Las Cruces Academic Catalog
2017-2018

Catalog effective summer 2017 through spring semester 2023.
Catalog Editor: Kori Plank
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LAS CRUCES ACADEMIC CATALOG

Academic programs at the New Mexico State University System are available to all students without regard to age, ancestry, color, disability, gender, national origin, race, religion, sexual orientation or veteran status.

Any item in these catalogs are subject to modification at any time by proper administrative procedure.

The ultimate responsibility for planning an academic program in compliance with university, community college, college and departmental requirements rests with the student. In addition, the student bears ultimate responsibility for understanding all matters of the Course Catalogs.

Catalog effective summer 2017 through spring semester 2023.

Catalog Editor: Kori Plank
WELCOME FROM THE CHANCELLOR

New Mexico State University is a caring community transforming lives through discovery. I’m proud of the work done by everyone at NMSU. Our students are talented and spirited, and they join our faculty and staff in taking part in exciting research, teaching and outreach activities that happen here every day.

I’ve been around this university for a long time – as a student, a faculty member, a dean and now as chancellor. I love the energy on this campus. The Aggie spirit shown by everyone is something you can see and feel.

We are fortunate to have a beautiful campus and I encourage everyone to experience it. Whether it’s attending class, watching a sporting event, taking in a musical or theatrical performance, or just enjoying a stroll near the pond, there is plenty that NMSU has to offer.

Garrey Carruthers, Ph.D.

Chancellor and President, New Mexico State University
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Garrey E. Carruthers, Chancellor

Board of Regents
Susana Martinez, Governor of New Mexico, Ex Officio Regent from Santa Fe.

Amanda Lopez-Askin, Appointed Student Regent from Las Cruces for term expiring December 31, 2016

Debra Hicks, Appointed Regent from Hobbs for term expiring December 31, 2020.


Mike Cheney, Appointed Regent from Las Cruces for term expiring December 31, 2016.

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Pontelli, Enrico., Dean, Arts and Sciences College
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Reddi, Lakshmi, Dean, Engineering College
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Grants
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Armstead, Beth, VP Student Services
Sheski, Harry, VP Academic Affairs
THE HISTORY OF THE UNIVERSITY

New Mexico State University (NMSU) was founded in 1888 as the state's land-grant university. Through serving the educational needs of New Mexico's diverse population, NMSU has provided comprehensive programs of education, research, extension education and public service. Upon its founding, NMSU was known as Las Cruces College and later renamed New Mexico College of Agriculture and Mechanic Arts. In 1960, the constitution of New Mexico formally recognized the institution as NMSU. Today, NMSU is a major institution of higher education. Throughout its history, the university has preserved many traditions of its land-grant origin while also increasing emphasis on the fine arts, humanities, social and natural sciences.

Mission

New Mexico State University is the state’s land-grant university, serving the educational needs of New Mexico’s diverse population through comprehensive programs of education, research, extension education, and public service.

Vision

New Mexico State University will be a premier university as evidenced by demonstrated and quantifiable excellence in teaching, research, extension, outreach, service, economic development, and community engagement relative to its peer institutions.

Values

- Diversity and Inclusion
- Accountability
- Excellence
- Discovery
- Engagement

NMSU's Values began as a project completed by the first class of the Aggie Leadership Training Academy (https://training.nmsu.edu/alta/2015aggie-leadership-training-academy). In the fall of 2016, the University Administrative Council started with that work, and members contributed their top five values (http://provost.nmsu.edu/plan/wp-content/uploads/sites/13/2012/07/Values-12_12_16.pdf). This list was compiled from those contributions.

Accreditation

New Mexico State University has been accredited by The Higher Learning Commission (HLC) since 1926. The HLC may be contacted at:

The Higher Learning Commission
230 North LaSalle St.
Suite 7-500
Chicago, IL 60604-1411
Phone: (800) 621-7440

In addition, the university maintains various specialized and professional accreditations, as listed at the beginning of each college section in the catalog, and as found at https://accreditation.nmsu.edu/specialized-accreditation/.

NMSU Graduation and Retention Rates

These rates may be found on the NMSU Institutional Research web site at: http://oia.nmsu.edu/data-reports/oiareports/.
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AREAS OF INTEREST

What Are Meta-Majors?

Meta-majors at NMSU are two-semester academic maps designed as planning tools for students who have not yet decided on a program of study. Each meta-major represents a broad cluster of degree programs. The meta-major academic maps include courses (such as English and Math) that lay the academic foundation for all of the degree programs represented by the specific meta-major as well as course options that facilitate exploration of the various disciplines represented.

Meta-majors share a common early pathway toward a degree, diverging as a student becomes more focused on an individual major. By identifying a limited number of meta-majors that encompass all the majors at NMSU, and helping students who are unsure about a major choose a meta-major consistent with their interests, we can help ensure that courses taken early in a collegiate career will count toward a degree, thereby lessening the academic wandering that can impede student success.

Students will be directed to a meta major only if they are uncertain what they want to study. Students who are certain of their major will be advised into courses that are in that major’s degree plan.

• Applied and Clinical Health Sciences
• Applied Social and Behavioral Sciences
• Business
• Communication, Media Study, and Creative Arts
• Humanities and Social Sciences
• Life Sciences
• Physical Sciences and Engineering
• Teacher Education

Applied and Clinical Health Sciences

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• Kinesiology - Bachelor of Science in Kinesiology (p. 505)
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• Information Systems - Bachelor of Business Administration (p. 421)
• International Business - Bachelor of Business Administration (p. 435)
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Physical Sciences and Engineering

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- Elementary Education - Bachelor of Science in Education (p. 476)
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ESSENTIAL INFORMATION FOR STUDENTS

The information provided in this section of the Academic Catalog is considered essential information for students throughout their time at New Mexico State University. The section includes information on Admissions, Tuition, Financial Aid, Military and Veterans Programs and General Education Course requirements. There are also sections pertaining to Student Resources such as Housing, Campus Activities and parking to name a few.

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- Transfer Undergraduate Students (p. 23)
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Undergraduate Admissions

A student may be accepted for undergraduate admission to NMSU as either:

- A degree-seeking student or
- A nondegree student under the policies and conditions as set forth in this section.

How to Apply as a First-Time Student (Regular Student)

Requirements for admission as a degree seeking student include the following:

- A formal application for admission, accompanied by a one-time $20 nonrefundable application fee.
- An official transcript with the student's high school credits is to be sent directly from the high school to the Undergraduate Admissions Office. Students who attended a college or university while in high school must request official transcripts(s) sent directly to the Undergraduate Admissions Office by the Registrar of each college or any post-secondary educational institution previously attended, you may hand carry the official sealed and unopened school envelope to our office.
- Official results of the American College Testing Program (ACT) or Scholastic Aptitude Test (SAT) are to be sent directly from the Testing Centers to the Undergraduate Admissions Office. All freshman applicants are required to submit scores from either the ACT or the SAT before a final admission is granted.

Freshman Admission Requirements

Students who meet the minimum high school course requirements listed below must meet one of the following criteria in order to be admitted:

- Cumulative high school GPA of 2.75
- Ranked in the top 20 percent of their graduating class
- ACT composite score of 21 or SAT score* of 990 (SAT score of 1060 for new format)

*NMSU uses combined scores from the critical verbal and math portions of the SAT for admission and scholarship purposes. NMSU will be taking scores from the traditional SAT and the new SAT format, which was launched March 2016.

Note: All entering freshmen must submit official ACT or SAT scores before final admission is granted. ACT code=2638, SAT=4531

<table>
<thead>
<tr>
<th>Subject</th>
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</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4*</td>
</tr>
<tr>
<td>Math</td>
<td>4**</td>
</tr>
<tr>
<td>Science</td>
<td>2***</td>
</tr>
<tr>
<td>Foreign Language/Fine Art</td>
<td>1</td>
</tr>
</tbody>
</table>

*Must include at least 2 units of writing intensive courses, one of which must be a junior or senior level course
**From Algebra1, Geometry, Algebra II, and one additional math course
***Beyond general science

Applicants who meet all the requirements listed above will be offered admission to NMSU. An applicant who does not meet all the requirements may also be offered admission if a review of their additional information indicates that the student would be successful at NMSU.

We encourage all students to apply for admission to NMSU. When reviewing the admisibility of students, we consider many factors, including high school GPA, test scores, dual-credit coursework, leadership experience, community involvement and other accomplishments. Applicants may be asked for additional information, including academic letters of recommendation, in support of their application.

Aggie Pathway

In the Aggie Pathway to the Baccalaureate Program, our system of five campuses work together to navigate you toward a bachelor’s degree – even if you initially don’t meet admission requirements to the university. Aggie Pathway students may transition to the Las Cruces campus after successful completion of:

- 24 credits, in addition to any required developmental courses
- 2.50 cumulative college GPA

Students participating in the Aggie Pathway program can attend academic, cultural and athletic events on the NMSU Las Cruces campus. Students enrolling through NMSU Doña Ana Ana have access to on-campus housing and dining. For more information, please visit http://aggiepathway.nmsu.edu/ or call 575-646-8011.
How to Apply as a GED or HISET Student
Students must complete the GED or HiSET in English. Satisfactory scores on either the GED or HiSET tests, official high school transcript and the ACT or SAT test are required.

How to Apply as a Home School Student
The home school educator must submit a signed transcript or document that lists the courses completed and grades earned by the student, as well as, indicate the date the student completed or graduated from the home school program. The ACT or SAT test is also required.

Home school students who are New Mexico residents and wish to participate in the Lottery Success Scholarship program are required to submit official New Mexico GED or HiSET test results in English.

Aggie Welcome and Orientation
At the mandatory Aggie Welcome and Orientation events students will attend information sessions, meet with an academic advisor and register for classes. Students will also learn more about college life and campus resources.

For information, please contact the Aggie Welcome and Orientation Office at (575) 646-4496 or (575) 646-8038 and can be reached via email at awo@nmsu.edu or http://awo.nmsu.edu/.

How to Apply as a Nondegree Seeking Student
Nondegree admission is designed to meet the needs of non-traditional, part-time students who do not wish to pursue a degree at this university. Courses taken in this status may not be used to meet university admission requirements. Students interested in using nondegree credit for initial teacher certification or certification in a new field need to contact the College of Education.

Students on nondegree status are ineligible to receive financial aid or student employment; and are ineligible to participate in student government or intercollegiate athletics. They are also ineligible to receive benefits from any veterans' program.

Transcripts from previous institutions, high school, and/or results of college entrance exams may be required to assure readiness for university-level courses. A $20 one-time, non-refundable, nondegree application fee is required.

Nondegree students are subject to the same university regulations as regular students.

Changing from Nondegree Status
A nondegree student in good academic standing at NMSU must submit a formal application for a change of status from nondegree to degree seeking. Requirements for regular admission must be met. Nondegree students may not transfer more than 30 credits from this status to any undergraduate degree program with the exception of students participating in a high school concurrent enrollment program.

How to Apply For Readmission
Former students of the NMSU system, who have been out of school for more than two consecutive semesters are required to make a formal application for readmission. Applications should be submitted to the Undergraduate Admissions Office before the opening of the semester or summer sessions for which the student plans to enroll.

A student who has attended other institutions during an absence must have official transcripts forwarded directly to the Undergraduate Admissions Office by the Registrar of each institution and must be eligible to return to the college or university last attended. Transcripts must be received prior to the date of registration. Admission status at the time of readmission will normally be determined by previous NMSU academic standing. However, academic performance at other institutions attended during the applicant’s absence from NMSU may be taken into consideration in determining the student’s admission status.

Opportunities for High Schools Students
Dual Credit for High School Students
The Dual Credit Program is designed to give high school students an opportunity to enroll at NMSU prior to high school graduation. Students must be either a junior or senior in high school and enrolled in one-half or more of the minimum course requirements approved by the following:

- Public Education Department in a New Mexico public school district;
- Locally chartered and state-chartered charter school;
- State-supported school;
- Be in physical attendance at a bureau of Indian education-funded high school at least three documented contact hours per day.

Under Senate Bill 158 signed by the Governor and effective July 1, 2014, support for dual credit privileges at post-secondary institutions is now available for private and home school-eligible students. Under a Statewide Dual Credit Master Agreement between NMSU and the school district, students enrolled in approved dual credit courses are eligible to have the full cost of tuition and general fees waived.

Dual credit students must complete:

1. the Undergraduate Admission Application
2. provide official high school transcript and official ACT or SAT scores to the Undergraduate Admissions Office (and)
3. complete the State of New Mexico Dual Credit Request Form.

Requirements to be admitted to the dual credit or early admission programs are:

1. high school grade point average (GPA) of 3.0
2. an ACT composite of 23 or equivalent SAT score (and)
3. substantial progress toward completion of the following high school courses: 4 units of English, 4 units of Math (Algebra 1, Geometry, Algebra 2, and one additional math course), 2 units of Science (beyond General Science), 1 unit of foreign language or a unit of fine arts.

Application Materials
All documents submitted as part of the official admissions process become property of NMSU and will not be returned to the student. Application materials are retained for one calendar year for students who apply but do not attend.

Application Deadlines
Applications for admission should be sent to the Undergraduate Admissions Office at least 30 days before the beginning of the regular semester or summer sessions in which the student intends to enroll. The
deadline for application to NMSU’s Nursing Program is February 1st for the fall semester and September 1st for the Spring semester.

Out-of-State Students and Legal Jurisdiction

By applying for admission/enrollment, both the student and parents agree that New Mexico law prevails and all litigation will be in federal or state court in New Mexico.

Contact Information

For more information, contact:

Undergraduate Admissions Office, MSC 3A
New Mexico State University
PO Box 30001
Las Cruces, NM 88003-8001
Phone: (575) 646-3121
http://admissions.nmsu.edu/

Transfer Undergraduate Students

NMSU evaluates eligible courses for NMSU transfer equivalency from postsecondary institutions that are regionally accredited or are candidates for regional accreditation. Credits from non-accredited institutions may be evaluated after the student has shown acceptable performance at NMSU for two semesters of full time enrollment. NMSU Colleges may have additional requirements for course transfer please the College for more information.

Transfer students are subject to the same graduation requirements as all NMSU baccalaureate-degree (bachelor’s) seeking students. Thirty (30) of the last 36 credit hours for every degree to be awarded from NMSU must be earned at NMSU.

Community/Junior College Transfers

Community/Junior college transfer students may be admitted and classified on the basis of acceptable credits earned at a two-year institution. However, transfer students are subject to the same graduation requirements as all NMSU-Las Cruces campus baccalaureate seeking students. This includes the required minimum number of 48 upper division credits from courses numbered 300 or above and the requirement that the last 30 credits must be earned through this university.

NOTE: Students currently enrolled at a NMSU Community College (Alamogordo, Dona Ana, Carlsbad or Grants) are not considered transfer students. If a student wants to change campuses they must submit a Change of Campus (https://admissions.nmsu.edu/change-of-campus-request) form.

Transfer Students- Admission Requirements

1. Transfer students must provide official transcripts sent directly from the Registrar’s Office or each previously attended institution to the NMSU Admissions Office or official transcripts will be accepted if delivered in person only if in a sealed envelope from the granting institution and with current issue date. Official transcripts must be received before the date of registration.

2. Students who have not earned credit for the first semester of each college English may be required to provide ACT or SAT scores directly to the NMSU Admissions Office.

3. Students with 30 or more college credit hours must have a cumulative grade point average (GPA) of at least 2.0.

4. Students with 29 or fewer college credit hours must fulfill the freshman admission requirements and have an overall college GPA of at least 2.50.

5. Students must be eligible to return to their last college or university.

6. Any student who conceals the fact that he/she has attended another college or university and has not submitted a transcript for each institution-whether or not credit was earned-will be subject to immediate suspension.

7. NMSU will uphold academic and judicial suspensions from other colleges and universities.

General Requirements for Transfer Credits

Credit will be awarded for transfer courses as follows:

1. Grades earned in courses taken at other institutions are not included in the calculation of the NMSU GPA, except for grades earned by approved National Student Exchange students.

2. A grade of D or better is required to receive NMSU credit for courses identified as having an NMSU equivalent.

3. Colleges or departments may require a grade of C- or higher for courses required in their programs.

4. Any lower-division course from another institution receiving transfer credit from NMSU at the 300 or above level will be evaluated on a case-by-case basis.

5. Each college determines which transferred courses are applicable toward a degree or a minor.

6. Transcripts may need to be reevaluated when students transfer from one NMSU campus to another.

7. Currently enrolled students who do not receive a passing grade for a class taken within the NMSU system can receive transfer credit for the course taken at an outside institution. However, the student may not receive the credit for the equivalent NMSU (system) course.

Student Responsibility

Planning for effective transfer with maximum efficiency is ultimately the student’s responsibility. Responsible transfer planning includes early and regular consultation with the intended degree-granting institution to assure that all pre-transfer coursework will meet the requirements of the desired degree.

NMSU maintains a database (http://nmsudirect.nmsu.edu/) of commonly transferred courses from numerous institutions. Courses included in the database at the time the student is admitted to NMSU will automatically transfer to NMSU, provided the student follows all guidelines (see Currently Enrolled NMSU Students below). If a transferred course does not exist in the database, it is the student’s responsibility to provide the departmental faculty with sufficient materials (e.g. catalog description, syllabi, etc.) to determine if any of the department’s courses may be equivalent to the credits being transferred.

Evaluation of Transfer Credits

NMSU has 3 levels of course credit transfer. Once a student has been admitted to NMSU, they are awarded credit for equivalent courses accordingly. Following award of credit as described in Levels 1 and 2 (below), application of any additional credit transfer via specific Program Articulation agreements will be approved by the student’s academic department and dean, including additional courses in the major that
may count toward a degree or a minor but are not included in a Program 
Articulation.

**Level 1**
Automatic course-to-course equivalency credit transfer from colleges/
universities in the state of New Mexico, per the New Mexico Higher 
Education Department (NM HED) articulation modules. Eligible credits for 
Level 1 transfers will be automatically applied to the student’s transcript, 
provided minimal grade requirements are met. Level 1 equivalency includes

1. New Mexico State Common Core general education courses
2. New Mexico State articulated academic programs (e.g. Business, 
   Early Childhood Education, and NM Nursing Education Curriculum).

**Level 2**
Faculty established NMSU course-to-course equivalency transfer

1. Equivalency is determined by designated departmental faculty in
   the department/program in which the equivalent course is offered, 
   and may include review of course description, syllabus and/or 
   interaction with the other institution. If a course equivalency does
   not exist in the database, it is the student’s responsibility to provide
   departmental faculty with sufficient materials to determine if any
   of the department’s courses may be equivalent to the credits being
   transferred.
2. Credit for courses transcripted with NMSU equivalency will count 
   toward the degree/major.
3. Credit for courses with no NMSU equivalence will be transcripted as 
   100E (lower level) or 300E (upper level) and may or may not count as 
   credit toward a specific degree. Departmental faculty may accept the 
   “E” course as elective credit toward the degree, or as substituting for 
   a course not applied universally.

**Level 3**
Specific Program Articulation between an NMSU program/department 
and a program/department at another institution.

1. Program Articulation with other institutions is monitored at 
   the department/program level in accordance with articulation 
   agreements, and may include credit transfers that are applicable only 
   to the specific degree articulated (i.e. credit for courses may change 
   depending on degree student declares).
2. Because Level 3 transfer credit is degree specific, transcripts must be 
   re-evaluated when a student changes their major or college. Level 3 
   transfer credits are not applied universally.

**Religious Center Courses in Religion**
Courses in religion, offered by the various religious centers through 
higher educational institutions with which they are affiliated, are open 
to all students and these or similar courses from other universities 
may be transferred for elective credit (“E”) to NMSU. Registration for 
these courses is separate from the NMSU System’s registration and is 
conducted by the religious center offering the course.

No more than 6 credits in such courses may be transferred to NMSU. To 
transfer earned credits to NMSU, the student must do the following:

1. Obtain written approval from the student’s department head and 
   academic dean prior to registration for the course
2. Count the credit in the course as part of the total semester load

3. Upon completion of the course, request that the institution granting 
   the credit send a transcript of the credit to the Registrar’s Office at 
   NMSU-Las Cruces

**National Student Exchange (NSE)**
Courses transferred back to the NMSU System by students participating 
in the National Student Exchange (NSE) Program will be evaluated as 
NMSU (system) courses and recorded on the student’s academic record. 
All computable grades earned will be included in calculating the student’s 
cumulative grade point average.

**Currently Enrolled NMSU Students**
Currently enrolled students must obtain prior approval from their 
academic department head and dean before courses taken at another 
institution will be applied toward meting NMSU graduation requirements.

Currently enrolled students who do not receive a passing grade for a 
class taken at NMSU can receive transfer credit for the course taken at 
an outside institution. However, the student may not receive the credit for 
the equivalent NMSU course.

**Transfer Credit Appeal Process**
All New Mexico public post-secondary institutions are required to 
establish policies and practices for receiving and resolving complaints 
from students or from other complainants regarding the transfer 
of coursework from other public institutions in the state. A copy of 
NMSU’s transfer credit policy may be obtained from the University 
Registrar’s Office or from the Deputy Secretary for Academic Affairs, 
Higher Education Department, 2048 Galisteo St., Santa Fe, New Mexico 
87505-2100.

**International Undergraduate 
Students**
The general policies of the university as outlined in this catalog apply 
to international as well as domestic students. However, some special 
policies are required by federal laws applicable only to international 
students.

An international student is any individual attending NMSU while present 
in the United States on a non-immigrant student visa (F-1, F-2, J-1, J-2, 
H-4, NATO Visas, and possibly others such as students in protected 
refugee status).

Legal immigrants (green card holders) should present documentation of 
their status to University Admissions and go through the same admission 
process as U.S. citizens.

**Federal Regulations**
The United States Department of Homeland Security has established 
rules for students in non-immigrant status, such as those with F-1 or J-1 
visa types. Some of these rules include:

1. For immigration purposes, each student must maintain full-time 
   student status
   a. Full time status for fall and spring semesters is defined as 12 or 
      more credits for undergraduates (only 3 per semester allowable 
      online).
   b. Full time status for summer is defined as 6 or more credits for 
      undergraduates (only 3 per summer allowable online).
   c. Exceptions possible for final semester. Consult ISSS officials for 
      more details.
2. International students may not work off campus without authorization. On-campus employment may be authorized under certain conditions.

3. All international students must maintain an up-to-date record in the ISSS Office. This record must include the student's current living address, phone number, and email address.

4. Prior to admission, a prospective international student must demonstrate the following:
   - Academic ability to succeed in the chosen course of study.
   - Adequate financial support to complete the chosen course of study.
   - English language proficiency as defined by the university.

**University Procedures for International Students**

**Regular Undergraduate Admission and English Requirements**

After regular and full admission to an NMSU degree program, each international undergraduate student is administered an English Language Placement Test. Based on the results, the student is either assigned to SPCD 110 (http://nmsu.smartcatalogiq.com/en/2015-2016/Undergraduate-Catalog/Courses/SPCD-ENGLISH-AS-A-SECOND-LANGUAGE/100/SPCD-110) (a bridge course designed to ensure success in ENGL 111 M), or allowed to enroll directly into ENGL 111 M. International students excused from SPCD 110 (http://nmsu.smartcatalogiq.com/en/2015-2016/Undergraduate-Catalog/Courses/SPCD-ENGLISH-AS-A-SECOND-LANGUAGE/100/SPCD-110) will be required to take ENGL 111 M. The student may then be required to complete one or more regular English classes as required for a particular degree. Completing basic English courses at other U.S. institutions does not automatically satisfy the ENGL 111 M requirement. Equivalencies for SPCD 110 are determined by CELP, and equivalencies for ENGL 111 M or ENGL 111G are determined by the English department. CELP and the English Department reserve the right to require additional testing in cases of dramatic discrepancies between TOEFL/IELTS scores and ELPT, or in other unusual circumstances. In cases where further testing is required, students will have to take the TOEFL PBT (Paper Based Test). Placements will be based on those scores as follows: 519 and below = CELP, 520-529 = 110. 530+ = 111.

In rare cases, exceptions to the above scoring and placements may be applicable. CELP reserves the right to identify cases where dramatic discrepancies exist between the ELPT and the original TOEFL or IELTS score submitted for admission. In such cases, students may be asked to take the institutional Paper Based TOEFL (PBT). This test will be administered locally, in a timely fashion, and at the university’s expense. Following the PBT a re-assessment of the student’s English course placement will be made by CELP.

Students voluntarily objecting to their ELPT score and placement in CELP are allowed to take the institutional TOEFL one time only, at their own expense, for the purpose of re-evaluation of their English course placement by CELP.

**Conditional CELP Admission and English Requirements**

NMSU, via Center for English Language Programs (CELP), conducts an Intensive English Language Program (IELP) for undergraduate and graduate students prior to pursuing their degree programs at NMSU. International students in this program are admitted to the university for the sole purpose of studying English, with a guarantee of full admission to the university upon completion of the CELP program (subject to all other admission requirements). Only undergraduate students who are conditionally admitted and complete the full sequence of IELP courses will be admitted directly into ENGL 111M. Placing out of levels by retaking the TOEFL is not allowable once conditional admission status has been granted. Visit http://celp.nmsu.edu/ for full details.

**English Language Proficiency**

NMSU requires a score of 520 (paper-based) or 68 (internet-based) or better on the Test of English as a Foreign Language (TOEFL), or a score of 6.0 on the International English Language Testing System (IELTS), for all international students both non-degree and degree seeking. International students may also demonstrate English proficiency by satisfactorily completing NMSU’s Center for English Language Programs (CELP) programs. A waiver of the TOEFL requirement may be considered for:

1. Students who are native speakers of English.
2. Students completing high school in the United States who (a) have attended the high school for at least two full semesters and (b) have scored in at least the 75th percentile in English on the ACT.
3. Students transferring from a junior college, or university in the United States who have earned a minimum of 30 acceptable semester credits (45 acceptable quarter credits) with a GPA of 2.0 or better (acceptable credit means classes that require a high proficiency in both written and oral English).
4. Students demonstrating English-language proficiency using methods accepted by the Office of University Admissions or ISSS Office.
5. Students enrolling in certain programs where English language proficiency is not required.
6. Students completing coursework in CELP. Satisfactory completion of each level in CELP requires a final grade of no less than 70% in all courses. Visit http://celp.nmsu.edu/ for full details.

The university reserves the right to require any prospective international student to meet the TOEFL or IELTS requirement.

**Financial Support**

No financial aid is available from NMSU for international students. The university reserves the right to require advance deposit of funds for any period deemed reasonable prior to granting admission. Each prospective international student must submit a current financial support document with his/her application. This document must show that:

1. The person providing the financial support has the necessary funds.
2. The funds can be transferred from the student’s home country to the United States.

**Admission Restrictions**

International student admission may be prohibited based on one of the following conditions:

1. The dean of a chosen college, the department head of a chosen major, and the President of a Community College campus may refuse to grant admission.
2. There may be a disproportionate number of international students or a disproportionate number of a particular nationality in one department, college or community college.
3. Academic advisors may not be available.
4. Sufficient classroom-based courses are not available to maintain visa status (e.g., courses are online).

All application material, including the application for admission, letters of recommendation, transcripts, national examination scores, transcripts from colleges or universities (with an English translation), test scores including the TOEFL. Pearson’s IELTS, should be sent to the ISSS Office.
by the following recommended dates. Additionally, proof of adequate financial support should be sent directly to ISSS. For full consideration for undergraduate admission, ISSS maintains the following deadlines:

- July 1 (application initiated) for fall semester
- July 15 (all documents submitted) for fall semester
- October 1* (Study Abroad and CELP Programs) for spring semester
- November 15 (application initiated) for spring semester
- December 1 (all documents submitted) for spring semesters

* Contact the Office of Education Abroad for exchange program admission deadlines, and CELP for intensive English program deadlines.

Miscellaneous Regulations
1. All international students are required to have student health insurance. Insurance will be automatically be billed to the student’s account each semester.
2. New international students are not permitted to register until all ISSS requirements are met, including attending orientation and taking the English Language Placement Test. All international students, are therefore, required to report to the campus to which they were admitted. The following are the offices that a student may need to report to:
   a. Las Cruces campus: International Student & Scholar Services, Garcia Annex, room 246 (exchange students need to report to the Office of Study Abroad)
   b. Doña Ana Community College: International Student & Scholar Services, Garcia Annex, room 246 (exchange students need to report to the Office of Study Abroad)
   c. Alamogordo Community College: Office of Student Services, Student Services Building, second floor
   d. Carlsbad Community College: Office of Student Services, 150 University Drive, Room 111
   e. Grants Community College: Office of Student Services, Walter Martinez Building, Main Office Complex
3. Students in nondegree exchange J-1 visa status must be engaged full time in a prescribed course of study as determined by the NMSU Responsible or Alternate Responsible Officer (RO/ARO). Consult ISSS for more details.

Tuition, Fees, and Other Expenses

All costs are given for one term/semester. The university reserves the right to change any of the charges without notice.

Campus Tuition Rates
For a full listing of all tuition rates from the NMSU System please see the University Accounts Receivable (http://uar.nmsu.edu/dues-fees/tuition-rates) website.

**Additional Fees**

<table>
<thead>
<tr>
<th>Fee</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Undergraduate admission application fee</td>
<td>$20.00</td>
</tr>
<tr>
<td>Graduate admission application fee</td>
<td>$40.00</td>
</tr>
<tr>
<td>New student orientation fee</td>
<td>$165.00</td>
</tr>
</tbody>
</table>

**Tuition, Fees, and Other Expenses**

International student admission application fee $50.00
International student orientation fee $50.00
Distance Education Course Delivery Fee (per credit) $35.00
ASNMSU Fee (Fall/Spring 1-11 credit enrollment) $33.50
ASNMSU Fee (Summer 1-8 credit enrollment) $12.40
Graduate Wellness/Fitness fee – (Fall/Spring 9-11 credits) $159.30
Undergraduate Course examination fee (per credit) $221.80
Graduate Course examination fee (per credit) $243.90
Certificate degree fee $25.00
Bachelor or Associate degree fee $25.00
Master or Doctorate degree fee $35.00
Degree application late filing fee $25.00
Late Registration Fee Base Cost $25.00
Engineering Technology Fee $145.00
Thesis binding fee (3 copies) $38.50
Thesis binding molecular biology / astronomy majors (4 copies) $48.50
Dissertation binding fee (3 copies) $38.50
Dissertation molecular biology / astronomy majors (4 copies) $48.50

**Course Fees (Fees Assessed Per Course)**

See the Course Fee page for a list of courses with additional fees.

Applied Music courses - see Music (p. 370) section of catalog

**Mandatory International Student Fees**

All international students are required to have health insurance coverage. International student health insurance is provided by HTH Worldwide unless otherwise covered by comparable health and accident insurance approved by the International Student Services. International students will be required to purchase health insurance for spring and summer during spring registration unless they have applied for spring graduation. (See optional fees (p. ) All international undergraduate students will be assessed a $36 International Student Program Fee each semester.

**Optional Fees**

**Wellness/Fitness Fee - Rates may Increase for 2017-2018**

The Wellness/Fitness fee is included in tuition for full-time students at the Las Cruces Campus. Options for part-time students enrolled at Las Cruces Campus include:

<table>
<thead>
<tr>
<th>Wellness</th>
<th>Fitness</th>
</tr>
</thead>
<tbody>
<tr>
<td>$79.00</td>
<td>$40.00</td>
</tr>
<tr>
<td>$105.00</td>
<td>$53.00</td>
</tr>
</tbody>
</table>

*Contact the Office of Education Abroad for exchange program admission deadlines, and CELP for intensive English program deadlines.*
The Wellness fee grants access to the Student Health Center with charges accruing for medications, lab work, testing or procedures. The Fitness fee grants access to the Student Activity Center.

**Health Insurance**

Students who have access to the Campus Health Center may choose to purchase a commercial insurance policy offered through the Health Insurance Marketplaces established by the Affordable Care Act (ACT). These exchanges are intended to provide consumers with a new way to shop for, compare costs and coverage benefits, and enroll in insurance coverage. For more information visit: www.healthcare.gov or www.bewellnm.com.

**Dining Services**

See Housing and Residential Life (http://catalogs.nmsu.edu/nmsu/general-information/student-resources) section for meal plan descriptions, application process, deposit requirement, regulations and eligibility. Freshmen living on campus must choose between Aggie Unlimited and Aggie Choice Plans.

<table>
<thead>
<tr>
<th>Meal Plan</th>
<th>Fall/Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggie Unlimited (unlimited entrances + 100 Aggie Dining $)</td>
<td>$1,900.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Aggie Choice (230 entrances + 325 Aggie Dining $)</td>
<td>$1,848.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Aggie 64 (64 entrances + 325 Aggie Dining $)</td>
<td>$894.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Pistol 400 (0 entrances + 400 Aggie Dining $)</td>
<td>$400.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Family Resident Optimum 350 (350 entrances)</td>
<td>$1,388.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Family Resident Optimum 250 (250 entrances)</td>
<td>$992.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Aggie Choice 150 (150 Entrees)</td>
<td>$1,299.00</td>
<td>n/a</td>
</tr>
<tr>
<td>Aggie Choice 100 (100 Entrees)</td>
<td>$999.00</td>
<td>n/a</td>
</tr>
</tbody>
</table>

**Payment of Charges**

By enrolling in classes at NMSU, a student makes a financial commitment to pay the tuition and fee charges associated with his/her enrollment. The enrollment action constitutes a financial obligation between the student and NMSU and all proceeds of this agreement will be used for education purposes and constitutes an education loan pursuant to 11 U.S.C 523(a) (8). Terms and Conditions of Course Registration are posted on the NMSU website and available in each term’s registration guide. Payments can be made by mail, web, telephone, or in person at University Accounts Receivable. Cash, checks, money orders and limited types of credit cards are accepted. Term charges can be paid in full or paid by using a payment plan. For payment plan options visit the NMSU website. Fees vary based on the plan. All financial aid received must be paid towards balances owed. Additional penalty charges may be assessed for failure to make payments when due. The University reserves the right to deny a payment plan to any student who has a poor credit rating or who has been negligent in making payments to the University for previous debts. Course enrollment may be cancelled if payment arrangements for past due dates are not completed by the deadlines as outlined on the Important Dates website. Academic credits, transcripts, and diplomas will be withheld until all financial obligations are paid in full. Students are prohibited from registering for a term/semester until all previous debts due to the University are paid in full.

**Tuition Adjustments, Refunds and Forfeitures**

Students officially withdrawing from all courses or dropping a course(s) during a semester or term are eligible for a 100-percent refund of tuition and fees through the deadlines listed online as outlined on the Important Dates for each term. Students withdrawing from a course(s) after that deadline will not be eligible for a refund and will remain liable for payment of full tuition and fee charges. Non-attendance does not constitute an official course drop or withdrawal. It is the student’s responsibility to withdraw from the university and/or drop a course if he/she decides to not attend once enrollment has taken place. All charges due to NMSU must be paid before refunds or adjustments will be permitted.

In cases of academic or disciplinary suspension, eligibility for tuition refunds and adjustments will depend on the conditions of the suspension and will be entirely at the option of the institution. Should unforeseen circumstances beyond the reasonable control of New Mexico State University result in curtailing classes, closing residence facilities, or otherwise withdrawing services that are a normal function of the institution, refunds of any nature will be at the discretion of the college/university administration.

Residence hall rentals and dining hall charges may be refunded in accordance with schedules adopted by these departments.

**Delinquent and Prior-Term Balances**

NMSU reserves the right to cancel the registration of any student who fails to pay, when due, any indebtedness to the institution.

Academic credits, transcripts, and diplomas will be withheld until all financial obligations are paid in full.

**Dishonored Financial Transactions - Checks, Credit Cards, ACH Transactions**

The University charges a penalty on all dishonored cash instruments. Personal checks will not be accepted from students who have had previously dishonored checks.

**Late Registration Fee**

A late registration fee of $25 is imposed if registration has not been completed before the late-registration period begins. Failure to make
scheduled payments with the University Accounts Receivable on due dates may result in additional liability.

**Estimating Other Expenses**

In addition to the direct costs stated above, other expenses per semester may include such items as textbooks and supplies (estimated at $300) and personal expenses (estimated at $460).

**Cooperative Education**

Students participating in the Cooperative Education Program who receive academic credit pay the same tuition and fees as regularly enrolled students. Work phase students who are assigned to campus or a nearby off-campus workstation may pay for the student wellness/fitness as if they were a part-time student enrolled in 1-5 credits.

**Ways to Qualify for Lower Tuition Rates**

Resident or nonresident status is determined in accordance to a uniform definition established for all New Mexico institutions by the Higher Education Department, State of New Mexico. The NMSU Registrar’s Office administers residency. Information on the following programs may be obtained from the University Admissions, the University Financial Aid and Scholarship Services, the NM Administrative Code (NMAC) 5.7.18.

- American Indian Agreement
- Athletic Grant
- Colorado-Arizona Reciprocal Agreement
- Dual Credit
- Fire Fighter and Peace Officer Survivor Scholarship
- Foreign Military Dependent
- Foreign Military Spouse
- Foreign Military Stationed in New Mexico
- Graduate Assistantship
- Immigrant Student (NM HS GRAD)
- Military Dependent
- Military Spouse
- Military Stationed in New Mexico
- NM Competitive Scholarship
- Part-time Students
- Senior Citizen Waiver
- Summer Session
- Texas 135
- Veteran Waiver
- Western Undergraduate Exchange
- WICHE/WUE

WUE states include Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming and the Commonwealth of the Northern Mariana Islands. For more information about any of the above ways to qualify for lower tuition rates please contact the University Accounts Receivable Office or the University Registrar’s Office.

**Contact Information**

For more information, contact:

University Accounts Receivable, MSC 4570
New Mexico State University

PO Box 30001
Las Cruces, NM 88003-8001
Phone: (575) 646-4911
http://uar.nmsu.edu

**Financial Aid & Scholarship Services**

University Financial Aid and Scholarship Services administers a broad spectrum of loans, grants, scholarships and work-study funding in an attempt to meet the financial need of the university's students.

University Financial Aid and Scholarship Services awards financial aid to students according to their individual need. Parents of students are expected to contribute to their child’s education according to their ability, taking into account their income, assets, number of dependents and other relevant information. Students themselves are expected to contribute from their own assets and earnings, including appropriate borrowing against future income. All information provided to University Financial Aid and Scholarship Services is regarded as confidential.

Students applying for financial aid must complete a Free Application for Federal Student Aid (FAFSA) designed to determine, in accordance with state and federal guidelines, the difference between what the student and/or family is expected to contribute and the cost of attending any campus within the NMSU System. Among the factors that determine the family’s Expected Family Contribution (EFC) are:

1. annual adjusted gross income as reported to the Internal Revenue Service;
2. savings, stocks, and/or bonds;
3. other assets in the form of a business, farm or real estate;
4. nontaxable income and benefits; and
5. student’s prior year income and assets.


Please refer to the NMSU-Las Cruces, Financial Aid and Scholarship Services web site for more information on available financial aid. A complete listing of programs and policies is available at: http://fa.nmsu.edu.

**General Eligibility Requirements**

To receive financial aid you must demonstrate that you are qualified to obtain education by:

- Having a high school diploma or a recognized equivalent such as a General Educational Development (GED) certificate or
- Completing a high school education in a home-school setting approved under state law.

If you were enrolled in college in an eligible program or career school prior to July 2, 2012, you may show you are qualified to obtain a higher education by:

- Passing an approved ability-to-benefit test (if you don’t have a diploma or GED, a college can administer a test to determine whether you can benefit from the education offered at that school);
- Completing six credit hours or equivalent course work toward a degree or certificate (you may not receive aid while earning the six credit hours)
Financial Aid Awards

All financial aid awards are based on information provided by the student and/or parents, availability of funds and eligibility requirements. Any award may be revised based on changes in enrollment, cost of attendance, application of graduation, family contribution or failure to meet satisfactory academic progress. Withdrawals or reductions in enrollment may affect an award or any future awards. Financial Aid will not pay for audited courses or some repeats.

Federal Direct Subsidized Loans

This is a loan program for eligible undergraduate students who demonstrate financial need. The U.S. Department of Education pays the interest on a Direct Subsidized Loan while the student is enrolled in school at least half-time.

Federal Direct Unsubsidized Loans

Loans that are made to eligible undergraduate and graduate students that do not demonstrate financial need. Unlike other federal loans, interest accrues while the student is attending school.

Repayment of a Federal Direct loan begins six months after graduation or six months after enrollment drops below 6 credits or less than half time for undergraduate students.

Students receiving a subsidized or unsubsidized Federal Direct Loan, must complete an online entrance counseling session before NMSU will issue the funds. In addition, students must complete an exit interview upon graduation or withdrawal from the university.

Federal Perkins Loans

A school-based loan program for undergraduate and graduate students with exceptional financial need. Under this program the school is the lender. A Perkins Loan must be repaid according to Federal Guidelines. Repayment begins nine months after graduation or nine months after enrollment drops below 6 credits for undergraduate students.

Grants

The Federal Pell Grant is a federal grant available to undergraduate students with documented financial need. Pell Grants range from $593 to $5,920, though these figures are subject to change each year. If a Pell Grant is insufficient to pay educational expenses, the student may be eligible to receive other types of aid, including a Federal Supplemental Educational Opportunity Grant (SEOG) or Leveraging Education Assistance Partnership Program Grant (LEAP), and/or other miscellaneous grants. These grants are awarded to undergraduate students who show exceptional financial need. For more information, contact University Financial Aid and Scholarship Services or visit the university’s financial aid website at: http://fa.nmsu.edu/. Generally, grants do not have to be repaid.

Work-Study Programs

The Federal Work-Study Program provides employment opportunities for selected undergraduate students with demonstrated financial need. The New Mexico Work-Study Program also provides employment opportunities for New Mexico resident students.

For more information on the U.S. Department of Education student aid programs, go to http://studentaid.ed.gov/ or see the NMSU Financial Aid web site at http://fa.nmsu.edu (http://fa.nmsu.edu).

Scholarships and Other Aid

Many students finance part of their education with scholarships, which may be awarded for academic achievement, special skills, talent and/or based on the applicants financial need.

The NMSU System has a variety of scholarships that are offered to incoming freshman, transfer, continuing and graduate students. State, institutional and private scholarships may also be available but amounts, deadlines and eligibility requirements vary. For more information, contact University Financial Aid and Scholarship Services or visit the university’s scholarship web site at http://admissions.nmsu.edu/scholarships/

To be considered for most scholarships with the NMSU System you are required to apply online through Scholar Dollar$, at https://scholarships.nmsu.edu/. One scholarship application serves all students with the NMSU system, regardless of campus.

Financial Aid Satisfactory Academic Progress

Federal regulations require that financial aid recipients meet certain academic standards to be eligible for federal financial aid. To ensure that financial aid recipients are making satisfactory academic progress, academic transcripts are reviewed at the end of each term to determine eligibility for the next term. All terms of attendance are reviewed, including periods in which the student did not receive financial aid. All transfer credit hours are taken into account when satisfactory progress is reviewed. The Financial Aid SAP standards are not the same as the NMSU System’s Academic Standards of Progress criteria.

Elements of Financial Aid Satisfactory Academic Progress

- Qualitative Progress: Undergraduate students must maintain a cumulative GPA of at least 2.0 (a C- average). Grade point values are:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Grade Points per Unit of Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+/ A</td>
<td>4.0</td>
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- Quantitative Progress: Students must complete the required number of credits to progress each term.
- Satisfactory Attendance: Students must be enrolled or accepted for enrollment as a regular student working toward a degree or certificate in an eligible program.
- Be a U.S. citizen or eligible noncitizen (state funded scholarships are available to undocumented students).
- Have a valid Social Security number. If you don’t have a Social Security number, you can find out more about applying for one at: www.ssa.gov (http://www.ssa.gov).
- Must be meeting satisfactory academic progress (SAP).
- Sign a statement on the FAFSA certifying that you will use Federal student aid only for educational purposes.
- Sign a statement on the FAFSA certifying that you are not in default on a federal student loan and that you do not owe money back on a federal student grant.
- Register with the Selective Service, if required.

For more information on the U.S. Department of Education student aid programs, go to http://studentaid.ed.gov/ or see the NMSU Financial Aid web site at http://fa.nmsu.edu (http://fa.nmsu.edu).

Financial Aid Awards

All financial aid awards are based on information provided by the student and/or parents, availability of funds and eligibility requirements. Any award may be revised based on changes in enrollment, cost of attendance, application of graduation, family contribution or failure to meet satisfactory academic progress. Withdrawals or reductions in enrollment may affect an award or any future awards. Financial Aid will not pay for audited courses or some repeats.

Federal Direct Subsidized Loans

This is a loan program for eligible undergraduate students who demonstrate financial need. The U.S. Department of Education pays the interest on a Direct Subsidized Loan while the student is enrolled in school at least half-time.

Federal Direct Unsubsidized Loans

Loans that are made to eligible undergraduate and graduate students that do not demonstrate financial need. Unlike other federal loans, interest accrues while the student is attending school.

Repayment of a Federal Direct loan begins six months after graduation or six months after enrollment drops below 6 credits or less than half time for undergraduate students.

Students receiving a subsidized or unsubsidized Federal Direct Loan, must complete an online entrance counseling session before NMSU will issue the funds. In addition, students must complete an exit interview upon graduation or withdrawal from the university.

Federal Perkins Loans

A school-based loan program for undergraduate and graduate students with exceptional financial need. Under this program the school is the lender. A Perkins Loan must be repaid according to Federal Guidelines. Repayment begins nine months after graduation or nine months after enrollment drops below 6 credits for undergraduate students.

Grants

The Federal Pell Grant is a federal grant available to undergraduate students with documented financial need. Pell Grants range from $593 to $5,920, though these figures are subject to change each year. If a Pell Grant is insufficient to pay educational expenses, the student may be eligible to receive other types of aid, including a Federal Supplemental Educational Opportunity Grant (SEOG) or Leveraging Education Assistance Partnership Program Grant (LEAP), and/or other miscellaneous grants. These grants are awarded to undergraduate students who show exceptional financial need. For more information, contact University Financial Aid and Scholarship Services or visit the university’s financial aid website at: http://fa.nmsu.edu/. Generally, grants do not have to be repaid.

Work-Study Programs

The Federal Work-Study Program provides employment opportunities for selected undergraduate students with demonstrated financial need. The New Mexico Work-Study Program also provides employment opportunities for New Mexico resident students.

For more information on the U.S. Department of Education student aid programs, go to http://studentaid.ed.gov/ or see the NMSU Financial Aid web site at http://fa.nmsu.edu (http://fa.nmsu.edu).

Scholarships and Other Aid

Many students finance part of their education with scholarships, which may be awarded for academic achievement, special skills, talent and/or based on the applicants financial need.

The NMSU System has a variety of scholarships that are offered to incoming freshman, transfer, continuing and graduate students. State, institutional and private scholarships may also be available but amounts, deadlines and eligibility requirements vary. For more information, contact University Financial Aid and Scholarship Services or visit the university’s scholarship web site at http://admissions.nmsu.edu/scholarships/

To be considered for most scholarships with the NMSU System you are required to apply online through Scholar Dollar$, at https://scholarships.nmsu.edu/. One scholarship application serves all students with the NMSU system, regardless of campus.

Financial Aid Satisfactory Academic Progress

Federal regulations require that financial aid recipients meet certain academic standards to be eligible for federal financial aid. To ensure that financial aid recipients are making satisfactory academic progress, academic transcripts are reviewed at the end of each term to determine eligibility for the next term. All terms of attendance are reviewed, including periods in which the student did not receive financial aid. All transfer credit hours are taken into account when satisfactory progress is reviewed. The Financial Aid SAP standards are not the same as the NMSU System’s Academic Standards of Progress criteria.

Elements of Financial Aid Satisfactory Academic Progress

- Qualitative Progress: Undergraduate students must maintain a cumulative GPA of at least 2.0 (a C- average). Grade point values are:

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<thead>
<tr>
<th>Letter Grade</th>
<th>Grade Points per Unit of Credit</th>
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<tr>
<td>A+/ A</td>
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- Quantitative Progress: Students must complete the required number of credits to progress each term.
- Satisfactory Attendance: Students must be enrolled or accepted for enrollment as a regular student working toward a degree or certificate in an eligible program.
- Be a U.S. citizen or eligible noncitizen (state funded scholarships are available to undocumented students).
- Have a valid Social Security number. If you don’t have a Social Security number, you can find out more about applying for one at: www.ssa.gov (http://www.ssa.gov).
- Must be meeting satisfactory academic progress (SAP).
- Sign a statement on the FAFSA certifying that you will use Federal student aid only for educational purposes.
- Sign a statement on the FAFSA certifying that you are not in default on a federal student loan and that you do not owe money back on a federal student grant.
- Register with the Selective Service, if required.

For more information on the U.S. Department of Education student aid programs, go to http://studentaid.ed.gov/ or see the NMSU Financial Aid web site at http://fa.nmsu.edu (http://fa.nmsu.edu).
I, CR, RR, PR, NC, W, AU not calculated in the GPA

- Completion Rate: Students must complete a minimum of 70 percent of all coursework (registered credit hours) attempted within the NMSU System. Any course with a grade of withdraw (W), incomplete (I), repeats (RR), failure (F), audit (AU), or no credit (NC) is not considered completed coursework. Repeated courses are included in the calculation.

- Maximum Time Frame: Undergraduate students must complete their program within 150 percent of the published length required by the program. Students who have reached the maximum allowable time will be suspended from receiving financial aid. Limited developmental/remedial hours are excluded from this calculation. Total attempted hours including repeated courses and transfer coursework are included in the student's maximum time frame calculation.

- Recipients of financial aid grants and loans who drop credits or withdraw may be required to return all or a portion of awarded Title IV funds. Further information regarding the return of Title IV funds is available on the NMSU-Las Cruces web site at http://fa.nmsu.edu/resources/return-of-title-iv-funds/.

Financial Aid Warning
"Warning" is a status assigned to a student who fails to make satisfactory academic progress at a school that evaluates satisfactory academic progress at the end of each payment period and/or term, and chooses to allow students who fail its progress standards to continue to receive aid. If the student has not returned to satisfactory standing after this additional semester, he or she will be suspended from further financial assistance until the satisfactory progress standards are met.

Financial Aid Suspension
Students are suspended from receiving financial aid if they do not meet satisfactory academic progress standards for financial aid purposes. Students on financial aid suspension will not receive any form of federal or state financial aid (grants, loans, work study). Financial aid eligibility is reinstated when all standards of satisfactory progress are met.

The Appeals Process
Students suspended from financial aid may appeal the suspension if there are mitigating circumstances affecting their progress. Students who would like to appeal the suspension must submit an appeal form, available at: http://fa.nmsu.edu. They must also submit all required documentation to University Financial Aid and Scholarship Services. A committee will review the appeal and may grant reinstatement of financial aid based on mitigating circumstances that directly contributed to deficient academic performance. Appeals are evaluated on a term-by-term basis. All appeals, including relevant documentation, must be submitted by the semester deadline based on the current semester of enrollment. A student may appeal the termination of eligibility only twice during his or her career within the New Mexico State University System.

Contact Information
For more information, contact:
Las Cruces Campus Financial Aid Office
MSC 5100
PO Box 30001
Las Cruces, NM 88003-8001

Phone: (575) 646-4105
http://fa.nmsu.edu/

Registration
For information about Registration please see the NMSU System Academic Regulations (p. 53) section of the catalog and the Registrar's Office (http://registrar.nmsu.edu) website.

Withdrawals
For information about Withdrawals please see the NMSU System Academic Regulations (p. 53) section of the catalog and the Registrar's Office (http://registrar.nmsu.edu) website.

Resources for Students
Aggie Health & Wellness Center
The university maintains a well-equipped integrated health center on campus, with a comprehensive medical care, laboratory, pharmacy, x-ray, and counseling services. Hospitalization and emergency services are available in the community. Undergraduate students are eligible for services at the Center. Those students enrolled for 12 or more credits (6 in a summer session) may access the Center as fees have been paid through full-time enrollment. Students enrolled for less than 12 credits (5 in summer session) may choose to pay the wellness fee or office fee for medical care. The Center accepts payment for medical services through cash, credit card, student account and insurance reimbursement.

Counseling services at Aggie Health & Wellness provides students and the campus with individual, couples and group counseling, crisis intervention, career counseling, outreach programs and consultation. We assist students who are dealing with issues such as relationship concerns, depression, anxiety, stress management, trauma and self-esteem. In addition, Aggie Health & Wellness also has services and resources that support harm reduction. These services include: WAVE (Wellness, Alcohol, and Violence Education) which provides the campus with information concerning the decisions that surround alcohol use, sexual assault, and violence prevention; social work services operates the Aggie Cupboard, an on-campus food pantry and provides resource support for students who may need assistance with housing, insurance or other basic needs. All services are strictly confidential and are free.

The Aggie Health & Wellness Center is open Monday- Friday from 8:00 am - 5:00 pm during the academic year and Monday - Friday 8:00 am - 12:00 pm & 1:00 - 5:00 pm during university breaks and summer. The Center is located on the corner of Brelend and Stewart Sts. For more information, please call (575) 646-1512 or visit the website at wellness.nmsu.edu (http://wellness.nmsu.edu).

Campus Activities
The Office of Campus Activities offers involvement outside the classroom, an essential component of the student's academics. Campus Activities collaborates with campus and community entities to create opportunities for student involvement, group and individual leadership and personal development. Campus Activities coordinates activities and events through the Activity Registration process for chartered student organizations, administers the University Sales and Solicitation Policy, the Freedom of Expression Policy, and serves as the university liaison to the Interfaith Council.
Campus Dining
First-year students living in the residence halls, who recently graduated from high school, are required to participate in a Meal Plan and are limited to the Aggie Unlimited and the Aggie Choice 230. The Meal Plan dining contract runs for an entire academic year (unless applying for the Spring Semester only) and charges are applied to a student's university account each semester. 

Any registered student may participate in the Meal Plan program whether living on or off campus to include continuing, commuter, as well as Graduate students. A variety of Meal Plan choices are available to suit their lifestyle.

Application procedures and additional information may be obtained from the ID Card Services Office by calling (575) 646-4835 or via e-mail at idsvs@nmsu.edu, or by stopping by Room 137 in Corbett Center Student Union between 8:00 am - 4:30 pm Monday - Friday. The mailing address is:

ID Card Services Office
PO Box 30001, MSC 3 ID
Las Cruces, NM 88003

Other Food Services Options
In addition to the Meal Plans, food service is available at various locations throughout the campus by using cash, NMSU Aggie Cash, the NMSU Enhanced Aggie ID Card, a credit/debit card, or, in most areas, the Aggie Dining Dollars included with a Meal Plan package. Food service location hours are available at dining.nmsu.edu (https://dining.nmsu.edu). Additional information can be obtained by contacting the ID Card Office between 8:00 am - 5:00 pm at (575) 646-4835, idsvs@nmsu.edu, by visiting the office on the 1st floor of the Corbett Center Student Union. You may also visit us at idcard.nmsu.edu (https://idcard.nmsu.edu).

Career Services
The mission of Career Services is to offer programs, services and resources that will contribute to students life-long career planning efforts. Staff members work closely with deans, department heads, faculty and employers to assist students and alumni in developing suitable career opportunities based on their education, experiences and interests. Additionally, Career Services coordinates interviews between prospective employers, students and alumni. The staff advises students on the career-planning process and career-search strategies. Current information on employment trends, a comprehensive library of career literature, and electronic career products help students make educated decisions. Also, career fairs are held throughout the academic year. Students can launch their career plans through registration in AggieCAREER Manager.

Excellent experiential opportunities, through the following programs, contribute to forming students’ career goals:

On-Campus Employment: Information is available for part-time employment through federal work-study, student employment and graduate assistant programs. Available opportunities are advertised on AggieCAREER Manager located on our website below.

Off-Campus Employment: Part- and full-time jobs in Las Cruces, requiring general or very specific qualifications, are listed and referrals are made for students.

Cooperative Education and Internship Program: Information is available on Cooperative Education and internship opportunities offered by government, nonprofit organizations and business/industry.

For comprehensive information on all programs and services offered by Career Services please visit us at Garcia Annex Room 224, call (575) 646-1631, or review our services online at http://careerservices.nmsu.edu.

Center for Academic Advising and Student Support
The Center for Academic Advising and Student Support will be housed in Garcia Annex and new freshmen attending Aggie Welcome and Orientation this summer will be the first class to be fully integrated into the new advising center. The transition for students currently enrolled at NMSU will take effect after the beginning of the Fall 2017 semester. Leadership for the Center for Academic Advising and Student Support is Dr. Jennifer Hodges (jphodges@nmsu.edu) as Interim Director and Marissa Fowler (http://provost.nmsu.edu/advising/marissa-fowler-bio) (marimaci@nmsu.edu) as Interim Associate Director.

Cooperative Education and Internship Program
Today’s competitive employment market necessitates that students gain practical experience related to their major before they finish their college degree. This experience is called Experiential Learning.

NMSU enjoys a national reputation for its Cooperative Education (Co-op) and Internship Program, which contributes to students’ total educational experience and realization of career goals by integrating academic theory and practical application on the job. Co-op and Internship assignments provide varied work experiences with employers from business, industry, government and nonprofit organizations. All Co-op work assignments are for continuing full-time students, and must be completed prior to graduation. Each semester (spring, summer, & fall) that a student participates in an approved Co-op a notation is placed on his/her permanent academic transcript.

Students may register full-time for the alternating plan, working one of more work phases throughout the U.S.; each work phase will last the duration of an academic semester. Work phases are separated by at least one semester of full-time on-campus classroom instruction. Note: While on an alternating work phase, students are afforded full-time academic status with the university, which protects enrollment status, financial aid and other student eligibilities, whether they are registered for any credit or not.

Continuous academic enrollment can be maintained through the parallel plan, wherein a student works part-time (approximately 20-29 hours per week) concurrent with full-time enrollment. Employers are generally located within commuting distance of the university.

In addition to gaining academically related work experience, Co-op students establish positive work ethics, receive remuneration for their educationally related experiences, and also may potentially arrange for course credit through an academic department.

Experiential Learning also includes internships. Internships vary in definition based on the employer and can be one-time or multiple semester work assignments that may or may not be curriculum-related, short or long duration and are paid or unpaid. Internships may qualify for...
the NMSU Cooperative Education and Internship program, if they meet the program requirements. Approved internship work assignments for continuing full-time students must be completed prior to graduation. Each semester (spring, summer & fall) that a student participates in an approved part-time or full-time Internship a notation is placed on his/her permanent academic transcripts. Internships may earn academic credit through the approval of an academic department.

All students interested in Cooperative Education or Internships must first register with the Cooperative Education and Internship Program office located in Career Services, Garcia Annex. Registration includes an NMSU AggieCAREER Manager Account and an advising session.

For more information contact:

Cooperative Education and Internship Program, MSC 3509
PO Box 30001
Las Cruces, NM 88003-8001
Phone: (575) 646-4115
Email: coop@nmsu.edu
http://careerservices.nmsu.edu

Corbett Center Student Union

Corbett Center Student Union (CCSU) serves as the center for campus life, providing programs and services for students and other members of the university community. CCSU is a place to study, relax, meet with student groups, eat, work or play; CCSU offers students, faculty and staff a variety of services and activities. The union is the home to several administrative offices, Campus Activities, Associated Students of NMSU (ASNMSU), Housing & Residential Life, Campus Dining Services, the student radio station and student newspaper. Services offered include an auditorium, meeting rooms, multiple dining facilities (both retail and residential), student attorney or student legal aid services, ATMs, a computer lab, study areas, post office, fitness center, game room and a convenience store.

For more information contact:

Corbett Center Information Desk
MSC CC, PO Box 30001
Las Cruces, NM 88003
Phone: (575) 646-4411 or (575) 646-4530
ccsu.nmsu.edu (https://ccsu.nmsu.edu)

Distance Education

The Office of Distance Education extends New Mexico State University’s reach beyond traditional programs to provide opportunities for students to meet their academic, professional and personal learning goals. Distance Education courses from NMSU are delivered using the most innovative technology and methods available, including web-based technologies, ITV (Interactive Television), faculty exchanges and off-site classes.

Distance Education (DE) programs are designed to serve students who live a significant distance away from the Las Cruces campus or have scheduling conflicts due to family or work obligations and often find distance education as the best solution to educational advancement. DE at NMSU is defined as the formal education process of delivering educational instruction so students physically remote from the campus of program origin and/or instructor may participate. Distance education degree programs at NMSU are delivered using a variety of formats including 100% online, or combinations of ITV, online and face-to-face instruction at the Las Cruces campus or off-site locations such as NMSU community college campuses. Visit http://distance.nmsu.edu/degree-programs/ for a complete listing of programs.

For further information, contact the Office of Distance Education (ODE) located in Milton Hall, room 185. Contact ODE by calling (575) 646-8231, or email: distance@nmsu.edu. For current information, visit: http://distance.nmsu.edu/.

Bachelor’s Degree Completion Programs

All undergraduate degree programs offered through NMSU-Las Cruces are bachelor’s degree completion programs. These programs require that students have all lower-division (100 and 200 level) credits completed before admittance into the program. Bachelor degree completion programs normally require two years of 300 and 400 level upper-division coursework to finish. The undergraduate degree completion programs vary in delivery format. Some are 100% online; some use web-based delivery and online; and some use online combined with face-to-face or ITV instruction at off-site locations such as NMSU community college campuses. Visit http://distance.nmsu.edu/degree-programs/ for a complete listing of programs.

Online Bachelor’s Degree Programs

NMSU-Las Cruces partners with the NMSU Community Colleges to provide 100% online bachelor’s degrees https://distance.nmsu.edu/online-bachelors/ where the first two years are completed at the community college and the second two years are completed through the online bachelor’s degree completion programs. The academic plans for the 2+2 online bachelor’s degrees are aligned for a smooth transition between programs and colleges.

Off-Site/Extension Programs

Distance education programs listed under this category are delivered primarily face-to-face at off-site/extension locations. Often, these courses will enhance instruction and learning with technology. Programs are located at NMSU two-year and Albuquerque Center campuses, as well as other locations throughout the state. Several degree programs are available at one or more off-site/extension locations. Visit http://distance.nmsu.edu/degree-programs/ for a complete listing of programs.

Technology-Based Programs

Distance Education programs listed under this category are delivered primarily using distance learning technologies. In some cases, programs may require brief residencies on the Las Cruces campus for orientation, assessment, or other activities. Technologies used to deliver distance education at NMSU include:

- Instructor Canvas - the learning management system enables instructors to utilize the Internet in the delivery of a course
- Adobe Connect - the web-conferencing system, offers a synchronous Web delivery solution for conducting virtual or live classroom events through the Web
- Instructional Media Services - provides course delivery primarily through ITV. However, a variety of synchronous and asynchronous technologies may also be used. Courses may use what is known as a “blended approach” to instruction by integrating two or more types of technologies shown above to promote engaging and effective learning.
Edgar R. Garrett Speech and Hearing Center

Combining instruction, evidence-based practical experience, state of the art technology, and service, the center provides training for students in Communication Disorders and renders service to the community. Students have opportunities to participate in diagnostic evaluations and to provide therapy in the areas of speech, language and hearing for clients across the lifespan.

Referrals are accepted from all sources (self, medical, school, nonprofessionals). The Edgar R. Garrett Speech and Hearing Center is a fee-for-service clinic where university students, staff, faculty and their immediate family receive a reduced rate. All services are supervised by speech-language pathologists who are licensed in New Mexico and hold the Certificate of Clinical Competence in Speech-Language Pathology or Audiology from the American Speech-Language-Hearing Association. Services are available in English and Spanish.

For further information, contact:
Edgar R. Garrett Speech and Hearing Center
MSC 3SPE, PO Box 30001
Las Cruces, New Mexico 88003-8001
Phone: (575) 646-3906
TTY: (575) 646-6191
http://spedcd.education.nmsu.edu/cd/shc/

Housing and Residential Life

Living on campus is an opportunity for an investment in a student’s academic success. As campus residents, students are part of the campus community with more opportunities to join clubs and attend campus events. Students are within walking distance to classes, the student union, activity center, library, bookstore and many other campus resources. The university strongly encourages students to take advantage of the many opportunities available through campus residency. Studies show that compared to their off-campus peers, students who live on campus are more likely to: maintain higher grade point averages, use campus resources, interact more with professors, and ultimately graduate on time (within four years).

Residency Requirement

All incoming first-time, first-year students must reside in university-operated housing or complete an exemption request as part of the campus enrollment process. First-year students will be assigned to the residence halls and must reside for two consecutive semesters to satisfy this requirement. The Board of Regents approved a few reasons for students to be exempted from this requirement:

• The student is living in a structure environment provided by a parent, legal guardian, or immediate family member (as defined as a grandparent or aunt/uncle). Living with an adult sibling is not included in this exemption.
• Students residing with a spouse, domestic partner, and/or dependent child(ren).
• A student is 21 years or older, enrolled exclusively in distance education, or who are active military or veterans.
• Other extenuating circumstances including financial hardship or special medical accommodation.

Students are asked to submit specific documentation to support each of the reasons presented above. Please visit housing.nmsu.edu/exemptions (http://housing.nmsu.edu/exemptions) for more information.

Application Procedures and Acceptance

To qualify for housing the student agrees to be enrolled continuously in at least half-time or more at either the undergraduate or graduate level during the fall or spring semesters as degree seeking. Completed applications for housing should be submitted as early as possible, preferably one regular semester in advance. Submission of housing application indicates acceptance of the terms and conditions of the applicable agreement. Housing applications require a deposit and fee at the time of application. Certain qualifications must be met to apply for summer housing, single student apartment and family housing. To view the various housing options visit http://housing.nmsu.edu/options or contact the housing office at (575) 646-3202 or Housing and Residential Life MSC 3BB, PO Box 30001, Las Cruces NM 88003-8001. Housing typically has a May 1 priority deadline for both residence hall and campus apartment contracts. Student family housing applications are accepted on a more rolling basis.

The university will assign accommodations subject to the space available. Assignments to a particular building, type of accommodation, specific room or apartment, single room or roommate(s) are not guaranteed. The university reserves the right to change or cancel assignments in the interest of order, health, safety or discipline with appropriate written notice. The university reserves the right to deny housing to any student. Examples of reasons for denial include, but are not limited to, individuals who have criminal histories, individuals who have behavioral problems which may, in the opinion of the university, negatively impact the group-living environment, individuals who have been previously terminated from campus housing, or individuals who have poor rental histories. Student behavior expectations, rights, and responsibilities related to living in university-operated housing can be found at housing.nmsu.edu/guide (http://housing.nmsu.edu/guide).

Availability of Units for Students with Disabilities

There are a limited number of specially equipped residence hall rooms, single student apartments and family housing units available to students with disabilities who wish to reside in campus housing. These are assigned on a first come, first-served basis. Specific needs or requirements (i.e., roll-in showers, special door openers, etc.) should be discussed with the Office of Student Accessibility Services on an individual basis prior to submitting an application.

Residence Halls

Residence halls offer furnished, mostly suite-style rooms, large lobbies and plenty of outdoor space. Each residence hall has its own personality and environment, offering students a variety of choices while providing the amenities, social interaction and academic support. Living Learning Communities (LLCs), provide a benefit which allows members to live in the same hall and on the same floor with other students who share common academic interests. More information on the extensive offerings of LLCs can be found at housing.nmsu.edu/lhc (http://housing.nmsu.edu/lhc). Inclusive Housing is offered in the residence halls for those students who are Gender Variant as well as Lesbian, Gay, Bisexual, and Transitioning and Questioning. Inclusive Housing provides a living environment where a student can room with any other student regardless of sex, gender, gender identity/expression or sexual orientation. Alcohol is not permitted in the residence halls.
Single Student Apartments
Campus apartments offer students more than just affordable housing. Campus apartments offer a unique college atmosphere where neighbors share similar goals and together form an academic community unlike any found off campus. Available for second-year to graduate students, on-campus apartments have the benefits of on-site staff, prompt maintenance and amenities such as a computer lab and laundromat. Efficiencies, one, two and four bedroom options are available and include living rooms and kitchens. Apartments are fully furnished and the semester rate includes utilities, cable TV and internet connectivity. Campus apartments feature a select number of co-ed housing options, where students may share an apartment with whichever gender they choose.

Student Family Housing
Completed applications for Student Family Housing should be submitted at least six weeks in advance. Family Housing occupants are assigned once the application process is completed. Applications are considered incomplete and cannot be processed if requested information and supporting documents are not provided and payment of the associated fees is not received. Family Housing applicants may select six, nine or twelve-month agreement, with thirty (30) day notice to vacate or request for renewal, prior to an expiration of the agreement. Family units include married couples, married couples with children, single parents with dependent children and domestic partners (as defined by NMSU Policy found at http://benefits.nmsu.edu/other/domestic-partner/). Consideration is also given to veterans and non-traditional dependent family units. As part of the application process, a criminal history check will be conducted for all adult occupants over the age of 18. Current residents will undergo a criminal history check no less than once a year. In addition, a rental payment history will also be conducted. By signing the application, you authorize New Mexico State University to conduct this process. Results of the criminal history checks and rental payment history may be shared with the applicant. Single family homes include two bedrooms, a bath, kitchen and living room. Four-bedroom units include two bathrooms, a kitchen and living room. All units offer a stove and refrigerator and are unfurnished. The monthly rent includes utilities, cable TV, and internet connectivity. Some pets are allowed in parts of Student Family Housing, reference the pet policy at http://housing.nmsu.edu/guide.

Community Development
Housing and Residential Life develops safe and engaged communities which supporting students’ efforts to achieve academic success and strong social connections at NMSU. Our live-in student (Resident Assistants) and professional staff members (Resident Directors) work to meet students’ needs, and create a fun, positive experience for our residents. Residents can expect to have progressive conversations with student staff members, enjoy a myriad of social, educational, and recreational events, and engaged in community meetings and health and safety inspections. Residents are encouraged to join organizations such as community councils, Residence Hall Association (RHA) and the National Residence Hall Honorary, or Greek Life to help shape the community experience and learn more about leadership skills.

Books, Supplies, Parking and Transportation
The New Mexico State University bookstore and parking office are both conveniently located at the corner of Jordan Street and University Avenue. The bookstore provides an avenue for students to obtain assistance with purchasing required books and supplies. The Parking & Transportation office assists with parking permits and transportation services questions.

ID Card Services
The NMSU Aggie ID Card is the official identification card that provides access to everyday life at NMSU. The Aggie ID Card serves as a membership card for meals, Aggie Dining Dollars, Aggie Cash, Aggie Print, as a key to the residential halls, access to various buildings, carries proof of eligibility for access to athletic events and allows for other student services. This information is added to your card after registration for classes and financial arrangements have been completed. Please visit idcard.nmsu.edu (https://idcard.nmsu.edu) for more information.

Aggie Cash is a pre-paid account that allows you to use your Aggie ID Card to make purchases at locations all over campus. The NMSU Enhanced Aggie ID Card allows your student card to also be your Wells Fargo debit card. The ID Card Services Office in Corbett Center Student Union, Room 137 has the information and applications you will need. For more information please contact us at (575) 646-4835.

Information and Communication Technologies
Information and Communication Technologies (ICT) provides the university community with the computing and communication resources and services that support the educational, research, and public service missions of the university. These resources include NMSU’s central computing systems, the network that supports the systems and the wired and wireless functionality through which the Internet is accessed. ICT operates the student computer labs found throughout the Las Cruces campus; maintains and manages laptop, desktop, camera, and projector checkout and rental for students; network registration of internet connected devices which is required for access to the NMSU network; and student printing known as Aggie Print. Information about specific resources are available at http://studenttech.nmsu.edu/ ICT also provides support for all NMSU technology users through the ICT Help Desk.

For further information, contact:
Information and Communication Technologies (ICT)
MSC 3AT, PO Box 30001
Las Cruces, NM 88003-8001
Phone: (575) 646-1840
email: help@nmsu.edu

ICT's web homepage is located at http://ict.nmsu.edu and the helpdesk webpage is located at http://help.nmsu.edu/. The helpdesk is located in room 105 of the Hardman and Jacobs Undergraduate Center.

National Student Exchange Program
Under the National Student Exchange Program (NSE), students may pay NMSU tuition and attend any of 180 colleges or universities across the nation. NSE allows students to broaden their academic, social, and cultural awareness through study in different geographical settings. To qualify for the program, an applicant must be a full-time student with a 2.5 grade-point average and must be a sophomore, junior, or senior at the time of exchange. Applications for the program are accepted from October through February for the following academic year. Late applications may be accepted if space permits.

Grades and credit hours earned at the host institution become part of the official NMSU transcript upon approval of the academic advisor and
records officer. Grades are recorded according to the NMSU grading system.

New Mexico State University Library
The New Mexico State University Library is a Destination for Discovery that offers access to rich content and research-level collections in two library facilities located in the heart of the campus. Zuhl and Branson libraries house over 1.8 million items and provide electronic access to scholarly journals and databases for both general academic and discipline-specific research. View the large geological collection and artworks on display at Zuhl Library and explore historical collections within the Archives and Special Collections Department at Branson Library. Reference assistance and research support are provided by a team of faculty and staff dedicated to student learning and success. There are a variety of study areas available including quiet and group spaces, some of which can be reserved. Over 100 PCs, scanners, laptops, and other resources are available for students to use. More detailed information may be found at http://lib.nmsu.edu.

Office of International and Border Programs (IBP)
The Office of International and Border Programs oversees the comprehensive internationalization of the university. Overseen by the Associate Provost for IBP, it is the umbrella unit responsible for the welfare and recruitment of incoming international students, outgoing education abroad students, and global learning in general. IBP also represents the university with U.S. government agencies, foreign governments, international education professional associations and the private sector concerning international activities. The office also advocates for effective curricular and co-curricular practices, policies and procedures to internationalize the university and provides programs and services to increase international understanding and awareness in the campus and local community, including southern New Mexico and northern Mexico. The major program areas are reflected in its five offices listed below, each overseen by its own Director. The offices work closely together on all aspects of internationalization.

Office of Education Abroad – This office oversees all study, research, internship and service abroad programs, coordinates Faculty-Led International Programs (FLiPs) that allow faculty to take NMSU students abroad on for-credit programs, and coordinates all programs and services for visiting exchange students.

Office of International Student and Scholar Services – This office ensures that the needs of NMSU’s international students and scholars are met, and oversees all international undergraduate admissions. This includes application processing, transcript evaluation, orientation, advising and institutional compliance with U.S. Department of Homeland Security and U.S. Department of State regulations as they pertain to the F and J visa programs. The office also has an important role in facilitating international student programming and cross-cultural activities.

Center for Latin American and Border Programs – This center is responsible for strengthening the university’s involvement in US-Mexico and Latin American cooperative projects including research, economic development and educational outreach.

Center for English Language Programs – This office provides all intensive English language training for the NMSU community. CELP prepare students for matriculation into regular degree programs, and also engages in international contracts for special English training programs.

Confucius Institute – This institute is dedicated to increasing awareness and understanding of Chinese language and culture in the community through education. The CI provides teachers and instructional materials for K-16 Chinese language instruction, as well as through performances, seminars, and community outreach. The Institute is a joint project supported by both NMSU and the Hanban/Confucius Institute Headquarters, which is a public institution affiliated with the Chinese Ministry of Education.

The Office of Education Abroad
This division of International and Border Programs is the international education program development and coordination unit that assists colleges and departments with integrating study abroad into the undergraduate and graduate curriculum. It manages support services for outbound study abroad students and inbound international exchange students and coordinates all international partner exchange agreements, intensive language immersion and faculty-led programs as well as all credit-bearing international research, service and internships. The division also sponsors the Study Abroad Ambassadors Club, a chartered student organization that provides support to international exchange students at NMSU. Additionally, the Office of Education Abroad works closely with Housing and Campus Life to provide leadership and oversight for the Global Village Living and Learning Community.

All NMSU students, including community college students, may apply to study abroad while maintaining NMSU student status to receive regular course credit through Faculty Led Programs, international distance education language credit and teacher education credit (graded A through F), and/or receive transfer credit (graded CR) per regular NMSU transfer credit guidelines. For most exchanges with international partner institutions, students must have completed two full semesters of university study, maintained a 2.75+ grade-point-average, and obtained permission of their college to receive transfer credit. For other programs, students must be in good standing academically at NMSU, and receive permission to enroll from the course instructor or program coordinator. International Business majors must receive permission from their department for study abroad to count as required in their degree plan. At least four weeks of a study abroad program may count for a waiver for 3 credits of Viewing the Wider World (http://oea.nmsu.edu).

Parking Office
NMSU requires a parking permit to park in campus parking lots or curbside on streets. Parking meters require payment. Free parking is available near the Pan American Center. The campus parking map is available online at park.nmsu.edu (http://park.nmsu.edu). Parking regulations are enforced between the hours of 7:30am - 4:30pm. Disabled parking spaces, emergency/fire zones, service zones and yellow curbs are enforced 24 hours a day. Parking Regulations are available at park.nmsu.edu (http://park.nmsu.edu).

Information on purchasing a parking permit is also available online at park.nmsu.edu (http://park.nmsu.edu) or at the Parking Department located at 1400 E. University Ave. (southwest corner of the Auxiliary Services building between Barnes & Noble and Panda Express) Monday through Friday from 8am - 4:30pm. When visiting, you may park for free in designated spots just south of the building. Aggie Transit is a free campus shuttle service available to all students. Bus route maps are available at park.nmsu.edu (http://park.nmsu.edu).
Transportation and Parking Services is responsible for issuing parking permits, enforcing parking regulations and developing parking lots as well as maintaining information related to the university fleet.

# Student Accessibility Services

In compliance with the federal regulations outlined in Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 2008, NMSU is committed to providing accommodations and academic adjustments to ensure equal access for students with disabilities. Students who wish to request an accommodations or academic adjustment for face-to-face and online classes, practicums and internships must follow the established procedures for self-identification by completing the intake process with Student Accessibility Services (SAS).

For more information, please visit the SAS office in Corbett Center Student Union:

Room. 208  
MSC 4149, PO Box 30001  
Las Cruces, NM 88003-0001  
(575) 646-6840  
Email: sas@nmsu.edu  
http://sas.nmsu.edu

## Sustainability Courses at NMSU

The following courses have been identified as being Sustainability-Focused. These courses may be used to attain an 18 credit minor in a sustainability related discipline offered in the departments of

- Anthropology (p. 181),
- Engineering Technology (p. 572),
- Management (p. 442) and
- Plant and Environmental Sciences (p. 145).

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG E 315V</td>
<td>World Agriculture and Food Problems</td>
<td>3</td>
</tr>
<tr>
<td>AG E 337V</td>
<td>Natural Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>AG E 384V</td>
<td>Water Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 100G</td>
<td>Introductory Plant Science</td>
<td>4</td>
</tr>
<tr>
<td>AGRO 483</td>
<td>Sustainable Production of Agronomic Crops</td>
<td>4</td>
</tr>
<tr>
<td>AGRO 515</td>
<td>Crop Physiology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 362</td>
<td>Environmental Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 538</td>
<td>Plants, Culture, and Sustainable Development</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 502</td>
<td>Business Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 301</td>
<td>Principles of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 462</td>
<td>Conservation Biology</td>
<td>3</td>
</tr>
<tr>
<td>BLAW 530</td>
<td>American Indian Law and Policy</td>
<td>3</td>
</tr>
<tr>
<td>CHME 330</td>
<td>Environmental Management Seminar I</td>
<td>1</td>
</tr>
<tr>
<td>E S 110G</td>
<td>Introductory Environmental Science</td>
<td>4</td>
</tr>
<tr>
<td>E T 300</td>
<td>Special Topics</td>
<td>1-3</td>
</tr>
<tr>
<td>E T 381</td>
<td>Renewable Energy Technologies</td>
<td>3</td>
</tr>
<tr>
<td>E T 386</td>
<td>Sustainable Construction and Green Building Design</td>
<td>3</td>
</tr>
<tr>
<td>E T 400</td>
<td>Special Topics</td>
<td>1-3</td>
</tr>
<tr>
<td>ECDV 671</td>
<td>Sustainable Economic Development</td>
<td>3</td>
</tr>
<tr>
<td>ECON 337V</td>
<td>Natural Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 384V</td>
<td>Water Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>EPWS 380V</td>
<td>Science &amp; Society</td>
<td>3</td>
</tr>
<tr>
<td>FWCE 255</td>
<td>Principles of Fish and Wildlife Management</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 315V</td>
<td>World Agriculture and Food Problems</td>
<td>3</td>
</tr>
<tr>
<td>HON 305V</td>
<td>Global Environment</td>
<td>3</td>
</tr>
<tr>
<td>HORT 100G</td>
<td>Introductory Plant Science</td>
<td>4</td>
</tr>
<tr>
<td>HORT 315</td>
<td>Crop Physiology</td>
<td>3</td>
</tr>
<tr>
<td>HORT 485</td>
<td>Vegetable Crop Management</td>
<td>4</td>
</tr>
<tr>
<td>HRTM 430</td>
<td>Hospitality Facilities Management</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 450</td>
<td>Special Topics</td>
<td>1-4</td>
</tr>
<tr>
<td>HRTM 492</td>
<td>Special Problems</td>
<td>1-4</td>
</tr>
<tr>
<td>MGT 375V</td>
<td>Global Environmental Assessment and Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 388V</td>
<td>Leadership and Society</td>
<td>3</td>
</tr>
<tr>
<td>MGT 448</td>
<td>Business Consulting</td>
<td>3</td>
</tr>
<tr>
<td>MGT 449</td>
<td>Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 458</td>
<td>Comparative International Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 465</td>
<td>Contemporary Issues in Human Resources Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 548</td>
<td>Business Consulting</td>
<td>3</td>
</tr>
<tr>
<td>MGT 590</td>
<td>Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 591</td>
<td>New Venture Creation</td>
<td>3</td>
</tr>
<tr>
<td>MGT 655</td>
<td>Seminar in Organizational Systems and Theory</td>
<td>3</td>
</tr>
<tr>
<td>SOE 465V</td>
<td>Environmental Sociology</td>
<td>3</td>
</tr>
<tr>
<td>WERC 330</td>
<td>Environmental Management Seminar I</td>
<td>1</td>
</tr>
</tbody>
</table>

## Student Success Centers

New Mexico State University offers a variety of learning assistance, and tutorial services via the Student Success Center. The Student Success Center provide services to assist NMSU students in reaching their academic potential. The Student Success Center provides study skills assistance in such areas as: time management; memory; concentration; note taking; reading; test preparation; test taking; math; science; speed reading; critical thinking; financial wellness, as well as graduate school and professional skills test preparation. The services are available to students in the following formats:

1. Individualized assistance is provided to any student who walks in at The Student Success Center

2. Degree credit is offered under

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIV 110</td>
<td>Personal Learning Skills I</td>
<td>1-3</td>
</tr>
<tr>
<td>UNIV 112</td>
<td>Academic and Personal Effectiveness</td>
<td>2</td>
</tr>
<tr>
<td>UNIV 113</td>
<td>Speed Reading</td>
<td>1</td>
</tr>
<tr>
<td>UNIV 114</td>
<td>Financial Literacy Money Matters</td>
<td>2</td>
</tr>
<tr>
<td>UNIV 150</td>
<td>The Freshman Year Experience</td>
<td>3</td>
</tr>
<tr>
<td>UNIV 300</td>
<td>Preparing for the Graduate Record Examination</td>
<td>1</td>
</tr>
<tr>
<td>UNIV 350</td>
<td>Peer Education</td>
<td>3</td>
</tr>
<tr>
<td>UNIV 395</td>
<td>Independent Study</td>
<td>1-3</td>
</tr>
</tbody>
</table>

3. Learning strategies and study-skills workshops provide quick assistance in one-hour presentations offered throughout the semester.
4. Professional and graduate school workshops provide development in such areas as speed reading, getting into graduate school, preparing for the GRE, GMAT, LSAT, MCAT, or NMTA.

5. Student Success Center staff provide outreach presentations on learning and study-skills topics to classes, programs and organizations on campus.

6. The Campus Tutoring Service (CTS) provides walk-in and online tutoring at no charge; and the QuickConnect Early Alert and Intervention Program is an early warning and intervention system, utilized by faculty, focused on first-year students.

For comprehensive information on all programs and services offered by the Student Success Center please visit us at the Hardman and Jacobs Undergraduate Learning Center Room 128, call (575) 646-3136, or review our services online at http://ssc.nmsu.edu.

Testing Services
Testing Services provides test information and registration materials for the following tests:

- American College Testing Assessment (ACT);
- College Level Examination Program (CLEP);
- High School Equivalency (HSE);
- General Education Development (GED) and HiSet;
- Graduate Management Admission Test (GMAT);
- Graduate Record Exam (GRE);
- Miller Analogies Test (MAT);
- Pearson VUE Test Site;
- PRAXIS Series;
- Pre-Professional Skills Test (PPST);
- New Mexico Teacher Assessments;
- and others.

For more information contact:

Testing Services
MSC 3DA, PO Box 30001
Las Cruces, NM 88003
Phone: (575) 528-7294
http://dacc.nmsu.edu/testing

Trio Student Support Services Program
TRIO Student Support Services program offers academic and social support to ensure that program participants succeed at NMSU. Services that are provided to participants include the following:

- Mentoring – participants meet with a mentor each week for assistance in adjusting to college, learning and using campus resources, developing effective study skills, accessing financial aid, using academic peer advising, staying motivated and dealing with personal issues associated with college. Mentors are certified by the College Reading and Learning Association.
- Tutoring – individual tutoring is available by appointment in science, math, engineering, agriculture, social sciences, humanities, business and foreign languages. Tutors are certified by the College Reading and Learning Association.
- Computer Lab – complete assignments and check email.

- Cultural Activities – participants receive tickets to cultural/educational activities such as plays, dance productions and symphonies.
- Equipment Loans – digital recorders and programmable calculators are available to participants.

To qualify for the program, students must be a first generation college student (neither parent received a four-year baccalaureate degree), meet income guidelines set by the US Department of Education, demonstrate an academic need or have a learning or physical disability. Admission to the TRIO Student Support Services is highly competitive with only 350 slots available for eligible students.

For comprehensive information on program services offered by the TRIO Student Support Services Program please visit us in the Student Success Center located at the Hardman and Jacobs Undergraduate Learning Center Room 128, call (575) 646-1336, or review our services online at http://ssc.nmsu.edu/trio-student-support-services/

Undergraduate Research Programs
New Mexico State University has a variety of faculty mentored undergraduate research programs that offer students the opportunity to demonstrate knowledge gained within the classroom and apply it to scholarly research projects. In addition to offering the opportunity to write an honors thesis and work individually with faculty members through an independent study project is a sample sub-set of research programs available to undergraduates:

- Aggie Innovation Space
- Building Research Achievement in Neuroscience (BRAiN)
- Fred Hutchinson Partnership for the Advancement of Cancer Research Project
- Howard Hughes Medical Institute (HHMI)
- iCREDITS Center
- New Mexico Alliance for Minority Participation (AMP)
- Maximizing Access to Research Careers (MARC)

Graduate Research Facilities
The University recognizes and supports the concept of off-campus study and research as a valuable experience for graduate students. These experiences may take the form of internships, intensive study of specialized techniques with personnel at other institutions, and conducting research at specialized research facilities. Arrangements for such off-campus activities should be made with the student’s committee and the graduate dean and should represent opportunities not normally available at this university. When the bulk of a student’s research is to be conducted off-campus, both on- and off-campus advisors should be appointed and periodic meetings with the student’s committee held to ensure timely progress. Such opportunities offer students considerable flexibility in their training and promote valuable contacts between the student, the university, industry, and research institutions. Students are encouraged to pursue these opportunities with their advisors and the graduate dean.

Agricultural Experiment Station
The Agricultural Experiment Station is the research division of the College of Agricultural, Consumer and Environmental Sciences. Faculty, professional personnel, and graduate students conduct basic and applied research concerned with biological, physical, and economic phases of
food and fiber production, processing, and distribution; consumer health and nutrition; and the social and economic aspects of rural living. Energy, environmental, and natural resource conservation aspects of these broad disciplines offer many opportunities for the graduate student to undertake meaningful research investigations in both the laboratory and the field.

There are eight departments on the main campus with excellent laboratory facilities for research. In addition, the station maintains 13 field research centers including eight agricultural science centers, a forestry research center, a livestock research center, an animal insect lab, and two research ranches.

The station provides financial support to graduate research assistants and cooperates with research institutes at the university and with various state and federal agencies in providing opportunities for graduate research programs covering a wide scope of student interests. For further information, contact aesdean@nmsu.edu or visit http://aces.nmsu.edu/aes/.

Apache Point Observatory (APO-ARC)
Apache Point Observatory (APO) is located in the mountains of south-central New Mexico and is operated by New Mexico State University. The observatory is a major astronomical research facility that is home to four telescopes. The largest is a fully equipped 3.5-meter telescope that can be used for optical and infrared imaging, photometry, and spectroscopy. Apache Point Observatory is also the site of the Sloan Digital Sky Survey 2.5-meter telescope, which is running several different wide-field surveys touching on many facets of astronomy. NMSU owns and operates a 1-meter telescope at APO for wide field imaging. There is also a 0.5-meter telescope at the site.

Apache Point Observatory is owned by the Astrophysical Research Consortium (ARC). The consortium members include: New Mexico State University, the University of Colorado, the University of Virginia, the University of Washington, Georgia State University and Johns Hopkins University. NMSU manages and operated the observatory for the ARC consortium. Astronomy faculty and graduate students use the facility for various research projects. For further information, e-mail astro@nmsu.edu.

Arts and Sciences Research Center
The research center is the coordinating office for all scholarly activities within the College of Arts and Sciences. The primary functions are service to departments and faculty members, and the administration of grants and contracts. The center encourages and stimulates individual research and creative efforts in all areas of the college, and it facilitates the development of potential research programs within the college, and with other colleges, institutes, the Physical Science Laboratory, and external organizations. The center assists individual faculty members by providing small grants of “seed” money. Typically, support services fall within, but are not limited to, the following areas:

- Location of funding sources
- Administration of grants and contracts
- Financial management of grants and contracts
- Liaison with the Office of the Vice President for Research

Contact: Olga Ostos at oostos@nmsu.edu
http://www.nmsu.edu/~artsci/Research/center.html

Bioinfomatics Research Lab
The bioinformatics research lab develops efficient computational and statistical methods to model mechanisms of complex biological systems. The lab’s work rigorously evaluates both the theoretical and practical effectiveness of computational methods for characterizing molecular interactions from high-throughput measurements such as next generation sequencing data. The lab’s long term goal is to invent advanced computational technology to expedite quantitative understanding of the complexity of life processes.

Director: Joe Song
https://www.cs.nmsu.edu/~joemsong/group.shtml

Biology Research Facilities
The Department of Biology houses multiple core facilities and individually faculty-maintained research laboratories that have been successful in the acquisition of millions of dollars in research grants from the NIH and NSF, as well as other agencies. The facilities and equipment include a cell culture facility, insect and invertebrate rearing and microbiology culturing facilities, diverse microscopy laboratories, as well as a well-maintained herbarium and vertebrate museum holding more than 100,000 specimens from our region and beyond. Individual research laboratories are equipped to investigate organismal genomics, transcriptomics, and microbiome analysis; organismal and microbial evolutionary mechanisms and physiology; vaccine development; host-symbiont interactions; cell mitosis and cytokinesis; plant pathology; neuronal and muscular tissues; animal vocalization and behavior; computational modeling of biological phenomena; and molecular systematics.

Contact: Dr. Ralph Pressler (rpressle@nmsu.edu)

Bureau of Business Research and Services
Founded in 1969, the bureau has two basic objectives. The first is to provide business and economic research services to both public and private sectors of the state, the region and the nation. Research capabilities in the behavioral and managerial sciences, business systems, economic and social sciences, marketing, statistical design and analysis and regional planning can be applied to problems relating to economic growth, business development and community needs in New Mexico.

The second objective of the bureau is to provide management training services to business organizations and associations, to government agencies, and to the public as well. Management development seminars, training programs, and analytical services are designed to meet specific organizational needs.

The Bureau of Business Research and Services is a member of the Association for University Business and Economic Research.

Contact: Dr. William Gould (wgoould@nmsu.edu)

Carlsbad Environmental Monitoring and Research Center
Created in 1991 with a grant from the U.S. Department of Energy, the Carlsbad Environmental Monitoring & Research Center (CEMRC), a department of the College of Engineering, conducts environmental research, provides special analytical services, assists with technology development, and disseminates information for federal, state, and private sponsors. CEMRC is housed at Light Hall, a 26,000-square-
foot facility located in Carlsbad, in southeast New Mexico. The facility’s laboratories include radiochemistry and associated nuclear spectroscopy, environmental organic and inorganic chemistry, in vivo bioassay, and field sampling. A primary activity of CEMRC is long-term environmental monitoring for contaminants in the region of the Waste Isolation Pilot Plant (WIPP), located near Carlsbad. The data produced from this project are summarized in periodic reports and are presented on the CEMRC web site at www.cemrc.org (http://www.cemrc.org). Primary research areas of the CEMRC include studies of atmospheric dust and inorganic contaminants, human and ecological risk assessment, and development of radioanalytical and spectroscopic methods for measurement of naturally occurring and human-produced radioactive elements. Results of CEMRC research projects appear in peer-reviewed scientific journals and are presented at national and international meetings.

Contact: Dr. Russell Hardy at (575) 234-5555

The Center for Animal Health and Food Safety

The Center was founded in 2007 and is comprised of three primary functional research units:

1. Chemical Analysis and Instrumentation Laboratory maintains high-end analytical instrumentation which is available to support collaborative research within NMSU, the State of New Mexico and other educational or industrial partners.

2. Food Safety Microbiology Laboratory specializes in research and development of foodborne pathogen detection and control; food product testing, including microbiological analyses, pH, aw; process evaluation of acidified foods, inoculation studies, shelf-life testing, and contracting to establish food safety plans (e.g. HACCP plans, Listeria control programs).

3. Veterinary Entomology Research Laboratory provides a state-of-the-art large animal research facility located on 45 acres, with a 5000 sq. ft. large animal laboratory, capable of housing 24 animals individually in environmentally controlled rooms. The laboratory maintains multiple insect rearing facilities for major ectoparasites including: house flies, stable flies, horn flies, face flies, mosquitoes, lice, mites and ticks. The facility has outdoor housing for 60 large animals in covered, individual outdoor stanchions, in addition to housing for wildlife species including: deer, elk, bighorn sheep and rabbits.

Director: Dr. Tanner Schaub (tschaub@nmsu.edu; (575) 646-5156)

Center for Latin American and Border Studies

The Center for Latin American and Border Studies (CLABS) was established in 1979 by the College of Arts and Sciences and is located at the Nason House. CLABS supports Frontera NorteSur, an on-line journal about the U.S.-Mexico border. In addition, CLABS supports the collection at the NMSU library, travel for faculty to conferences, language training in Spanish and Portuguese, lectures by visiting speakers, curriculum development for teachers, the student Latin American organization, and other outreach activities. It has a faculty governance organization and helps administer the Nason foundation fund. In recent years the center has pursued an active program of research on U.S.-Mexico border policy issues, in cooperation with several universities in the United States and Mexico.

Contact: Dr. Cornell Menking (cmenking@nmsu.edu)

Chemistry and Biochemistry Research Facilities

The Department of Chemistry and Biochemistry has a comprehensive equipment base that supports research in nearly all phases of chemistry. It also has instrumentation dedicated to the department’s teaching mission. Major instruments supporting both missions include five nuclear magnetic resonance (NMR) spectrometers ranging from low field (200 MHz) to high field (500MHz), two atomic absorption spectrometers, several UV-Vis spectrometers, two mass spectrometers (LS/MS) and four gas chromatograph instruments. Details about all instruments located in the department’s facilities can be accessed at http://www.chemistry.nmsu.edu/instrumentation/NMSU_MainInstrument.html.

Instrumentation Facilities Manager: Jaime Rodriguez (jarodrig@nmsu.edu)

Cooperative Extension Service

As a land-grant institution, New Mexico State University has a tripartite mission—instruction, research, and extension. The three parts of this mission are closely interrelated and mutually reinforcing. New Mexico State University’s Cooperative Extension Service serves a unique role in New Mexico. As the state’s land-grant university, and as mandated by its charter, it is the “leading object” for agriculture, home economics, engineering, business, health sciences, as well as educational programs in the liberal arts and natural sciences. NMSU’s uniqueness arises from its vision of teaching/learning, research, and extension/outreach functions—interdependent, mutually supportive and central to its land-grant mission.

The extension aspect of the university’s mission is the process of extending the intellectual expertise and resources of the university through teaching and applied research to address the social, civic, economic and environmental challenges and opportunities facing our state, region, nation, and global community. Extension entails an organized and planned program of activities; these activities bring the resources of the university to bear in a coherent and strategic fashion for the benefit of the citizens of New Mexico and the nation. Many faculty have split appointments with the Agricultural Experiment Station and serve as graduate advisors for students interested in extension as a career. For more information see http://extension.nmsu.edu/.

Core University Research Resources Laboratory

The Core University Research Resources Laboratory (CURRL) is a campus-wide, core facility providing all levels of technical support and consultation for investigators needing analytical and routine transmission, scanning electron microscopy, and light microscopy services. The integrated imaging facility is administered through the Office of the Vice President for Research and is considered a core research facility. The facility was established to furnish state-of-the-art microscopy instrumentation and techniques to investigators and their students for research and training. The laboratory is located in Skeen Hall, RM W152, and W160.

Director: Dr. Huiyao Wang (huiyao@nmsu.edu)
Data Management and Data Analysis (DATA) Research Lab

The Data Management and Data Analysis (DATA) research lab aims at advancing techniques for the effective management and analysis of complex data (e.g., sequence data, graph data, semi-structured data). The laboratory conducts research in modeling, storing, querying and mining large amounts of complex data at both theory and application levels. The laboratory keeps active collaborations with scientists from other Computer Science areas and scientific disciplines to broaden the usage of data management and data mining techniques. The laboratory is located in Science Hall, Rm. 153.

Director: Huiping Cao
https://kddlab.nmsu.edu/

Dissect Laboratory

DISSECT (Discovering Science through Computational Thinking) is a laboratory established by a joint team of researchers from the Department of Computer Science and the College of Education. The lab is housed in Computer Science on the second floor of the Science Hall. DISSECT provides physical space and facilities to nurture interactions between computational scientists and educational researchers in order to develop innovative technologies that will expose K-12 students to fundamental principles of computing. The laboratory provides workspaces and high-performance workstations for graduate students as well as a dedicated network and offices for researchers and visitors.

Director: Dr. Enrico Pontelli (epontell@cs.nmsu.edu).

Educational Research Center (EDRC)

The Educational Research Center (EdRC) in the College of Education is the administrative office which supports faculty in obtaining and managing external funding. The academic which supports faculty in obtaining and managing external funding. The academic component of the ERC, under the direction of the Associate Dean for Research, facilitates faculty involvement in research, publishing and outreach initiatives with the goal of building a strong research agenda for the college. The business component of the ERC is the Education Research and Budgeting Office (ERB) which assists in proposal submission, account setup and monitoring and provides oversight for the College’s unrestricted, restricted and legislative funds.

ERB Director: Juanita Hannan (juamendo@nmsu.edu)

Engineering Research Center

The mission of the College of Engineering’s Engineering Research Center (ERC) is to support the faculty and staff of the college in building research programs of nationally and internationally recognized excellence. The ERC assists faculty and staff in their pursuit of research funding, management of their research, and in ensuring research activities are in compliance with all relevant laws and regulations. The ERC disseminates information to the college regarding state, national and international research trends, programs and policies. The ERC identifies potential funding opportunities and calls for proposals that may be a fit for college faculty and staff. The ERC works with the Office of the Vice President for Research and the other NMSU colleges to bring together multi-disciplinary teams.

Contact: Mark Chidester, (575) 649-0840, mchidest@nmsu.edu

Geochemistry Research Laboratory

The Department of Geological Sciences houses a number of analytical instruments, all of which are available for use by graduate students, undergraduate researchers, and faculty. The department houses a Laser-Ablation Multi-Collector Inductively Coupled Plasma Mass Spectrometer (LA-MC-ICPMS) for analysis of isotopic ratios of microsamples, an X-ray fluorescence spectrometer for geochemical analysis of rocks and other solid materials, a thermal ionization mass spectrometer for analysis...
of isotopic ratios of solids and liquids, and a laser-induced breakdown spectrometer for the analysis of solid materials. Sample preparation equipment is available to support research on these instruments. In addition, mineral separation equipment including a jaw crusher, Gemini shaker table, Franz magnetic separator, and heavy liquids, is available for geochronologic or other mineralogic research projects.

Contact: Dr. Nancy McMillan (nmcmilla@nmsu.edu)

ICredits: Interdisciplinary Center of Research Excellence in Design of Intelligent Smartgrids Technologies

The Center, funded through a grant from the National Science Foundation, is focused on the development of novel hardware/software technologies and methodologies to enable the design, development, deployment and evaluation of microgrids and smartgrids. The Center is housed in Science Hall; it supports research activities at the boundaries between power systems and computer science. The Center also promotes the development of educational and outreach activities aimed at enhancing the awareness and training in all areas relevant to the smartgrids vision.

Contact: Dr. Enrico Pontelli (epontell@nmsu.edu)

Institute for Energy and the Environment

The Institute for Energy & the Environment (IEE) is a unit within the Engineering Research Center IEE’s programmatic efforts focus on interdisciplinary research, education, and outreach to develop comprehensive solutions for environmental, energy and water challenges in the southwestern United States and worldwide. IEE offers opportunity for conducting research to the graduate and undergraduate students at NMSU. IEE’s major objectives include renewable energy, biofuel, advanced water treatment and desalination, and advancing education, training and outreach in areas of environment, energy and water.

Director: Dr. Phillip DeLeon (pdeleon@nmsu.edu)

Knowledge Representation, Logic and Advanced Programming Laboratory (KLAP)

The KLAP lab was established in 1994 through an RIMI grant from the National Science Foundation and has developed into a focal research laboratory of international reputation. It is housed in the Department of Computer Science. KLAP’s research focus is to advance state-of-the-art knowledge in Artificial Intelligence and High Performance Computing and its application in diverse interdisciplinary domains such as bioinformatics and assistive technologies.

The lab provides a full meeting space (with multimedia projection capabilities), access to eight high performance work stations, a dedicated high performance computing server and a 40-core Infiniband Beowulf cluster. The lab has hosted international researchers and has graduated approximately 100 graduate students with MS and Ph.D. degrees. It has attracted almost $10,000,000 in external funding.

Director: Dr. Enrico Pontelli (epontell@cs.nmsu.edu)

Networks and Systems Optimization Lab (NSOL)

The Networks and Systems Optimization Laboratory (NSOL) supports research in networking and communication including, but not limited to: wireless networks, the Internet, supercomputing networks, and online social networks. This research includes optimization problems, protocol design and development, hardware design and development, and mechanisms for improving security and privacy of communications (including cybersecurity). The lab has a 24 core blade server (RAID-10) that is used for extended simulations and back-up, five desktops, five laptops, and four smartphones, which form a networking testbed.

Director: Satyajayant “Jay” Misra
http://nsol.nmsu.edu/

New Mexico Department of Agriculture

The New Mexico Department of Agriculture (NMDA), under the control of the NMSU Board of Regents, is responsible for administering laws and regulations that daily affect the lives of every citizen of the state. These laws and regulations (concerning the production, preparation, processing, sale, and use of agricultural products; weights and measures; and petroleum products) are designed to assist producers, processors, and consumers. NMDAs marketing program provides guidance to commodity groups in the promotion of agricultural products. A broad consumer service in many areas other than agriculture is provided by the department. NMDAs director is New Mexico’s secretary of agriculture and serves on the governor’s cabinet as a liaison between state government and the agricultural industry. For further information, e-mail: mailto:pio@nmda.nmsu.edu (pio@nmda.nmsu.edu). NMDAs web site is at http://www.nmda.nmsu.edu

New Mexico State University Library

The New Mexico State University Library is a Destination for Discovery that offers access to rich content and research-level collections in two library facilities located in the heart of the campus. Zuhl and Branson libraries house over 1.8 million items and provide electronic access to scholarly journals and databases for both general academic and discipline-specific research. View the large geological collection and other resources are available for students to use. More detailed information may be found at http://www.lib.nmsu.edu

New Mexico Water Resources Research Institute

The New Mexico Water Resources Research Institute (WRRI) at NMSU, established in 1963, was one of the first of 54 water institutes in the United States. The WRRI program encompasses all state universities in New Mexico and public agencies sponsoring water research. The institute serves as a coordinator, assisting researchers in obtaining funds, working with granting agencies, and serving as the administrator for projects. The annual budget of approximately $1.5 million is made available from federal, state, and/or private sources through a variety of grants and contracts. All research projects administered by the institute encourage graduate student participation. As a result, about 30 students
a year receive scientific training through institute-sponsored projects. WRRI also sponsors the Annual New Mexico Water Conference, which has provided a public forum for state water issues since 1956. Public participation helps the institute focus its research program on areas of greatest need. The WRRI publishes research results of every project it administers and other miscellaneous reports. The WRRI also maintains a water resources reference room with 2,000 books and documents and the ability to link to 10,000 water-related documents on water issues facing the state and the nation. E-mail may be sent to nmrwri@nmsu.edu. The WRRI’s homepage address is http://nmwrri.nmsu.edu/.

Oak Ridge Associated Universities Program (ORAU)

Since 1991, students and faculty of New Mexico State University benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 98 colleges and universities and a contractor for the U.S. Department of Energy (DOE) located in Oak Ridge, Tennessee. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship, and research appointments; and to organize research alliances among its members.

Through the Oak Ridge Institute for Science and Education (ORISE), the DOA facility that ORAU operates, undergraduates, graduates, postgraduates, as well as faculty enjoy access to a multitude of opportunities for study and research. Students can participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry, and mathematics. Appointment and program length range from one month to four years. Many of these programs are especially designed to increase the numbers of underrepresented minority students pursuing degrees in science- and engineering-related disciplines. A comprehensive listing of these programs and other opportunities, their disciplines, and details on locations and benefits can be found in the ORISE Catalog of Education and Training Programs, which is available at http://www.orau.gov/orise/educ.htm, or by calling either of the contacts below.

ORAU’s Office of Partnership Development seeks opportunities for partnerships and alliances among ORAU’s members, private industry, and major federal facilities. Activities include faculty development programs, such as the Ralph E. Powe Junior Faculty Enhancement Awards, the Visiting Industrial Scholars Program, consortium research funding initiatives, faculty research and support programs as well as services to chief research officers.

For more information about ORAU and its programs, contact:
Dr. Luis Vazquez - Interim Vice President for Research (575) 646-2481
ORAU Corporate Secretary (865) 576-3306; or Visit the ORAU Home Page (http://www.orau.org)

Physics Research Facilities

The Department of Physics operates a PANalytical Empyrean x-ray diffractometer for low-resolution powder diffraction, high-resolution diffraction, reciprocal space mapping with a triple-axis crystal, and x-ray reflectance. It also operates a J.A. Woollam variable angle of incidence ellipsometer (VASE) with a computer-controlled Berek waveplate compensator for measurements from 190 to 2500 nm, at room temperature and from 80 to 800 K. Both instruments are integrated into CURRL and available to the campus community and off-campus users for a fee. See http://xrd.research.nmsu.edu and http://elliposmetry.nmsu.edu for more information and to book time on the instruments.

Contact Dr. Stefan Zollner (zollner@nmsu.edu).

Play and Interactive Experiences for Learning Lab (PIXL)
The Play and Interactive Experiences for Learning (PixL) Lab works at the intersection of games, human-computer interaction, and mixed reality, developing game experiences that educate and function as scientific experiments in HCI. Projects center around the best means of interfacing with games, including keyboard and mouse and controllers all the way to gesture-based input, wearable systems and mixed reality. Prior research has investigated the use of games for training firefighters, and ongoing research applies this to disaster response in general and military projects. The lab provides space for students, as well as access to workstations, a modular wearable computer, tracking sensors and games.

Director: Zachary O. Dugas Toups (ztoups@nmsu.edu)

Programming Languages Environments and Software Engineering (PLEASE) Laboratory

The PLEASE lab pursues research in the practical aspects of software development, including programming languages, programming environments, and software engineering. The lab is housed in Science Hall 167 and includes workstations and work space for graduate students pursuing research in relevant areas.

Director: Jonathan Cook
http://www.cs.nmsu.edu/please

Psychology Research Facilities

The Department of Psychology emphasizes research in social psychology, engineering psychology, and cognitive psychology. Faculty investigate such issues as mother-infant interactions and the impact of cortisol responses to stress upon development; visual search; human factors research; auditory perception; prospective memory; emotion and social decision-making; evolutionary psychology; skill acquisition; social cognition; perception and action; embodied cognition; cognitive neuroscience (control of attention, neural dynamics; and brain-computer interfaces); and research and statistical analysis methods.

All faculty have designated labs with a large central area and 3-4 smaller adjacent rooms. This facilitates data collection from small groups or individuals. Research using the department’s subject pool is managed with an online system.

The department has specialist facilities that include an EyeLink 1000 eye tracking system with experiment builder software; two 128 channel Biosemi ActiView-2 EEG systems and two shielded rooms; eight analysis workstations; and a Neuroconn DC Stimulator Plus tDCS stimulator. The lab collaborates with the Mind Research Network that has access to a Siemens 3T Trio research MR scanner, a Magvis 132 channel MEG system, and Biosemi and Geodesics EEG systems. The Auditory Perception Lab has a remote-controlled robot with binocular vision and stereo audition that is used to assess auditory performances in applied
settings; another remote controlled robot to test perceptual interfaces for remotely-operated vehicles; a 30-element speaker array to simulate real-world auditory environments; and two portable eye trackers housed in the PACMANE (Perception, Action and Cognition in Mediated, Artificial and Naturalistic Environments) lab.

Contact: Dr. Dominic Simon (domsimon@nmsu.edu)

Research Initiatives in the College of Education

The College of Education has research initiatives and labs in the following areas:

- The Kinesiology and Dance Department offers lab space for the study of biomechanics, sport psychology & motor learning, apply and basic physiology, healthy aging, physical education curriculum and kinesthetic learning.
- The Speech and Hearing Center’s Benfer for voice and speech science research.
- The Special Education/Communication Disorders Department’s Autism Research Initiative.
- Alliance for the Advancement of Teaching and Learning in collaboration with the Southwest Regional Educational Lab REL (Institute for Educational Services, IES) provides research for partner school district practitioners on accountability, special education/response to intervention, literacy, leadership development, math and science achievement, and program evaluation.
- The Institute for Mathematics and Science Education oversees multiple mathematics and science grants as well as serving as the STEM Outreach Center for K-12 education.
- The Counseling and School Psychology Training and Research Center provides counseling services for students, training for graduate students in counseling, school psychology and counseling psychology, and conducts research on counseling outcomes and processes.
- A Reading Research Center is housed in the NMSU Children’s Village and provides reading diagnostic services including analysis of reading using eye-tracking software.

Southwest Institute for Health Disparities Research

To address the substantial health disparities that exist in Southern New Mexico and the U.S./Mexican Border Region, New Mexico State University has recently established the Southwest Institute for Health Disparities Research within the College of Health and Social Services. The purpose of the Institute is to assist faculty to secure external funding and conduct research which has the potential to reduce health disparities and improve minority health, provide health related community outreach programming, provide training for researchers, lay groundwork for additional funded research, and attract highly qualified minority faculty and graduate students to NMSU. Additionally, the Institute serves as the coordinating office for all scholarly activities within the College of Health and Social Services http://swihdr.research.nmsu.edu/.

Dr. Jill McDonald (jillmcd@nmsu.edu)

Southwest Technology Development Institute (SWTDI)

SWTDI, formally the SouthWest Regional Experimental Station or SWRES, was established in 1977 under DOE funding as a Photovoltaic research center. Over the last 30 years SWTDI has conducted extensive long term panel, inverter, and systems testing providing significant contribution to the field. One substantial consequence of the system testing has been the accumulation of knowledge related to the safety, installation methodology, design, and development industry standards in PV. Today SWTDI continues to be a leader in education and development of article 690 of the National Electric Code (NEC), Solar Photovoltaic Systems and continues its research in long term panel and inverter testing. However in 2012 SWTDI integrated with the Electrical and Computer Engineering Department of NMSU to broaden the research focus and has developed a microgrid for expanded research into renewable integration into the electric grid and demonstration of ongoing collaborative research with the ECE department on industry partners.

Director: Dr. Steve Bukowski (sbukowski@nmsu.edu; (575) 646-1323)

Spatial Applications and Research Center (SPARC)

The SpARC laboratory was established in 1982 as an applied contract research laboratory for the NMSU Geography Department. SpARC provides a variety of services including planning and research, GIS, image processing, modeling and training. The original purpose of the laboratory was to undertake externally funded projects under the direction of geography faculty and employ students within the department. Thirty-four years later, the laboratory continues to do project related work. It has employed more than 150 students, and provided assistance to more than 35 faculty members inside and outside Geography. The primary clients of the lab have been federal state and local government agencies, with an emphasis on applied transportation, water resource, and environmental research projects. The lab houses 11 high performance workstations, a range of mapping grade GPS units, and a large scanner/plotter. Software available for use includes database software, ENVI image processing software, TransCAD, and the entire suite of Esri GIS software.

Director: Dr. Christopher Brown (brownchr@nmsu.edu; (575) 646-1892)

Survey Research and Program Evaluation Center

The Survey Research and Program Evaluation Center (SRPEC) is designed to assist researchers, agency directors, business leaders, and policy makers in all aspects of survey research and program evaluation. Housed in the College of Health and Social Services, the Center has state-of-the-art hardware and software for conducting phone and internet surveys of any type and length as well as facilities for conducting face-to-face interviews and focus groups. SRPEC provides a wide array of services: questionnaire design, sampling, data collection, and statistical analysis for telephone, mail, and internet surveys. Center staff are also able to assist and conduct all forms of program evaluation from formative to summative approaches, including process, outcome and impact evaluations. Bilingual (Spanish/English) questionnaire translation and interviewing are also available.

Director: Dr. Joe Tomaka (tomaka@nmsu.edu; (575) 646-3525)
University Museum
Established in 1959, the New Mexico State University Museum has provided 50 years of service to the university and community. The University Museum assists NMSU in providing quality education, advancing knowledge through research, and celebrating the culture and history of the southwest and the University. The Museum serves the community as a repository and exhibitor of local and regional history and culture. Through its care and maintenance of donated ethnographic, historic and prehistoric objects, it preserves an important part of Southwestern and Border region culture and history. The Museum encourages faculty and student research using our diverse cultural materials.

The Museum’s collections are primarily anthropological (archaeological and ethnographic) with secondary collections in history and the natural sciences. Anthropological collections document the cultural diversity of the border in the Greater Southwest and northern Mexico. The Museum preserves and catalogs collections to promote research and access to cultural materials. Exhibits are developed by students and staff as well as brought in from other institutions.

Director: Dr. Fumi Arakawa (farakawa@nmsu.edu)
Curator: Anna Strankman (amstrank@nmsu.edu)

Military and Veterans Programs (MVP)
NMSU is a military and veteran friendly university which strives to provide the best possible service to our current and former servicemembers as they pursue their educational goals. NMSU Military and Veterans Programs promotes lifelong learning and professional development for veterans, active-duty military and their families, assisting them in their higher education goals by offering:

- Affordable, in-state tuition rates for active-duty military personnel and dependents using federal education benefits
- Affordable, in-state tuition rates for veterans and dependents receiving U.S. Department of Veterans Affairs education benefits
- Easily transferable credits that count toward degrees at NMSU
- Facilitation of all Department of Defense Tuition Assistance (TA) Benefits
- Courses taught online and at locations near regional military installations
- Innovative technology and course delivery methods
- Internships for veterans
- Student advocacy at every level, from admissions to graduation
- Resource materials from a variety of veteran and military service organizations
- Priority registration for all military and veteran students
- Veterans On Campus Training by Kognito, training faculty and staff on our student veterans and the unique value they bring to campus
- Salute Honor Society for student veterans
- Connection with student organizations
- A tradition of quality education

NMSU degree programs are approved by the State Approving Agency Directory at the New Mexico Higher Education Department. Eligible students may receive education benefits from the U.S. Department of Veterans’ Affairs.

For further information, contact Military and Veterans Programs at:
MSC 4740, PO Box 30001
Las Cruces, NM 88003-8001
(575) 646-4524
http://mvp.nmsu.edu

Costs
Active-Duty
Active-duty military personnel (Armed Forces) stationed in New Mexico or at Fort Bliss, Texas may complete a “Resident Tuition Application for Active Military, Veterans and Dependents of the US Armed Forces” waiver to qualify for in-state tuition. Spouses and minor children of active-duty personnel who are stationed in New Mexico and Fort Bliss, Texas who are not otherwise entitled to claim in-state residency, may apply for in-state tuition by submitting a “Resident Tuition Application for Active Military, Veterans and Dependents of the US Armed Forces” waiver to the Military and Veterans Programs office. Applications are available at the Military and Veterans Programs Office, online at http://mvp.nmsu.edu, or through the Registrar’s Office.

Dependents Receiving VA Educational Benefits
Per NM 2015 HB 427:
A spouse or child of a veteran of the armed forces is entitled to pay tuition and fees at the rate provided for New Mexico residents; provided that the spouse or child is eligible for benefits pursuant to the federal Post-9/11 Veterans Educational Assistance Act of 2008 or any other federal law authorizing educational benefits for a veteran and the dependents of a veteran. Applications are available by contacting Military and Veterans Programs office.

Veterans
Veterans receiving U.S. Department of Veterans Affairs education benefits are eligible for in-state tuition through the Veterans In-State Tuition Act by submitting a “Resident Tuition Application for Active Military, Veterans and Dependents of the US Armed Forces” waiver. For further information concerning approved programs and application process, eligible persons should contact Military and Veterans Programs office.

Veteran students enrolled under the following programs are responsible for their tuition and fees in the same manner as a nonveteran student:

- Montgomery GI Bill-Active Duty (CH 30)
- Dependents (CH 35)
- Montgomery GI Bill-Selected Reserve (CH 1606 & 1607)
- Vocational Rehabilitation Program (Ch 31)

MVP Lab
The MVP lab serves as a one-stop shop for military and veteran students with numerous resources on and off campus. Military and Veterans Programs can assist you with all matters at NMSU from admissions to graduation. Military and Veterans Programs has a lab containing 6 PCs. Common Access Card (CAC) readers are available on 2 machines. The lab is open 8am-5pm, Monday through Friday and is available to all military and veteran students including dependents. Enjoy a free cup of coffee while doing your homework or just hang out and network with like-
mindful veterans. We offer free fax, copy and printing services to further accommodate our students.

**Regulations**

*Note: These regulations apply to all campuses of NMSU and are effective with the publication of this catalog. Tuition amounts, fees, and similar items subject to annual review and change are all effective with the current catalog.*

**Credit for Military Service**

New Mexico State University will award academic credit to United States military personnel for courses and Military Occupational Specialties (MOS), based on the American Council of Education Guide (ACE) as well as through national standardized tests, such as CLEP, AP, PEP and DANTES. Credit for military-training is in accordance with NMSU Faculty Senate Legislation Proposition 24-07/08, which was passed in May 2008. Military Training and Military Occupational Specialties (MOS) must have a recommendation evaluation by ACE (in the ACE Guide) for credit to be awarded. Courses accepted for transfer credit become part of the student’s official NMSU transcript and academic record. If a student wishes to appeal a decision regarding the acceptance of military training/education and/or MOS for academic credit, the student must submit a written statement of appeal to the Dean of the College to which the student has applied. The Dean will review the merits of the appeal and render a decision. The decision of the Dean is final.

Only Primary MOS (s) are eligible for academic credit in the initial review and evaluation. Credit for Duty and/or Secondary MOS may be eligible for academic credit if the student petitions the college’s Associate Dean. Primary MOS is the primary specialty of a soldier and reflects the broadest and most in-depth scope of military experience. Veterans, active-duty personnel, National Guard and Reservists who are current students or students applying for admission to New Mexico State University may be granted academic credit on a case-by-case basis upon evaluation of military transcripts - the Joint Service Transcript (jst.doded.mil) and the Community College of the Air Force transcripts. Course equivalencies and credit hours awarded for a particular NMSU degree are determined by colleges and/or academic departments. Credit hours may be awarded for specific courses toward degree requirement, or as elective credit. The number of credit hours awarded will be determined by the college and/or academic department.

**NOTE:** Students submitting military transcripts for credit evaluation must keep in mind the Maximum Time Frame policy. See Financial Aid (http://catalogs.nmsu.edu/nmsu/general-information/financial-aid-scholarship-services) Section.

**Tuition Assistance**

Tuition Assistance (TA) is a benefit paid to eligible active duty members of the Air Force, Army, Coast Guard, Marines and Navy. The Department of Defense (DoD) has given each service the ability to pay up to $250 per semester credit hour of the actual cost of tuition (no fees) during the fiscal year (Oct. 1 - Sept. 30). TA will pay for up to 13-semester hours of a bachelor’s degree and up to 39 semester hours of a master’s degree. TA must be requested and approved prior to the start date of the course.

Service members must first be admitted to NMSU before they may enroll in any classes at NMSU.

Please be aware of our admission and registration process:

1. Servicemembers must apply online to be admitted,

2. login to my.NMSU.edu (http://my.NMSU.edu) to register for classes, and

3. create an account and Request TA through their service online portal. Each service has its own criteria for eligibility, application process and restrictions. Refer to our website for service login information: http://mvp.nmsu.edu/tuition-assistance

It is important to request TA for the same class and section number as enrolled in NMSU for tuition and grading purposes. Only enrollments requested and approved through their service online portal will be eligible for TA. Refer to our website for further information at http://mvp.nmsu.edu/tuition-assistance or contact the Military Programs Coordinator for assistance at mvp@nmsu.edu or (575) 646-4524

**Military/Veteran Graduate Student Status**

Veteran benefits are determined by the number of graded graduate credits of enrollment for a given semester or summer session. Listed below are the credit hours that determine student status for military veterans.

Fall and Spring semester: full-time enrollment includes 9 or more graded credit hours. Students are considered three-fourths time if they are enrolled in 7 to 8 credit hours. Half time enrollment is 5 hours. Veterans enrolled in less than 5 credit hours are reimbursed for tuition and allowable fees only.

There are several sessions within the summer term. For the 10 week summer session, full-time enrollment is 6 credit hours and half time enrollment is 3 credit hours. During the five week sessions, full-time enrollment is 4 graded credit hours."

**Military Withdrawal**

New Mexico State University understands that our military students may be called to active duty, specialized training or for disaster relief efforts with little notice from the U.S. armed forces; this includes an order for mobilization of the Reserve Forces as a result of a national emergency. However, the below policy does not pertain to a student’s basic and/or annual training. A student who has an order for training is encouraged to formally request, through the proper chain of command, a postponement of their orders until the summer or the end of the semester they are currently enrolled in. If a student’s request for postponement is denied, the student may then follow the below steps but must provide documentation that their postponement request was formally denied.

All NMSU students that have been called up for active duty must take the following steps in order to withdraw from all their classes:

1. **Military and Veterans Programs (MVP):** VA students ordered to Active Duty must provide a copy of orders to the MVP office, in Corbett Center Student Union, Room 244. To assist in reporting accurate information to the VA Regional Office, student should also provide, in writing, last day of class attendance.

2. **NMSU Registrar:** All students presenting their orders to the Registrar’s Office, (575) 646-3411, will receive a military withdrawal from classes and a full tuition and fees refund for that semester or part of term that is still in progress.

3. **Bookstore:** Students who still have their receipts for textbooks purchased the semester in which they are called to active duty will be given a full refund for these textbook purchases when they present their orders. (575) 646-4431.
Veterans’ Attendance and Satisfactory Progress

The U.S. Department of Veterans Affairs requires all veterans receiving VA education benefits to make satisfactory progress and systematic advancement toward an educational objective or be liable for overpayments. Satisfactory progress and regular class attendance are expected of such students.

If a veteran receiving benefits is suspended for academic reasons, benefits are terminated and will be restored only after readmission to NMSU.

If the university has liability claims filed against it as a result of a veteran failing to meet compliance requirements of the U.S. Department of Veterans Affairs, the university will not release any academic records on the veteran until such time as the veteran has reimbursed the federal government for funds drawn in violation of those requirements.

A student receiving VA education benefits who is pursuing a degree program offered by New Mexico State University should adhere to the curriculum of that program. Failure to do so will result in the student being certified for less than full-time status or becoming liable for an overpayment.

Resources for Students

Military and Veteran Housing

New Mexico State University is one of the first in the nation to offer on-campus housing specifically designated for student veterans and their families transitioning out of the military and into student life. The Department of Housing & Residential Life has worked in conjunction with the Student Veterans Organization of NMSU to offer affordable housing on campus to student veterans attending the university.

For more information, please contact Housing and Residential Life: (575) 646-3202, housing@nmsu.edu, http://housing.nmsu.edu.

Service Members Opportunity Consortium (SOC)

The NMSU system has been designated a Servicemembers Opportunity Colleges (SOC) Consortium university. As a member of SOC, NMSU has committed itself to fully support and comply with SOC principles and criteria, ensuring that servicemembers and their families share in the postsecondary educational opportunities available to other citizens. Those eligible are provided with appropriately accredited educational programs, courses, and services. The flexibility of programs and procedures particularly in admissions, counseling, credit transfer, course articulation, recognition of other applicable learning experiences, including those gained in the military, scheduling, course format and residency requirements are provided to enhance access of servicemembers and their families to undergraduate education programs. All SOC rules and regulations apply, including:

- Credit for military training and experience – NMSU recognizes and uses ACE Guide in evaluating military training experiences
- Reduced academic residency requirements – 25% maximum for most programs; 30% for 100% online programs
- No final year or semester requirement
- Credit for nationally-recognized testing programs such as CLEP (General and Subject exams), DSST (DANTES Standardized Subject Tests)

For further assistance contact the SOC coordinator through Military and Veterans Programs at:

MSC 4740, NMSU
P.O. Box 30001
Las Cruces, NM 88003-8001
(575) 646-4524

Responsibility of Veteran Students

Students must be pursuing a degree in a specific program to be eligible for benefits. Admission procedures for veterans and other eligible persons are the same as for all students. Academic advisors must submit degree plans to Military and Veterans Programs prior to certification. For continued certification, students must submit a Concise Student Schedule and STAR Degree Audit to the MVP office every semester.

Veterans must notify the MVP office when any of the following occur:

- Dropping or adding course(s)
- Withdrawing from course(s)
- Discontinuing regular class attendance
- Changing programs (academic majors)

VA education benefits are payable for regular attendance in courses that are part of the veteran’s program (major) curriculum. VA educational benefits are not payable for:

- Classes not attended regularly
- Repeating a course for which a passing grade was received
- Classes for which credit is received through successful completion of a proficiency test or grade by examination
- Classes taken on an audit basis
- Classes that are dropped or withdrawn from
- Classes taken that are not part of the veteran’s program (major) curriculum

Reserve Office Training Corps (ROTC)

The Reserve Officer Training Corps is a commissioning program designed to attract, motivate and train qualified students for military service as officers. The ROTC program is represented on the NMSU campus by the Department of Military Science (U.S. Army) and the Department of Aerospace Studies (U.S. Air Force).

Curricula in the Departments of Military Science and Aerospace Studies are divided into basic and advanced courses of two years each. Enrollment in the basic course is voluntary and involves no obligation. Participation in the advanced courses is on a contractual basis and leads to military service as a commissioned officer. Elective academic credit is granted by the university for ROTC classes.

Students with prior military service or Junior ROTC experience may receive credit, although not academic credit, for all or portions of the basic courses.

All qualified cadets enrolled in ROTC receive a stipend that varies dependent upon the year the cadet is in the program. Scholarships, which pay full college tuition as well as various laboratory, textbook and incidental fees, are available on a competitive basis.

For more detailed information about the ROTC programs, see the College of Arts and Sciences departments of Aerospace Studies (p. 179) and Military Science (p. 364) in this catalog. Additional information may be obtained by contacting the departments directly at:

(575) 646-4030 (Army)
**UNIV 115 - Transition from Military to University**

UNIV 115 Transition from Military to University - Making a positive transition from military to civilian life is a key to success. This course will cover a variety of topics ranging from time management to critical thinking. It is designed to assist military and veteran students in becoming more effective learners through self-awareness, effective study, learning strategies and interpersonal skills. Skills and techniques for managing military to civilian readjustment transition issues are discussed and examined.

**General Education Courses**

**The New Mexico Common Core Requirements**

General Education at NMSU provides all students with a broad foundation and common framework upon which to develop knowledge and skills, social consciousness and respect for self and others, thus enabling them to function responsibly and effectively now and in the future. General education courses at NMSU can be identified by the G suffix.

The New Mexico General Education Common Core includes designated general education courses guaranteed to transfer to any New Mexico public college or university. A complete list of approved courses can be found on the New Mexico Higher Education Department website at www.hed.state.nm.us (http://www.hed.state.nm.us). The current approved NMSU courses are listed below under each of the five general education areas.

In accordance to state law (Chapter 21, Article 1B NMSA 1978), the New Mexico Higher Education Department has established policies to guarantee successful transfer of completed core courses between New Mexico postsecondary public institutions.

**Lower Division General Education Course Transfer Curriculum**

The NMSU Prefix and Course Number will be listed first, the New Mexico Transfer Curriculum number will then be listed in parenthesis’ followed by the course title and credit hours.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
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<td>ENGL 111GH</td>
<td>Rhetoric and Composition Honors</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 111 M</td>
<td>Rhetoric and Composition for International and Multilingual Students</td>
<td>4</td>
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**English Composition-Level 1**

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGL 203G</td>
<td>Business and Professional Communication</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 211G</td>
<td>Writing in the Humanities and Social Sciences</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 218G</td>
<td>Technical and Scientific Communication</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 311G</td>
<td>Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
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</table>

**English Composition-Level 2**

<table>
<thead>
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<th>Code</th>
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<tbody>
<tr>
<td>MATH 112G</td>
<td>Fundamentals of Elementary Math II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 142G</td>
<td>Calculus for the Biological and Management Sciences</td>
<td>3</td>
</tr>
<tr>
<td>MATH 190G</td>
<td>Trigonometry and Pre calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 210G</td>
<td>Mathematics Appreciation</td>
<td>3</td>
</tr>
<tr>
<td>MATH 275G</td>
<td>Spirit and Evolution of Mathematics</td>
<td>3</td>
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<tr>
<td>MATH 291G</td>
<td>Calculus and Analytic Geometry Honors</td>
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</table>

**Area II: Mathematics/Algebra**

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<th>Credits</th>
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<tbody>
<tr>
<td>ANTH 130G &amp; 130GL</td>
<td>Human’s Place in Nature: Introduction to Biological Anthropology and Human’s Place in Nature Laboratory</td>
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<tr>
<td>ASTR 105G</td>
<td>The Planets</td>
<td>4</td>
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<tr>
<td>ASTR 110G</td>
<td>Introduction to Astronomy</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 101G &amp; 101GL</td>
<td>Human Biology and Human Biology Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 111G &amp; 111GL</td>
<td>Natural History of Life and Natural History of Life Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 211G &amp; 211GL</td>
<td>Cellular and Organismal Biology and Cellular and Organismal Biology Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>C S 171G</td>
<td>Introduction to Computer Science</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 110G</td>
<td>Principles and Applications of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>E S 110G</td>
<td>Introductory Environmental Science</td>
<td>4</td>
</tr>
<tr>
<td>FSSTE 164G</td>
<td>Introduction to Food Science and Technology</td>
<td>4</td>
</tr>
<tr>
<td>FSSTE 263G</td>
<td>Food Science I</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 111G</td>
<td>Geography of the Natural Environment</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 111G</td>
<td>Introductory to Geology</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 212G</td>
<td>The Dynamic Earth</td>
<td>4</td>
</tr>
<tr>
<td>HON 205G</td>
<td>Life, Energy, and Evolution</td>
<td>4</td>
</tr>
<tr>
<td>HON 219G</td>
<td>Earth, Time, and Life</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 110G</td>
<td>The Great Ideas of Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 120G</td>
<td>Introduction to Acoustics</td>
<td>4</td>
</tr>
</tbody>
</table>
General Education Courses

PHYS 211G & 211GL General Physics I and General Physics I Laboratory 4
PHYS 212G & 212GL General Physics II and General Physics II Laboratory 4
PHYS 215G & 215GL Engineering Physics I and Engineering Physics I Laboratory 4
PHYS 216G & 216GL Engineering Physics II and Engineering Physics II Laboratory 4
PHYS 221G & 221GL General Physics for Life Sciences I and Laboratory to General Physics for Life Science I 4
PHYS 222G & 222GL General Physics for Life Sciences II and Laboratory to General Physics for Life Sciences II 4

Area IV/V - Social/Behavioral Sciences and Humanities/Fine Arts 15

Area IV: Social/Behavioral Sciences
AG E/FSTE 210G Survey of Food and Agricultural Issues 3
ANTH 120G Human Ancestors 3
ANTH 125G Introduction to World Cultures 3
ANTH 201G Introduction to Anthropology 3
ANTH 202G Introduction to Archaeology and Physical Anthropology 3
ANTH 203G Introduction to Language and Cultural Anthropology 3
CEP 110G Human Growth and Behavior 3
CJ 101G Introduction to Criminal Justice 3
ECON 201G Introduction to Economics 3
ECON 251G Principles of Macroeconomics 3
ECON 252G Principles of Microeconomics 3
GEOG 112G World Regional Geography 3
GEOG 120G Culture and Environment 3
GOVT 100G American National Government 3
GOVT 110G Introduction to Political Science 3
GOVT 150G American Political Issues 3
GOVT 160G International Political Issues 3
HON 232G The Human Mind 3
HON 235G Window on Humanity 3
HON 237G Archaeology: Search for the Past 3
HON 241G The Citizen and the State: Great Political Issues 3
HON 242G American Politics in a Changing World 3
JOUR 105G Media and Society 3
LING 200G Introduction to Language 3
PHLS 150G Personal Health and Wellness 3
PSY 201G Introduction to Psychology 3
S WK 221G Introduction to Social Welfare 3
SOC 101G Introductory Sociology 3
SOC 201G Contemporary Social Problems 3
WS 201G Introduction to Women s Studies 3
WS 202G Representing Women Across Cultures 3

Area V: Humanities and Fine Arts
ART 101G Orientation in Art 3
ART 110G Visual Concepts 3
ART 295G Introduction to Art History I 3
ART 296G Introduction to Art History II 3
DANC 101G Dance Appreciation 3
ENGL 115G Perspectives on Literature 3
ENGL 116G Perspectives on Film 3
ENGL 220G Introduction to Creative Writing 3
ENGL 244G Literature and Culture 3
HIST 101G Roots of Modern Europe 3
HIST 102G Modern Europe 3
HIST 110G Making History 3
HIST 111G Global History to 1500 3
HIST 112G Global History Since 1500 3
HIST 201G Introduction to Early American History 3
HIST 202G Introduction to Recent American History 3
HIST 211G East Asia to 1600 3
HIST 212G East Asia since 1600 3
HIST 221G Islamic Civilization to 1800 3
HIST 222G Islamic Civilization since 1800 3
HON 208G History of Ethics 3
HON 227G Plato and the Discovery of Philosophy 3
HON 229G The New Testament as Literature 3
HON 230G Bamboo and Silk: The Fabric of Chinese Literature 3
HON 234G The Worlds of Arthur 3
HON 239G Medieval Understandings: Literature and Culture in the Middle Ages 3
HON 242G Claiming an American Past 3
HON 270G Theatre: Beginnings to Broadway 3
MUS 101G An Introduction to Music 3
MUS 201G History of Jazz in Popular Music: A Blending of Cultures 3
PHIL 100G Philosophy, Law and Ethics 3
PHIL 101G The Art of Wondering 3
PHIL 124G Philosophy of Music 3
PHIL 136G The Quest for God 3
PHIL 201G Introduction to Philosophy 3
PHIL 211G Informal Logic 3
PHIL 223G Ethics 3
THTR 101G The World of Theatre 3

Total Credits 35-37

1 For Areas IV and V of the NM Common Core, students can take 6-9 credits of each area for a total of 15 credits.

Alternatives for Meeting General Education Requirements
Students taking nine or more credits in a specific subject area, even though the courses are not designated as General Education courses, will have met the general education requirements for that subject area. For example, a student may complete ART 150 Drawing I, ART 155 2-D Fundamentals and ART 156 3-D Fundamentals (9 hours) and thereby...
satisfy one course from the Area V: Humanities and Fine Arts category, even though none of those courses carries a G suffix. Please check with the college associate dean or with college advisors.

**NMSU Viewing a Wider World Requirements**

The Viewing a Wider World (VWW) requirement fosters intelligent inquiry, abstract logical thinking, critical analysis, as well as the integration and synthesis of knowledge. The program strives for literacy in writing, reading, speaking and listening. It teaches mathematical structures, acquainting students with precise abstract thought about numbers and space. The program also encourages an understanding of science and scientific inquiry, and as it provides a historical consciousness, including an understanding of one’s own heritage as well as respect for other peoples and cultures. To achieve its goals, the program includes an examination of values and stresses the importance of a carefully considered values system as it fosters an appreciation of the arts and general education.

It provides the breadth necessary to have a familiarity with the various branches of human understanding. All VWW courses can be identified by the "V" suffix.

Prior to graduating, NMSU students are required to take two courses from the Viewing a Wider World list in the Undergraduate Catalog. These courses are upper-division (300-400 level) Viewing a Wider World courses and should be taken in a student’s junior and/or senior year. One of the two courses must be in a college other than their own. The other course may be taken within their home college, but this course:

1. must be in a different department from their major department;
2. must not be cross-listed with a course in their home department;
3. cannot be counted as one of the requirements for the student’s major.

These courses strongly emphasize the international character and multicultural influences in the fields of study and strengthen information retrieval skills. There are two options that NMSU allows for replacing 3 credits of VWW requirement with another form of educational experience, these are:

1. **Study Abroad Experience**- consisting of at least four weeks of a Study Abroad program or university coursework in a foreign country earning 3 credits.
2. **Military Experience**- for students who have served at least four weeks of military service in a foreign country.

**NOTE:** This list is under continuous revision. Please check with the office of the college associate dean or with college advisors for additional eligible courses. Honors courses have a specific college designation based on course content. These are listed near the end of this section.

**College of Arts and Sciences**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ENGL 394V</td>
<td>Southwestern Literature</td>
<td>3</td>
</tr>
<tr>
<td>FREN 365V</td>
<td>Perspectives in French Culture</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 315V</td>
<td>World Agriculture and Food Problems</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 325V</td>
<td>New Mexico and the American West</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 328V</td>
<td>Geography of Latin America</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 331V</td>
<td>Europe</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 361V</td>
<td>Economic Geography</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 363V</td>
<td>Cultural Geography</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 365V</td>
<td>Urban Geography</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 305V</td>
<td>Fossils and the Evolution of Life</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 335V</td>
<td>Earthquakes, Volcanoes, Hurricanes, and Floods: The Role of Natural Hazards in Civil Past and Present</td>
<td>3</td>
</tr>
<tr>
<td>GER 333V</td>
<td>German Culture through Cinema</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 374V</td>
<td>The European City: History and Culture</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 380V</td>
<td>Contemporary World Political Ideologies</td>
<td>3</td>
</tr>
<tr>
<td>GPHY 340V</td>
<td>Planet Earth</td>
<td>3</td>
</tr>
<tr>
<td>HIST 302V</td>
<td>Science in Modern Society</td>
<td>3</td>
</tr>
<tr>
<td>HIST 311V</td>
<td>Colonial Latin America</td>
<td>3</td>
</tr>
<tr>
<td>HIST 312V</td>
<td>Modern Latin America</td>
<td>3</td>
</tr>
<tr>
<td>HIST 330V</td>
<td>Introduction to Religious Studies</td>
<td>3</td>
</tr>
<tr>
<td>HIST 366V</td>
<td>British Imperialism</td>
<td>3</td>
</tr>
<tr>
<td>HIST 374V</td>
<td>The European City: History and Culture</td>
<td>3</td>
</tr>
<tr>
<td>HIST 382V</td>
<td>Modern Russia</td>
<td>3</td>
</tr>
<tr>
<td>HIST 390V</td>
<td>The Holocaust</td>
<td>3</td>
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**College of Agricultural, Consumer and Environmental Sciences**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AG E 315V</td>
<td>World Agriculture and Food Problems</td>
<td>3</td>
</tr>
<tr>
<td>AG E 337V</td>
<td>Natural Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>AG E 384V</td>
<td>Water Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>AG E 445V</td>
<td>Agricultural Policy</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 303V</td>
<td>Genetics and Society</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 312V</td>
<td>Companion Animals and the Human-Animal Interaction</td>
<td>3</td>
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<tr>
<td>ANSC 351V</td>
<td>Agricultural Animals of the World</td>
<td>3</td>
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<tr>
<td>AXED 466V</td>
<td>John Muir: Lessons in Sustainability</td>
<td>3</td>
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<tr>
<td>EPWS 325V</td>
<td>Insects, Humans, and the Environment</td>
<td>3</td>
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<tr>
<td>EPWS 380V</td>
<td>Science &amp; Society</td>
<td>3</td>
</tr>
<tr>
<td>FCS 449V</td>
<td>Family Ethnicities and Subcultures</td>
<td>3</td>
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<td>GENE 303V</td>
<td>Genetics and Society</td>
<td>3</td>
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<tr>
<td>HORT 302V</td>
<td>Forestry and Society</td>
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<td>RGSC 302V</td>
<td>Forestry and Society</td>
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### General Education Courses

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<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>HIST 425V</td>
<td>History of Magic and Witchcraft in Medieval and Renaissance Europe</td>
<td>3</td>
</tr>
<tr>
<td>JOUR 377V</td>
<td>Mass Media Ethics</td>
<td>3</td>
</tr>
<tr>
<td>LING 302V</td>
<td>Language and Society</td>
<td>3</td>
</tr>
<tr>
<td>MATH 411V</td>
<td>Great Theorems: The Art of Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 323V</td>
<td>Engineering Ethics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 303V</td>
<td>Energy and Society in the New Millennium</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 305V</td>
<td>The Search for Water in the Solar System</td>
<td>3</td>
</tr>
<tr>
<td>PSY 417V</td>
<td>Intercultural Relations</td>
<td>3</td>
</tr>
<tr>
<td>SOC 330V</td>
<td>Introduction to Religious Studies</td>
<td>3</td>
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<tr>
<td>SOC 336V</td>
<td>Sociology of Pop Culture</td>
<td>3</td>
</tr>
<tr>
<td>SOC 360V</td>
<td>Introduction to Population Studies</td>
<td>3</td>
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<tr>
<td>SOC 361V</td>
<td>Social Issues in the Rural Americas</td>
<td>3</td>
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<tr>
<td>SOC 374V</td>
<td>Comparative Family Systems</td>
<td>3</td>
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<td>SOC 376V</td>
<td>Social Change</td>
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<td>SOC 394V</td>
<td>Sports and Society: A Global Perspective</td>
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<td>SOC 458V</td>
<td>Comparative Global Family Systems</td>
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<td>SOC 456V</td>
<td>Environmental Sociology</td>
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<td>SPAN 364V</td>
<td>Culture and Civilization of Mexico</td>
<td>3</td>
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<td>SPAN 365V</td>
<td>Culture and Civilization of Spanish America</td>
<td>3</td>
</tr>
<tr>
<td>THTR 307V</td>
<td>Society in Style: Fashion, History and Culture</td>
<td>3</td>
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<tr>
<td>THTR 321V</td>
<td>Modern European Drama</td>
<td>3</td>
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<tr>
<td>W S 374V</td>
<td>Comparative Family Systems</td>
<td>3</td>
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<tr>
<td>W S 380V</td>
<td>Women Writers</td>
<td>3</td>
</tr>
<tr>
<td>W S 381V</td>
<td>Women's Health Issues</td>
<td>3</td>
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### College of Business

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<th>Course Title</th>
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<tbody>
<tr>
<td>BLAW 385V</td>
<td>Consumers and the Law</td>
<td>3</td>
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<tr>
<td>BLAW 430V</td>
<td>American Indian Law and Policy</td>
<td>3</td>
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<tr>
<td>ECON 324V</td>
<td>Developing Nations</td>
<td>3</td>
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<tr>
<td>ECON 325V</td>
<td>Economic Development of Latin America</td>
<td>3</td>
</tr>
<tr>
<td>ECON 335V</td>
<td>Business and Government</td>
<td>3</td>
</tr>
<tr>
<td>ECON 337V</td>
<td>Natural Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 384V</td>
<td>Water Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 432V</td>
<td>Economics of Health Care</td>
<td>3</td>
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<tr>
<td>FIN 303V</td>
<td>Personal Financial Planning and Investing in a Global Economy</td>
<td>3</td>
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<tr>
<td>MGT 315V</td>
<td>Human Relations in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>MGT 335V</td>
<td>Business and Government</td>
<td>3</td>
</tr>
<tr>
<td>MGT 345V</td>
<td>Quality and Competitiveness: An International Perspective</td>
<td>3</td>
</tr>
<tr>
<td>MGT 375V</td>
<td>Global Environmental Assessment and Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 388V</td>
<td>Leadership and Society</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 311V</td>
<td>Consumer Behavior</td>
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### College of Education

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>C EP 300V</td>
<td>Human Relations Training</td>
<td>3</td>
</tr>
<tr>
<td>C EP 451V</td>
<td>Introduction to Counseling</td>
<td>3</td>
</tr>
<tr>
<td>DANC 451V</td>
<td>World Dance</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 317V</td>
<td>Multicultural Issues in Society</td>
<td>3</td>
</tr>
<tr>
<td>ELA 350V</td>
<td>Introduction to Educational Leadership in a Global Society</td>
<td>3</td>
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</table>

### College of Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>C E 355V</td>
<td>Technology and the Global Environment</td>
<td>3</td>
</tr>
<tr>
<td>CHME 395V</td>
<td>Brewing Science and Society</td>
<td>3</td>
</tr>
<tr>
<td>E T 309V</td>
<td>Manufacturing: History and Technology</td>
<td>3</td>
</tr>
<tr>
<td>E T 360V</td>
<td>Technology in Business and Society</td>
<td>3</td>
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### College of Health and Social Services

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CAST 301V</td>
<td>Introduction to Child Advocacy</td>
<td>3</td>
</tr>
<tr>
<td>PHLS 301V</td>
<td>Human Sexuality</td>
<td>3</td>
</tr>
<tr>
<td>PHLS 305V</td>
<td>Global Environmental Health Issues</td>
<td>3</td>
</tr>
<tr>
<td>PHLS 380V</td>
<td>Women's Health Issues</td>
<td>3</td>
</tr>
<tr>
<td>PHLS 464V</td>
<td>Cross-Cultural Aspects of Health</td>
<td>3</td>
</tr>
<tr>
<td>S WK 331V</td>
<td>Introduction to Social Policy: History</td>
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</tr>
</tbody>
</table>

### University Library

<table>
<thead>
<tr>
<th>Course Code</th>
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<tr>
<td>LIB 311V</td>
<td>Information Literacy</td>
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### Honors - Viewing a Wider World

### College of Agricultural, Consumer and Environmental Sciences

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>HON 321V</td>
<td>Agriculture in an Interconnected World</td>
<td>3</td>
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### College of Arts and Sciences

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>HON 304V</td>
<td>Dilemmas of War and Peace</td>
<td>3</td>
</tr>
<tr>
<td>HON 305V</td>
<td>Global Environment</td>
<td>3</td>
</tr>
<tr>
<td>HON 306V</td>
<td>Science, Ethics and Society</td>
<td>3</td>
</tr>
<tr>
<td>HON 308V</td>
<td>Into the Final Frontier</td>
<td>3</td>
</tr>
<tr>
<td>HON 318V</td>
<td>The World of Cinema</td>
<td>3</td>
</tr>
<tr>
<td>HON 324V</td>
<td>Science and the Arts: Theatre and Story</td>
<td>3</td>
</tr>
<tr>
<td>HON 326V</td>
<td>Art and Mythology</td>
<td>3</td>
</tr>
<tr>
<td>HON 328V</td>
<td>Rock History: 20th Century Popular Music</td>
<td>3</td>
</tr>
<tr>
<td>HON 348V</td>
<td>Comparative Mythology: Myth, Ritual, and the Life Cycle</td>
<td>3</td>
</tr>
<tr>
<td>HON 349V</td>
<td>Islam and the West: Cultural Contacts, Conflicts, and Exchanges</td>
<td>3</td>
</tr>
<tr>
<td>HON 351V</td>
<td>Interpersonal Relations and the Self</td>
<td>3</td>
</tr>
<tr>
<td>HON 353V</td>
<td>Justice without Prejudice</td>
<td>3</td>
</tr>
<tr>
<td>HON 365V</td>
<td>African and Caribbean: Literature and Film</td>
<td>3</td>
</tr>
<tr>
<td>HON 366V</td>
<td>The Gothic Imagination</td>
<td>3</td>
</tr>
<tr>
<td>HON 370V</td>
<td>Design: The Creative Act</td>
<td>3</td>
</tr>
<tr>
<td>HON 374V</td>
<td>The European City: History and Culture</td>
<td>3</td>
</tr>
<tr>
<td>HON 375V</td>
<td>The U.S. City: A History of Race, Space, and Urbanization</td>
<td>3</td>
</tr>
<tr>
<td>HON 379V</td>
<td>Literature as Film</td>
<td>3</td>
</tr>
<tr>
<td>HON 387V</td>
<td>Comparative Perspectives on Women</td>
<td>3</td>
</tr>
<tr>
<td>HON 394V</td>
<td>Southwestern and Border Literature</td>
<td>3</td>
</tr>
<tr>
<td>HON 411V</td>
<td>Great Theorems: The Art of Mathematics</td>
<td>3</td>
</tr>
</tbody>
</table>
HON 425V Magic and Witchcraft in Medieval and Renaissance 3

College of Business
HON 335V Legal Issues in Modern Society 3
HON 340V Indian Law and Policy 3
HON 380V Comparative Economic Systems 3
HON 384V Ethical Decisions in Organizations 3
HON 385V Consumers and the Law 3

College of Education
HON 347V World Dance 3
HON 388V Leadership and Society 3

College of Engineering
HON 378V Technology and Policy 3

Honors College
HON 450V The Sundt Honors Seminar 3

Alternatives for Meeting Viewing a Wider World Requirements
Students taking nine or more credits in a specific subject area, even though the courses are not designated as Viewing a Wider World courses, will have met the VWW requirements for that subject area.

The 9 credit hours must be in 300- to 400-level courses in one prefix area. For example, 9 upper-division ECON credits would fulfill one VWW area for students majoring in programs other than Economics.

Graduation Requirements
For specific information about graduation requirements for specific degrees, as well as, information about the commencement ceremony and the application for degree processes please see “The NMSU System Academic Regulations section (p. 71)” for Graduation Requirements.

Recognition of Academic Achievement
NMSU has a number of university-wide programs that recognize academic achievement. These include
  • the Honors College,
  • the Crimson Scholars Program,
  • the dean’s report of academic achievement and graduation with honors.

In addition, many colleges and departments have their own programs and awards that recognize the academic achievement of their students.

The Honors College
The Honors College provides motivated undergraduate students with opportunities to broaden and enrich their academic programs. In small classes taught by master teachers, honors students engage in lively discussion and collaborative investigation of interdisciplinary topics. By taking honors courses, students may also work toward completing general education requirements and disciplinary requirements in the major. There are two program options available to students: University Honors and the Honors Certificate. Each option has separate eligibility requirements, benefits, and forms of recognition for the student. For details concerning eligibility and requirements, see the Honors College (p. 639) section of the catalog.

Crimson Scholars Program
Crimson Scholars is a recognition program for academically superior students who achieve and maintain a Grade Point Average (GPA) of 3.5 or better. Crimson Scholars receive a number of benefits, including:
  • Automatic eligibility for all Honors courses
  • Early registration
  • Recognition in the commencement program
  • Regalia for Commencement that acknowledges the Crimson Scholar designation
  • Permission to live in the Honors Residential Community

For eligibility criteria, see the Honors College (p. 639) section of the catalog.

Dean’s Report of Academic Achievement
Following the close of the semester, each college dean publishes a list of students who have achieved honor standing in grades for the previous semester. To be eligible, a student must have been enrolled in 12 or more semester credits with a computable grade in each. The top 15 percent of eligible students by college for that semester will be named to the Dean’s Honor List.

Graduation with Honors
To be eligible for a four-year degree with honors, a student must have earned at least 60 semester credits in computable grades while in residence at New Mexico State. Courses taken in the Honors College and graded S will be counted as a part of the minimum of 60 credits. The number of students at graduation, by college, receiving degrees with honors in any one year shall not exceed 15 percent. To receive high honors, a student must be in the top 1.5 percent of the graduating class by college. One person from each college will receive highest honors. In case of a tie, the student with the greatest numbers of credits earned at NMSU with computable grades will be awarded highest honors for each college. Of the students receiving highest honors from the fall and spring commencements, the student with the highest grade-point average and the greatest number of credits earned at NMSU with computable grades will be awarded the Class of 1919 Scholarship Plaque.

Preprofessional Programs
NMSU offers a number of programs designed for transfer to professional schools through its undergraduate colleges. The programs are:

Preveterinary Medicine is administered by the College of Agricultural, Consumer and Environmental Sciences

Prehealth is administered by the College of Arts and Sciences (with the exception of prenursing which is administered by the College of Health and Social Services.)

Prelaw is administered by the College of Business and by the College of Arts and Sciences. Law schools will accept undergraduates who have earned bachelor’s degrees in any major. Many prelaw students take some law courses in their undergraduate program. The College of Arts and Sciences supervises a Supplementary Major in Law and Society, which
includes courses from a number of departments and several colleges. It is described under “Government” in the Arts and Sciences chapter. The College of Business offers a number of Business Law courses which can be found under the prefix BLAW in the course description chapter later in this catalog.

Further information will be found in the sections of this catalog devoted to the colleges. (See also the paragraph on Western Interstate Commission for Higher Education)

**Academic Programs**

**Associate Degree Programs**

NMSU awards both designated and undesignated associate degrees following completion of at least 60 semester credits (excluding "N" suffix courses). The last 15 to 30 credits, depending on the requirements of the college in which the degree is pursued, must be completed at NMSU or one of its Community Colleges. (Service personnel enrolled under the two-year Servicemembers Opportunity College Program may be exempt from this requirement.)

The designation Meritorious Graduate is awarded to the top 15 percent of the students receiving associate degrees within each college in any one academic year; the students must have completed 45 or more credits with computable grades at NMSU.

**Las Cruces Campus**

Detailed information on admission requirements, curricula, and associate degree or certificate requirements will be found in the section of this catalog devoted to the administering department/college.

- **Associate of Arts**  
  Administered by the Community Colleges
- **Associate of Fine Arts**  
  Administered by the Community Colleges
- **Associate of Science**  
  Administered by the Community Colleges
- **Associate of Science in Engineering Technology**  
  Administered by the College of Engineering

**Designated Associate Degrees**

The following designated associate degrees are granted to students completing the specified requirements of the degree.

- **Associate in Art and Graphic Design**  
  Administered by the Community Colleges
- **Associate in Criminal Justice**  
  Administered by the Community Colleges
- **Associate in Education**  
  Administered by the Community Colleges
- **Associate in Pre-business**  
  Administered by the College of Business
- **Associate of Arts in Heritage Interpretation**  
  Administered by the Community Colleges

**Community Colleges**

Many of the associate degrees offered on Las Cruces campus, as well as other programs, are available at NMSU's four community college campuses. For more information on community college campus offerings, refer to the “Community Colleges (p. 643)” chapter in this catalog and to their respective catalogs or admissions offices.

Please see the Community College Catalogs for more information about the Associate Degree Programs.

- Alamogordo Catalog
- Dona Ana Catalog
- Carlsbad Catalog
- Grants Catalog

**Undergraduate Programs**

For a full listing of all Undergraduate Programs offered at New Mexico State University, please see the Undergraduate Admissions webpage http://admissions.nmsu.edu/academics/.

**Graduate Degree Programs**

For a full listing of the Graduate Programs offered at New Mexico State University, please see the Graduate Admissions webpage http://gradadmissions.nmsu.edu/graduate-programs/.

**Academic Minors**

Students seeking a degree may elect to complete one or more minors from those available, and the minor will be designated on their transcripts. Minors cannot be earned after the degree has been conferred.

A minor consists of a minimum of 18 credits, at least 9 of which must be upper-division. The minor may be in a single department or may be interdepartmental. Specific requirements for these minors are available in printed form in departmental and deans' offices. Specific the College sections for a complete list of the minors offered in that college.
THE NMSU SYSTEM ACADEMIC REGULATIONS

The following regulations are effective with the publication of all the NMSU system catalogs, this includes the Las Cruces-Academic Catalog, Alamogordo Community College, Carlsbad Community College, Dona Ana Community College, and the Grants Community College catalogs. All regulations in this section of the catalog pertain to all the campuses housed with the NMSU System, this means that information for students pursuing Associate Degrees/Certificates, Bachelor’s Degree, and Graduate Degrees/Certificates is within the section of the catalog.

The regulations section is broken down into different areas:

- Academic Programs of Study
- Registration
- Academic Performance and Progress
- Grading
- Withdrawals
- Degree Applications, Graduation & Commencement
- Academic Standing and Probation
- Academic Misconduct and Grievances
- The Registrar’s Office

NMSU offers Associate, Baccalaureate, Master’s and Doctoral degrees. NMSU also offers Certificates at the associate and graduate levels. Requirements for specific degrees and other designations are set forth by this catalog for the NMSU-Las Cruces (main) campus and the corresponding catalogs for the NMSU Community Colleges (Alamogordo, Carlsbad, Dona Ana and Grants).

Additional Degree Designations
As part of a degree program, students may also earn additional degree designations indicating fields of study such as majors, minors or concentrations. A major is defined as a recognized area of study in which there is an extensive and well-developed curriculum offered at the university, as well as adequate library resources and support services. A minor is based on courses that encompass a recognized field of study outside the student’s major. A concentration is based on a collection of coursework in an area that is part of a major program of study. Degrees and additional designations awarded, limited to majors, minors, and concentrations, will be noted on the student’s transcript.

Catalog Effective Period
Each annual catalog edition is effective Summer Session I through Spring Semester and is considered active for a six year period for all campuses. Curricular requirements (course requirements and number of credits required) for a specific degree or other designation may be met by completing all of the course requirements as set forth by the catalog in effect at first matriculation, or any subsequent catalog, provided the selected catalog is considered active when the requirements for graduation are met. For all other matters, the current catalog is controlling. NMSU reserves the right to withdraw courses at any time, change fees, rules, calendar, curriculum, degree programs, degree requirements, graduation procedures and any other requirements affecting students. Except as otherwise stated here, changes will become effective whenever the proper authorities so determine and will apply to both prospective students and those already enrolled.

Application for Degree/Graduation or Certificate
Degrees and certificates are not awarded automatically upon completion of the requirements of their program of study. In order to receive the degree or certificate, students must submit an application and fee in the semester in which the student expects to graduate or complete the certificate requirements. The deadline for the application and fee is specified in the academic calendar for each semester. All designations earned must be noted in the application. Additional designations may not be added to a degree after it is awarded. Students who will be completing two degrees/certificates in the same semester must apply for graduation and pay the fee for each degree separately. Students who do not meet the necessary degree or certificate requirements or otherwise elect not to graduate in the semester in which the application is filed are required to re-apply in a subsequent semester and pay another fee. Students who wish to participate in commencement must submit a separate application and pay a fee by a separate deadline established by the Registrar. Students applying for graduate degrees must satisfy additional requirements as described in the Master’s and Doctoral Degree sections below.

Multiple Degrees and Designations
A student may earn more than one degree or multiple degree designations by completing all of the requirements in an appropriate catalog for each degree or designation. Students completing requirements for more than one degree must apply for and pay the application fee for each degree to be awarded. Upon completion of all requirements, multiple majors for a single degree (e.g., B.A., Major in Art; Major in Anthropology) and multiple bachelor’s degrees (e.g., B.A. and B.S.) will be noted on the student’s academic record/transcript and may also be granted at one commencement.

Degree Revocation
The Board of Regents reserves the right to revoke a degree should it be determined upon investigation that the degree requirements were not properly met. A degree revocation must be in accordance with NMSU policy and related rules.

Honorary Degrees
Ceremonial Honorary Degrees may be awarded in accordance with NMSU policy and rules as set forth in the NMSU Regents Policy Manual and the related Administrative Rules and Procedures.

Community College Certificate
A Community College may offer two types of certificates, the Certificate of Achievement and/or the Certificate of Completion. Certificates may be awarded independently from any degree program.

Certificate of Achievement
The Certificate of Achievement is a program of study less than 16 credits and is not eligible for Federal financial aid. This Certificate provides employment related and/or career enhancing skills necessary to succeed in a job or a chosen field of study. These courses can be a subset of those required for a corresponding Certificate of Completion or Applied Associates Degree. These certificates are recorded on the student’s transcript.

Certificate of Completion
The Certificate of Completion requires a minimum of 16 credits (other Title IV requirements must be met to be eligible for financial aid) and has been approved through the academic review process. These courses can be a subset of those required for a corresponding Applied Associates Degree. These certificates are recorded on the student’s transcript.
Requirements for certificates are found in the respective catalogs and sections concerning these programs. The following requirements apply to all certificates.

1. **Minimum Credit Hours**: The number of credit hours varies from certificate to certificate. Students must successfully complete the total number of credit hours as outlined in the respective catalogs and sections describing these certificates.

2. **GPA requirement**: Students must have a cumulative GPA of 2.0 or better in all courses taken at NMSU or one of its community colleges.

3. **Residency**: A minimum of 6 credits earned toward the certificate must be completed at NMSU or one of its community colleges. If the certificate requires fewer than 6 credits, all credits must be completed at NMSU or one of its community colleges.

**Associate’s Degree**

Associate’s degrees are of two types. The academic associate’s degree prepares students to transfer to a baccalaureate program and generally includes credits toward the first two years of a four-year degree. Academic associate’s degrees include the Associate of Arts, the Associate of Science, and other named degrees that link to a specific major (the Associate of Education, for example). Other associate degrees, typically called Associate of Applied Science, prepare students for entry into the workforce. Credits for these programs may or may not apply toward a four-year degree. Students interested in transferring to NMSU or another four-year institution should check the appropriate sections of the university catalog for more information.

Requirements for the two-year associate degrees are found in the respective catalogs and sections concerning these degrees. The following requirements apply to all associates degrees:

1. **Minimum Credit Hours**: a minimum of 60 credits (excluding “N” suffix courses). Some programs of study require coursework in excess of the 60 credit-hour minimum.

2. **GPA requirement**: Students must have a cumulative GPA of 2.0 or better in all courses taken at NMSU or one of its community colleges. In addition, students must earn a “C” or better in all classes taken at NMSU or one of its community colleges.

3. **Residency**: A minimum of 15 of the last 30 credits earned toward the degree must be completed at NMSU.

4. **Major**: All requirements for at least one major field of study as specified in the college and departmental sections of the respective catalog.

**Associate Major**

An associate major, consisting of at least 18 credits, may include courses from more than one department. Requirements for the Associate Majors are specified in the respective Community College Catalogs.

**Baccalaureate Degree (Bachelor’s Degree)**

A baccalaureate or bachelor’s degree provides students with a broad educational base as well as knowledge in a specific major field. Each college has unique degree requirements that are listed in the college’s designated section of this catalog. In addition to the College and Department requirements, students must complete each of the following degree requirements for every Bachelor’s Degree awarded by NMSU:

1. **Minimum Credit Hours**: a minimum of 120 credits (excluding “N” suffix courses)

2. **GPA requirement**: a minimum cumulative GPA of 2.0 in all courses taken at NMSU.

3. **New Mexico Common Core**: 35-36 credits of state mandated general education courses (as specified in General Education section); such course are designed with a “G”

4. **New Mexico State University’s Viewing a Wider World**: 6 credits of viewing a wider world courses, such courses are designated with a “V”, or alternatives as specified in the Viewing a Wider World section.

5. **Upper Division Courses**: a minimum of 48 credits in courses numbered 300 or above.

6. **Residency**: Of the last 36 credits earned toward award of the degree:

   a. 30 credits must be completed at NMSU
   b. 21 credits must be upper division (300 or above) and
   c. 12 of the 21 upper division credits must be within the student’s major.

   **NOTE**: colleges or departments may require that more than 12 upper division credits be within the major and they may direct that a certain number of these credits be course specific.

7. **Major**: All requirements for at least one undergraduate major field of study, other than a supplemental major, as specified in the college and departmental sections of the catalog.

**Bachelor’s Degree Designations**

**Undergraduate Major**

An undergraduate major consists of 24 or more credits within the major field, of which 18 credits must be upper-division courses, and may include courses from more than one department. Additional requirements for majors are specified in the college and department’s designated sections of this catalog.

**Supplemental Major**

A supplemental major consists of 24 or more credits of interdisciplinary coursework, of which at least 18 credits must be upper-division (300-499), and no more than 9 credits may be from the student’s major course of study. Additional requirements for supplemental majors are specified in the catalog listing for the field of study.

**Undergraduate Minor**

An undergraduate minor consist of 18 credits of course work, of which 9 credits must be upper-division (300-499). A minor encompasses courses that in a recognized field of study outside the student’s major. At least 12 credits of a minor must be completed at NMSU. Additional requirements for minors are specified in the college and department’s designated sections of this catalog.

**Undergraduate Concentration**

A concentration consists of 12 or more credits of coursework in a specialty area that is related to a specific major field of study. At least 9 of the 12 credits must be upper-division (300-499), and at least 9 credits must be completed at NMSU. Additional requirements for concentrations are specified in the college and department’s designated sections of this catalog.

**Distance Education Bachelor’s Degree Completion Program**

A Bachelor Degree Completion Program allows students who have met the lower division requirements (100 and 200 level) of an undergraduate degree program to complete the remaining upper-division credits (300 and 400 level) through distance delivery courses offered by NMSU.
Las Cruces. Only selected degrees are available as degree completion programs. Students must complete all required lower-division (100 and 200 level) credits before they can be admitted to the Bachelor's Degree Completion Programs. The program(s) normally require two years of upper division (300 and 400 level) coursework.

Graduating with Honors
For information about graduating with Honors, please refer to the Recognition of Academic Achievement section of this catalog.

Graduate Degrees
All graduate degrees are subject to rules and regulations of the Graduate School. Degrees will be certified by the Graduate School only upon the complete review and clearance of the candidate's program of study.

Graduate Degree Designations
Graduate Major
A graduate major may include courses from more than one department, but as a minimum it must consist of at least 30 graduate credits. Additional requirements may be imposed by the State of New Mexico and New Mexico State University as specified in this Catalog.

Graduate Minor
A graduate minor is based on at least 9 graduate credits in courses that encompass a recognized field of study outside the student’s major. Departments may require certain courses be a part of a minor and may exclude other courses.

Graduate Concentrations
A concentration is a collection of coursework in a specific area that is part of a degree program of study at NMSU. At the graduate level at least 9 of these 12 credits must be numbered 500 or above. Only approved concentrations within a students' department or program may be noted on a transcript. Concentrations will not be added to a transcript after a degree is awarded. In order for the approved concentration to be noted on the student’s transcript, the following conditions must be met:

1. Request the concentration at the time they file their official program of study.
2. Identify the concentration on their official Application for Degree.

Graduate Certificates
A Graduate Certificate program requires 12-18 credits of course work that is interrelated and designed to develop a focused skill or area of expertise but does not culminate in the awarding of a degree. Courses that comprise a graduate certificate must be regular approved courses offered by the University and must be numbered 450 or above. A graduate certificate is indicated on the student's transcript.

Master's Degree
New Mexico State University offers both academic and professional master's degrees. A link to the list of all master's degrees is provided in the Graduate School section of this catalog.

Underprepared students may be required to take additional general or discipline-specific undergraduate or graduate courses to prepare them for the advanced academic work necessary for success in graduate level courses in their chosen field. This may result in an extended graduation date.

Admissions to the Master's Degree
The admission of a student into the Graduate School does not imply admission to candidacy for an advanced degree. The major department in which the student intends to become a candidate for a master's degree must determine the student’s ability to pursue studies at the graduate level. Please see the Department(s) for specific requirements.

Program of Study
During the first semester of enrollment each new graduate student should prepare a complete program of study in consultation with the student's advisor.

Application to Candidacy
The program of study will formally list the curriculum requirements for degree completion and is required for application to candidacy. The program of study must be approved by the advisor, department, and academic dean and submitted to the Graduate School. The Program of study may specify the Catalog at the time of graduation, as long as the catalog is considered active. Otherwise, the current Catalog will be listed.

An Application for Admission to Candidacy must be filed with the Graduate School. This must be done before the completion of 12 credits of graduate coursework. The student must have a minimum cumulative GPA of 3.0 at the time the application is submitted. The application may specify the Catalog at the time of graduation, as long as the catalog is considered active. Otherwise, the current Catalog will be listed.

The student’s program of study must:
1. Meet the requirements of the chosen catalog, including the regulations of the Graduate School and of the major department.
2. Be signed by the student, the student’s advisor, department head, minor faculty if applicable, and academic dean.
3. List each course prefix/number, short title, credit hours and grades if available.

If the program of study does not comply with the departmental requirements or the potential degree audit, the program of study must be approved by the Dean of the Graduate School. The Program of Study is not required for master's programs if defined within the Star Degree Audit.

Credit Hour Requirement
A minimum of 30 credits is required for the master's degree. Most master's degrees require at least 15 credits in courses numbered 500 or above. This includes thesis credits for any master's programs that include a thesis option. Master’s programs involving a thesis, must include, either a minimum of 4 credits or a maximum of 6 credits of thesis. Please see the “Thesis” section for more information.

At least 15 credits for the master’s degree must be for work in courses within the student’s department. Additional credits may be selected from other fields to fit into a logical and justifiable program. However, courses that are used to remove deficiencies or satisfy prerequisites cannot be counted as requirements for a master’s degree.

Coursework Requirement
Students must take coursework from a variety of faculty. Students may not take more than half of the minimum credits required for a master’s degree with the same professor, excluding thesis credits. Short courses, of less than one summer session or one semester cannot constitute more than one-fourth of the total requirements for the degree.
Thesis Option

A thesis in the major field is recommended and may be required at the discretion of the department. A minimum of 4 credits and a maximum of 6 credits may be counted toward the requirements for a master’s degree. The final examination shall consist of an oral defense of the student’s thesis as well as a general examination of the candidate’s field of study.

- Continuous Enrollment: once registered, a student must continue to register for a minimum of 1 credit in thesis or graduate coursework each regular semester until the thesis is approved by the Graduate School and the copies have been accepted by the Branson Library binding section.

Graduate Committee for Thesis Option

The graduate committee for the master’s degree consists of a minimum of three faculty members who hold, at least, a master’s degree and meet the following criteria:

1. Committee chair:
   a. Must be from the student’s home department
   b. Must be a graduate faculty member

2. Committee member(s):
   a. May be from outside the student’s home department
   b. Student’s with a declared minor may have the representative from a related area or be appointed by the Dean of the Graduate School.
   c. Must be a graduate faculty member

3. Dean’s Representative:
   a. Must be a representative from a related area or appointed by the Dean of the Graduate School
   b. Must be a graduate faculty member

Finalizing the Master’s Thesis

After successful completion of the final examination, a copy of the thesis must be submitted to the Graduate School for format review no later than the deadline posted to the Graduate School website. The form and style of the thesis must comply with the regulations given in the Guidelines for Preparing a Thesis or Dissertation http://gradschool.nmsu.edu/theses-dissertations/. These guidelines also contain detailed information on the thesis approval process and binding. The thesis is not complete until copies have been accepted for binding by the binding section staff and until the online Library binding form has been completed and received in Branson Library.

Professional Degree and Non-Thesis Final Examination

Each candidate will be given a final examination conducted by their graduate committee in accordance to the schedule provided by the Graduate School. It is the department’s responsibility to ensure that the Report of Results for the Master’s Professional or Non-Thesis Final Exam form is submitted to the Graduate School at least ten working days after the exam.

The final examination format for the professional degrees and non-thesis option will be determined by the department, with the approval of the Dean of the Graduate School. If a department does not specify an examination format, the final examination will consist of an oral defense of the candidate’s field of study.

At the time of the final examination, a graduate student must have a cumulative GPA of at least a 3.0 and must be enrolled for a minimum of one credit hour in the final semester; or if the student is writing a thesis, he or she must have completed all course work for the master’s degree.

NOTE: the cumulative GPA, will be calculated from NMSU graduate coursework only.

Any candidate who fails in the final examination may either:

1. Be granted a second examination, written or oral, after a lapse of at least one semester, only with a recommendation from the student’s advisor andapproval from the Dean of the Graduate School.
2. Be excluded from further candidacy for the degree.
3. Failure in the second examination disqualifies a candidate from obtaining the degree.

Students in professional or non-thesis options may be required to pay a special exam fee in lieu of registering for 1 credit of graduate coursework. Please see the Tuition, Fees and Other Expenses section for more information.

Time Limit

Students must complete the master’s degree program within seven years (or eight successive summers) of the start of the degree, including completion of the master’s thesis or final project. Any coursework more than seven years old at the time of the final examination will not be included in the program. Any exception to the time limit rule must have prior approval of the Dean of the Graduate School.

Master’s Accelerated Program (MAP)

The master’s accelerated program provides an opportunity for academically qualified undergraduate students to begin working on a master’s degree during their junior and senior years while completing a bachelor’s degree. Typically, a bachelor’s degree requires four years to complete and a master’s degree requires an additional two years. The master’s accelerated programs allow students the opportunity to complete a graduate program in an accelerated manner.

Undergraduate students may apply for acceptance to a Master’s Accelerated Program available at New Mexico State University after completing 60 semester hours of undergraduate coursework of which a minimum of 25 semester credit hours must be completed at New Mexico State University and apply towards the undergraduate major. The grade point average must be at a minimum of 3.0; departments participating in the master’s accelerated program may have requirements that exceed these minimum standards. It is the student’s responsibility to meet with their financial aid advisor as financial aid awards may be adjusted by the Financial Aid Office.

The graduate department within the colleges may allow well-prepared advanced students to substitute a maximum of 12 graduate course credits for elective courses in an undergraduate degree program and then subsequently count those same courses as fulfilling graduate requirements in a related graduate program that the institution offers. A graduate program has the discretion to use up to 12 credits of NMSU coursework (450 level or higher) that can logically be applied towards the completion of master’s program of study. Students must receive a grade of B or higher in this coursework to be counted for graduate credit.

To Participate in this program:

1. The student must prior approval by the graduate program
2. Be general or discipline electives in the student’s undergraduate course of study. No required courses from the undergraduate
Interdisciplinary Master's Degree

Interdisciplinary studies, at New Mexico State University, are intended for individuals specializing in programs that require the integration of more than one discipline to fully engage in the field of study. The programs provide a mechanism to address emerging scholarship, innovation and research, as well as, allow graduate students to engage in emerging technologies that optimize their education outside the traditional disciplinary boundaries. An Interdisciplinary study takes advantage of traditional academic training within specific departments and also allows students to customize their own career preparation. In these programs, a coherent common core is expected and is intended to combine existing courses across disciplines to meet unique objectives.

The interdisciplinary studies option should not be used in cases where the applicants' objectives can be realized by admission to a specific department with a degree program, and inclusion of up to two minor courses across disciplines to meet unique objectives.

Admission

Students interested in pursuing an Interdisciplinary Master's Degree (IMAS) degree must meet with the Graduate School for advisement. The advisement session will include information on completing the IMAS admission application:

1. Develop a proposal for interdisciplinary studies
2. Create the IMAS graduate committee
3. Once the student's graduate committee is designated, the committee can require additional materials such as a statement of interest, letters of recommendation, GRE or GMAT scores and a personal interview.
4. Complete the IMAS referral form and procure committee members IMAS program approval.
5. Procure academic department head IMAS referral form approval.
6. Submit IMAS referral form and proposal for interdisciplinary studies to Graduate School for admissions.

Degree(s) Awarded

Students receive a Master of Arts (MA) or a Master of Science (MS) and a concentration in the designated interdisciplinary study area.

Other conditions for being awarded a degree within the interdisciplinary studies program are:

1. The student must present a written description of the program concept consisting of the following, as well as, the designated degree being sought and a name of the interdisciplinary area:
   a. The objective of the program of study which should include, proposed areas of skill development and proposed courses in more than one graduate degree granting department at NMSU.
   b. A justification for not using an existing degree program.

2. The student's program of study must include a minimum of 30 graduate level credits and a maximum of 36 graduate level credits. Students may take six credits in departments that do not grant a graduate degree, but the courses must be numbered 450 or above and be pertinent to the program of study.

3. The majority of the departments involved in the student's program will be master's degree granting departments. The student is expected to take at least 15 credits in the primary area of study within one department. The department selected by the student will receive a copy of the student's application for admissions to the Graduate School. In addition, the student is required to select a minor area of study in another department that consists of at least 9 graduate credit hours.

4. The student will form a committee composed of members of the graduate faculty and select an advisor who will chair the committee. The chair must be from the primary department where the student has taken at least 15 credit hours listed in the proposal submitted. The other committee member must be from the department in which the student has selected a minor area of study from the approved list.

5. The student will be required to submit the Candidacy Form after they have satisfactorily completed 12 credits.

6. The program will meet all requirements of a master's degree, with the interpretation, that "major field" includes courses from two or more departments and in the designated interdisciplinary study area.

7. The program of study will include the completion of a research thesis or project. The work may be submitted in the form of a publishable manuscript, technical report, thesis or creative option.

8. The student may enroll on a part-time basis keeping in mind that coursework cannot be more than seven years old at the time of the final examination.

9. The student will be administered a final comprehensive exam that is consistent with the department selected for the primary area of study. For example, if a department requires a written exam, the student in the interdisciplinary masters will also be required to take a written exam.

10. The final oral comprehensive exam will consist of questions pertinent to the area of study and the defense of the research thesis or project. In both cases, an integrated approach to the areas of study chosen should be followed.

11. All other rules for graduate study at NMSU must be followed.

Thesis/Non-thesis Option

As with any graduate student, the student in interdisciplinary studies can select to follow a thesis or non-thesis option. Students enrolled in the thesis option register for six thesis credits. Students not wishing to follow the thesis option will be required to complete a project report. The project
must reflect the interdisciplinary nature of the program which the student is pursuing.

**Comprehensive Exam**

Students in interdisciplinary studies take a comprehensive exam composed of questions designed by the student’s committee. The committee consists of two individuals in the area of study, the dean’s representative who must be outside of the department/program/interdisciplinary study option, and a committee chair.

**Second Master’s Degree**

A student who has earned one master’s degree at NMSU may be allowed to count a maximum of six semester credits earned on the first degree toward a second master’s degree, if those credits fit into a logical graduate program. The number of shared credits may be increased for joint degree programs.

**Teacher Licensure**

Students wishing to take graduate courses for licensure, renewal of licensure or for personal enrichment must be fully admitted to a department in order to do so. Undeclared students may not register for teacher licensure classes.

Endorsement is available at both the elementary and secondary levels in bilingual education, TESOL (Teaching of English as a Second Language), reading and special education. Endorsement is also available in early childhood education at the elementary level. Contact curric-instr@nmsu.edu for more information.

**Specialist in Education**

The specialist in education degree is available for experienced members of the education profession who have completed the master’s degree and have maintained a 3.3 grade-point average while pursuing this degree or its equivalent. Programs are available in curriculum and instruction, as well as, school psychology. Emphasis is placed on the development of the competencies needed for a professional specialization in a given field. Students must complete the general application for the Graduate School and they should also check with the admitting department for specific departmental requirements.

**Residency and Credit Requirements**

The specialist in education degree requires a minimum of 30 credits beyond the master’s degree, including research, intern experiences and graduate courses. Twenty-four of these credits must be completed at NMSU to meet the campus residency requirements.

Students must maintain a 3.0 GPA, no more than 6 credits of C level work are allowed for this program.

**Program of Study**

It is recommended that during the first semester of enrollment each beginning graduate student should prepare a complete program of study with the student’s advisor. The program of study can be tentative, should be kept in the student’s file within the department, and is not considered an “Application for Admission to Candidacy.”

**Major Field**

All course work taken for the degree should apply directly, through a logical program of study, to the specialty which candidate has selected. Each department is responsible for defining the required sequence of courses.

**Candidacy**

Following the successful completion of 12 credits beyond the master’s degree, the student is eligible for admission to candidacy. With the achievement of candidacy, a committee is appointed to work with the candidate on the remainder of the program. The committee consists of three members of the graduate faculty in the College of Education.

**Internship**

Each candidate will earn from three to six semester credits in an internship. This experience will consist of supervised performance of duties related to the candidate’s specialty. The student’s department will determine the structure of the internship and a research project will be conducted in conjunction with the internship.

**Oral Examination**

The oral examination committee will consist of the student’s committee and a dean’s representative appointed from the graduate faculty by the dean of the Graduate School. This committee will conduct an oral examination at the conclusion of the research project and no earlier than the candidate’s last semester of enrollment.

The examination will consist of a defense of the project along with general questions on subject matter related to the candidate’s field of study. Any candidate who fails the oral examination may upon recommendation of the advisor and with the approval of the graduate dean, be granted a second examination after a lapse of at least one semester. Failure in the second examination disqualifies the candidate from obtaining the degree.

**Time Limit**

The specialist in education degree must be completed within seven years following admission to the program. Students cannot include any course work on their program of study that is more than seven years old at the time of the final oral examination.

**Doctoral Degrees**

The doctoral degree requires significant scholarly study beyond the master’s program.

Prospective candidates are expected to hold bachelors or master’s degrees from accredited institutions, based on curricula that include the prerequisites for graduate study in the department of their subject. To be considered for admission to a doctoral program, the applicant must have a grade-point average of at least 3.0. Prospective candidates are urged to consult the department in which they wish to study for information concerning specific requirements.

**Professional Doctoral Degrees**

**Doctor of Economic Development (DED)**

Students enrolled in the Doctor of Economic Development are required to complete and pass a comprehensive examination. Since a dissertation is not required, students are expected to complete an internship experience and a project paper as defined by their program. They can embark on the project paper once they have completed and passed their comprehensive examination. Students are not required to take 700 level dissertation hours. However, they are expected to complete at least 12 credits at the 600 level including ECDV 694 (Internship) and ECDV 699 (Doctoral Project).

A project paper must be finalized using a similar submission process as the dissertation (see the “Finalizing the Doctoral Dissertation”). On the front page, after the title of the paper, the student should indicate that it is a project paper. Students completing projects papers do not need
to complete the earned doctoral survey. The paper must be submitted to the Graduate School for format review or before the deadline. The form and style of the paper must comply with regulations given in the “Guidelines for Preparing a Thesis or Dissertation.” These guidelines also contain detailed information on the dissertation/project paper-approval process as well as information on binding. Candidates are encouraged to consult with the Graduate School on format and procedures before final typing. The project paper is not complete until copies have been accepted for binding by the staff of Branson Library and until the microfilm agreement form has been completed and received in Branson Library.

**Doctor of Education (Ed.D)**
The degree of Doctor of Education demonstrates proficiency in a program of graduate study in which the emphasis is in preparation for performance in professional education. This program is intended primarily for students pursuing careers in which teaching, administration or school services are predominate rather than those in research. The Ed.D. Degree in curriculum and instruction is offered in the Department of Curriculum and Instruction; the degree in educational administration is offered in the Department of Educational Leadership and Administration.

The requirements for doctoral degrees in the two departments of the College of Education have the following distinguishing elements:

1. The qualifying examination consists of a written and an oral section, both of which are administered prior to admission to the program. Acceptance for doctoral admission is equivalent to the successful completion of the qualifying examination. Residency of at least two consecutive semesters cannot commence until the semester after the qualifying examination is successfully completed.

2. Comprehensive examinations usually are administered three times annually. The written examination tests the major and related areas of concentration and is administered after successful completion of the orals within two weeks’ time. A student who fails any part of the comprehensive examination may present him or herself for re-examination of the failed part of the exam before moving on to the next part.

3. The major area of study must be within the College of Education

A minimum of nine credits constitutes the related area. The courses can be taken in any department of the university with the approval of the student’s committee. The related area must be specifically planned with the major and minor departments in order for the doctoral fields to be mutually supportive. Any transfer credit or predoctoral course work to be included in the related field must have the approval of both the major and minor department at the outset. Specified course work in both research and statistics is required for this degree. Other requirements are described in the departmental sections of this catalog.

**Doctor of Nursing Practice (DNP)**
Students holding a Bachelor’s degree in Nursing are required to complete and pass all required course work for the DNP program, as well as, complete and pass their comprehensive examination. Since a dissertation is not required, they are expected to complete an internship experience and a project paper as defined by their program. They can embark on the project paper once they have completed and passed their comprehensive examination. They are not required to take 700 level dissertation hours. However, they are expected to complete at least 12 credits at the 600 level including NURS 698 (Advanced Clinical immersion) credits sufficient to complete the DNP Final Project.

Students who hold a Master’s of Science in Nursing are required to complete the following:

1. All course work requirements
2. Their comprehensive exam (with passing marks)
3. The DNP Project.

Post-MSN DNP students must complete at least 6 credits at the 600 level, including NURS 698 credits sufficient to finish the DNP Project. Finalized projects must be uploaded to a national DNP Project repository approved by the Graduate Faculty of the School of Nursing in order to achieve the DNP degree.

**Doctor of Philosophy (Ph.D.)**
The Doctor of Philosophy degree requires distinguished attainment in both scholarship and original research. The doctoral degree requires significant scholarly study beyond the master’s that is tailored to the needs and interests of the student. The degree is granted in recognition of the candidate’s high attainments and ability in the special field, shown by work on the required examinations covering both the general and the special fields. The individualized program of study is designed to meet the campus residency requirement, includes a minimum of 30 graduate credits, and includes the preparation of a dissertation. A candidate for the Ph.D. degree is expected to maintain a higher level of work than the grade-point average of 3.0, plus at least 18 credits of dissertation work (700-level courses).

**Interdisciplinary Doctorate**
Students interested in pursuing an Interdisciplinary Doctorate (IDOC) degree program must meet with the Graduate School for advisement. The advisement session will include information on completing the IDOC admission application.

The following requirements for admission to the interdisciplinary doctorate degree program are:

1. Students wishing to study in the interdisciplinary doctoral degree program must apply and be accepted into a doctorate-granting department.

2. A master’s degree or equivalent program of study that includes at least 30 credits of graduate course work with a minimum cumulative GPA of 3.0.

3. Twelve credits of graduate course work must be completed at NMSU in order to apply for admission into the interdisciplinary doctorate degree program. Additional course work is required for degree completion.

4. Evidence of outstanding academic achievement in graduate school.

5. A written description of the program concept prepared by the student consisting of:

   a. Areas in which competency is required
   b. Purposed readings and course work and how these relate to required competencies
   c. Objectives and an outline for thesis research
   d. Justification for not using an existing departmental degree program

6. Student must select an advisor from his/her department to help structure and chair a committee consisting of at least five faculty members from the graduate faculty list who are willing to work on the interdisciplinary degree program. The committee must include at least two members from each of the two doctorate-granting
departments. The committee chair will convene a meeting to review and approve the proposed program.

7. The Graduate School will send an Admission Referral document, signed by all the committee members, to the heads of all the departments from which the student proposes to use more than 8 credits of course work, or from the department which the faculty are requested to serve on the proposed committee.

8. Once the Admission Referral document has been approved by all departments, the committee chair will convene a meeting of the committee to review the student’s program and make changes as necessary. In addition, the committee will set the format and date for the qualifying exam. An effort should be made to incorporate the interdisciplinary nature of the program into the qualifying exam.

9. Students have satisfied the requirements for admission to the program once the qualifying exam has been passed and the respective department heads approve the Admission Referral memorandum. Formal acceptance into a doctoral program may be required in order to receive financial assistance.

10. The number of courses required for degree completion will vary depending on the student’s program of study, please see the department for specific requirements. However, Interdisciplinary doctorate degree students must meet the requirements for residency, registration, the comprehensive examination, the Final Examination, the dissertation and the declaration of approved minor.

11. The dissertation work shall include at least 18 credits of a 700-level course.

Completing your Doctoral Degree Program
Any student who fails to abide by the regulations in this section will be considered withdrawn from the university. In order to resume their studies, the student must formally apply for readmission to the Graduate School and satisfy any requirements that are in effect at the time of reapplication.

Declaration of Approved Minor
Any doctoral applicant for candidacy may declare up to two approved minors in addition to the major area of study. Demonstration of competency in the minor area will be required at both comprehensive and final examinations.

Qualifying Examination
Doctoral students must pass a qualifying examination that is scheduled by the student’s advisor and is administered by the major department. Its purpose is to determine the areas in which the student shows strength or weakness, as well as the ability to assimilate subject matter presented at the graduate level. A student may not register for dissertation credits prior to the successful completion of the qualifying examination.

The following conditions apply to students who wish to take the qualifying examination:

1. For students who enter the Graduate School with little or no previous graduate experience but wish to proceed directly to the doctorate, the qualifying examination should be taken after 12 credits of graduate work.
2. For students who enter with a master’s degree or equivalent from another university, or another department, the qualifying examination should be taken before the completion of one semester of graduate work.
3. For students who earn their master’s degree at New Mexico State University and will continue in the same department, the department may allow the master’s final examination to serve as the doctoral qualifying examination or may require a separate examination.

Based on the result of the qualifying examination, the department will take one or more of the following actions:

1. Admit the student to further work toward the doctorate
2. Recommend that the program be limited to the master’s degree
3. Recommend a re-evaluation of the student’s progress after the lapse of one semester
4. Recommend a discontinuation of graduate work

In all cases, the Graduate School shall be notified by the department of the results of the qualifying examination.

Students will be admitted to the doctoral program once the qualifying examination is passed. The student’s advisor and department head will then appoint the doctoral committee to prepare the student’s preliminary doctorate program of study. The student must submit the program of study to the Graduate School immediately following admission into the doctoral program and before registering for additional coursework.

Doctoral Graduate Committee
The doctoral committee will be composed of at least four members of the graduate faculty who hold doctoral degrees. The following rules apply to the composition of the committee:

- The committee chair must be from a discipline within the student’s major area.
- At least one additional member of the committee must also be from a discipline within the student’s major area.
- If an approved minor is declared, at least one (but no more than two) members of the committee must be from the minor area.
- At least three committee members must be members of the graduate faculty and be from a doctorate-granting department.
- Only one member may be outside of the student’s department.
- One member of the committee must serve as the dean’s representative. In programs where more than one department participates, the dean’s representative may not be from any of those departments. The dean’s representative may be one of the following:
  - the member from the related area
  - a member from the minor area
  - An independent member, not from the student’s department, that is appointed by the Dean of the Graduate School.

Departments may structure committees that include more than the minimum number of members, as long as the following conditions are satisfied. No changes can be made to the doctoral committee membership without prior approval from the Dean of the Graduate School.

Additional voting and nonvoting members may be any person approved or appointed by the Dean of the Graduate School.

All members of the committee will attend the comprehensive oral and final defense for the student’s dissertation.

Program of Study
Students should file the Program of Study Form once they have:

- Completed 12 graduate credits while at NMSU that are beyond the master’s degree
Advancement to candidacy, the student is cleared for the final stages of the graduate program which may include a dissertation, project or written examination.

For advancement to candidacy the following criteria must be met:

1. Successful completion of the comprehensive examination
2. Recommendation of the graduate committee
3. Approval of the Dean of the Graduate School

Upon receiving advancement to candidacy, students must establish residency and follow the Dissertation Registration Requirements (see Residency Requirements below).

Residency Requirements
The minimum campus residency requirements for the doctoral degree include enrollment in a minimum of 9 credit hours of program course work, including a minimum of 3 credit hours of dissertation, in at least two semesters of classes taught at NMSU. In some cases the minimum credit hour enrollment for the two semesters required to establish residency may vary based on the instructional delivery of the program, and must have prior approval from the Dean of the Graduate School.

Dissertation Registration during Fall/Spring Sessions
After becoming a candidate, students must continue to register for at least 3 credits of dissertation or graduate course work, each spring/ fall semester until the dissertation is approved by the Graduate School and the dissertation format review has been completed. The total number of dissertation hours must be 18 credits. The doctoral committee can impose additional requirements for courses numbered 700.

A student who fails to abide by these regulations will be considered withdrawn from the university and in order to resume studies, must formally apply for readmission and satisfy the requirements in effect at the time of reapplication.

Dissertation Registration during Summer Sessions
If the final examination is to be held during the summer or the dissertation is to be completed during the summer, students must register for one credit during the summer session in which the final examination will be held or the dissertation will be completed.

Dissertation Leave of Absence
Students may seek a leave of absence from their dissertation. A leave of absence requires that a student must get prior approval from the Dean of the Graduate School, which means the student must receive permission for the leave of absence before discontinuing their formal studies.

Final Examination
NOTE: If more than five years have elapsed since the date of the student’s passed comprehensive examination, the candidate will be required to take another comprehensive examination before admission to the final examination.

Every student working toward the doctoral degree will submit a dissertation embodying the results of original research. The dissertation is expected to demonstrate the student’s ability in independent investigation and to be a contribution to human knowledge. The dissertation shall display a mastery of the literature of the subject field, present an organized and coherent development of ideas with a clear exposition of results, and provide a critique of the limits and validity of the student’s conclusions.

When a complete draft of the dissertation has been prepared, the student’s doctoral committee (appointed after the qualifying
examination) will conduct the final examination. The final examination is concerned primarily with the research work of the student as embodied in the dissertation, but it may be much broader and extend over the candidate’s entire field of study. The intention of the final examination is to verify that the candidate has a satisfactory grasp of the major subject as a whole and has a general acquaintance with the fields of knowledge represented by the course of study. The final examination is oral and is open to the public.

The final examination must be completed in accordance with the schedule provided in the academic calendar. Ten working days before the examination is taken the department must submit the form requesting this examination to the Graduate School. This form may be found on the Web at http://gradschool.nmsu.edu/graduate-forms/ and is also available from the Graduate School and departmental offices.

Students must ensure that each member of the examining committee receives a copy of the dissertation, no later than seven working days before the date of the final examination.

Any candidate who fails the final oral examination may either be terminated from the doctoral program or upon recommendation of the committee and approval of the Dean of the Graduate School, be granted a second examination after a lapse of at least one semester. Failure in the second examination disqualifies the candidate from obtaining the degree.

Finalizing the Doctoral Dissertation

After successful completion of the final examination, a copy of the dissertation must be submitted to the Graduate School for format review no later than the deadline posted to the Graduate School website.

The form and style of the dissertation must comply with the regulations given in the Guidelines for Preparing a Thesis or Dissertation http://gradschool.nmsu.edu/theses-dissertations/. These guidelines also contain detailed information on the dissertation approval process and binding. Candidates are encouraged to consult with the Graduate School on format, deadlines and procedures before final typing.

The dissertation is not complete until copies have been accepted for binding by the binding section staff and until the UMI agreement form and the online Library binding form has been completed and received in Branson Library.

Registration at NMSU is a process that includes: (1) Academic advising with a faculty or staff member, (2) Registering for classes, online or with your academic advisor, and (3) Paying the tuition and fee bill. For first time freshman and transfer undergraduate students (at the Las Cruces campus), the registration process is through the Aggie Welcome/Transfer Student Orientations. For currently enrolled undergraduate students and all Graduate students registration is through your advisor or online through the myNMSU portal. Detailed instructions for registration are provided in the online registration guide maintained by the University Registrar’s office. For questions about registration which are not addressed on the website, please contact the University Registrar’s Office (http://registrar.nmsu.edu).

Admission Requirement

No person will be will be allowed to register for courses until formally admitted to NMSU through the Community College, International Programs, Undergraduate or Graduate Admissions processes.

Course Schedule

Each semester and summer session, the Registrar’s office provides an online course schedule which can be accessed through myNMSU or the NMSU website. Note that not all courses listed in this catalog are offered every semester.

Registration Schedule by Classification

Several groups of students (e.g. Crimson Scholars, Students with Disabilities, Veterans) receive priority dates for course registration. For other students, registration dates are determined by the student’s current classification at the time of registration. A student’s classification is determined by the number of credits completed. Freshmen have less than 28 completed credits. Sophomore rank is achieved with successful completion of 28 credits; junior rank 60 credits; senior rank 90 credits.

University Credits

The unit of university credit is the semester hour, which is based upon one hour of lecture class or a minimum of two hours of practice/lab per week for one semester and assumes substantial additional out of class work by the student. The number of credits associated with each course is indicated in the course schedule.

Course Load for Undergraduate Students

The full-time course load in a regular semester (fall or spring) for a main campus undergraduate students is 12-18 credits. A full-time course load for a summer term is 6 credits per session for a total of 12 credit hours. Some scholarships have a 15 credit course load eligibility requirement. Each student is responsible for meeting their own scholarship eligibility requirements.

An overload is classified as more than 18 credits for a regular semester and more than 12 credits for the summer term. A one-credit course in physical education will not create an overload. Registration for a course overload requires written permission from the Associate Dean for Academics in the student’s college. A “Petition for Course Overload” form is available from the Registrar’s office or website. Freshmen and students with a grade of D or F, or a cumulative grade-point average of less than 2.5, in either of the last two semesters, are not eligible for overloads. Concurrent enrollment in non-NMSU courses at other post-secondary institutions requires prior approval from the Associate Dean for Academics in the student’s college, and these courses are counted as part of a student’s class load.

Course Load for Graduate Students

A full-time course load is 9 credits, with a maximum of 15 graded credits for a regular semester (fall or spring) and a maximum of 9 graded credits for the summer session.

Course Numbering

The course numbering system at NMSU indicates the level of the course as follows:

Undergraduate courses are assigned numbers 100-499. Courses numbered 100-299 are referred to as “lower-division courses” and are primarily for Freshman and Sophomore level students. Courses numbered 300-499 are referred to as “upper-division courses” and are primarily for Junior and Senior level students.

Graduate courses are assigned numbers 500 or greater. Courses numbered 500-599 are primarily for graduate students working on a master’s degree. Courses numbered 600-700 are primarily for students working on a doctoral degree.

Some graduate programs may accept courses numbered 450-499 for graduate credit. Graduate students should confirm eligibility with their program department head.
Prerequisites and Corequisites
Some courses require advance or concurrently acquired specific knowledge and skills. Prerequisite(s) and corequisite(s) for each course are indicated in the course description section of this catalog. Students must have completed (or be presently enrolled in the prerequisite(s)) courses in order to register for a course with prerequisites. Where a student was allowed to register for a course while completing the prerequisite(s), and then subsequently fails to successfully complete a prerequisite course, the student shall be dis-enrolled from the course requiring the prerequisite. In the case of a corequisite, a student must enroll in the courses during the same semester. In some instances, where a course has an enforced “pre/corequisite” the student can elect to either take the requirement before registering for the course, or take the courses at the same time.

Registration Changes
Subject to any registration “holds” and any applicable deadlines, students may change their course registration online. Caution should be exercised as registration changes may negatively impact eligibility for scholarships, financial aid or athletic participation, the student’s ability to progress through their degree program in a timely manner, and the student’s obligations with respect to tuition and fees.

The Registrar’s office publishes an online schedule of “Important Dates for Students” for each semester. The students is responsible for reviewing and adhering to the Important Dates including the deadlines to add, drop or withdraw from course(s)for the relevant semester.

Adding Courses: There are two different types of deadlines for adding courses:

1. **Last day to add a class without instructor’s signature** - during the period through this date courses may be added online through myNMSU, or through your advisor (if necessary).
2. **Last day to add a class with instructor’s signature** - during the period through this date courses may only be added with “Change of Schedule” form signed by the instructor (available online through the Registrar’s Office).

* Students taking classes online and who do not live in the Las Cruces Area must email the instructor, using the NMSU email, in order to get permission to be added to the course. If the instructor approves the addition, the approved response must be sent to either the student’s advisor or to registrar@nmsu.edu with the student’s name, ID number and course CRN number they are wanting to add.

Withdrawing from Courses: There are two different types of deadlines for withdrawing from courses:

1. **Last day to drop without a “W” grade** – during the period through this date, the student can drop the course and not have it appear on their official transcript in any form, and the student will have no financial obligation related to the course (students will receive a 100% refund if tuition has been paid for the course).
2. **Last day to drop with a “W” grade** – during the period through this date, the student can withdraw from the course, but the course will appear on their official transcript with the withdrawal (W) designation as the grade, and the student will be responsible for the full tuition and fees related to that course.

Students are responsible for initiating official withdrawal from any course(s) which the student will not complete. Students who experience extraordinary circumstances that prevent timely registration changes should consult with their Academic Associate Dean or the Registrar.

For more information about the process for adding or withdrawing from a course(s), please speak with your advisor or contact the Registrar’s Office.

Any student attending under Veteran Educational Assistance must notify the Military and Veteran’s Programs office before processing registration changes to determine if changes will enrollment status or benefits.

A student found insufficiently prepared to carry a regular course may be transferred to a more elementary course in the same subject any day before the last day to withdraw from an individual course.

**Waitlisting**
Waitlisting is available for all courses across the NMSU system, except for labs that are linked to a specific lecture class. Waitlisting is an electronic list of students who are waiting to register for a filled course.

Once students are put onto the waitlist, the process to get into that course is as follows:

1. A currently enrolled student must drop the course for a seat to become available.
2. The first student on the waitlist is notified through their NMSU email.
3. The notified student has 24 hours to login to their myNMSU and register themselves for the class.
4. If the first student fails to register within their allotted 24 hours, then the next student on the waitlist is notified. This continues until the empty seat is filled.

A student who fails to register for the class during their allotted 24 hours and is automatically dropped from the waitlist can add themselves back onto the bottom of the waitlist for that course.

Students cannot be added to the waitlist after the first day of classes. Instructor overrides can only be made after the second day of class, at this point an instructor’s signature (add/drop/withdraw slip) is required for any registration changes.

**Graduate Registration Requirements for Summer**
Students who have scheduled their final examination, or who are completing their thesis during a summer session, must be registered for one credit hour during the same summer session. In order to graduate during a summer session, the student must have filed the Application for Degree by the deadline posted on the Academic Calendar.

**Repeating Courses for Undergraduate Students**
Undergraduate students may repeat courses, for a change in grade, when the original grade earned was a D or F. Once a passing grade of B or better is earned, the course will then be substituted in the calculation of the grade-point-average and students will no longer be able to repeat that course for change of grade purposes. Both the original grade and the substituted grade will show on the students transcript.

If the student’s original grade was a D and he/she repeats the course, but receives a F, the second grade will not be substituted for the original.

Repeat options apply only to eligible courses that were completed prior to the time a student was awarded a degree at NMSU.

**Repeating Courses for Graduate Students**
Graduate student may repeat courses to achieve a higher grade, but the grade assigned for each attempt will remain on the transcript and will be counted in the grade point average calculation.
Substitutions and Waivers
Students registering for their final semester must have all substitutions and waivers of required courses approved before the last day of registration, during the semester in which the student expects to obtain the degree.

Auditing a Course (No Credit)
An audited course is one in which the student registers for the learning experience but does not seek to earn academic credit for the course. A student seeking to audit a course must register and pay tuition and fees for the course and have the consent of the instructor to take the class in audit form. A student who has registered to audit a course may be dis-enrolled from the course at any time before the registration deadline expires if necessary to accommodate a student taking the course for credit. After the last day to register, the student cannot change the course an audited course to a for credit course.

Audited courses are not used in determining a maximum class load (overload) for undergraduate students in good academic standing, however, the audited course will be included for graduate students and undergraduate students who are on academic probation.

Attendance and Student Performance
Academic success is closely correlated to student participation and attendance. Accordingly, students are expected to regularly attend all their classes. Each course instructor will establish the specific attendance and course requirements. Only students who are currently enrolled in a course for either credit or audit are permitted to officially attend the classes. However, individual instructors may allow an occasional visitor and may allow a student who officially withdrew from the course to continue to attend for the remainder of the semester.

Absences from Class and Failure to Complete Assignments
Students who must miss class due to accident or illness, or due to other circumstances beyond their control should consult the course syllabus and the instructor for guidance. Students may be administratively dis-enrolled from a course due to excessive absences (consecutive absences in excess of the number of class meetings held within a week or any number of absences which are impairing the student’s performance), or for persistent failure to complete assignments. In such cases, the instructor may recommend administrative dis-enrollment by providing a completed “Student Absence/Lack of Progress Report” form to the Academic Associate Dean. If the Academic Associate Dean agrees with the recommendation of the course instructor, the student will be dis-enrolled from the course. A dis-enrollment has the same effect as a voluntary withdrawal (see “Registration Changes” in this catalog). Any student who has been administratively dis-enrolled from a class may appeal that decision to the Dean of the College where the course was offered within 10 days after notification of the dis-enrollment.

Any absences due to the student’s participation in a university sponsored event (e.g. ASNMSU president representing NMSU at legislative session, student athletes competing in NMSU scheduled athletic events, or students attending educational field trips and conferences) will be excused and deemed an “Authorized Absence”. Authorized absences do not relieve the student of the course assignments or responsibilities and instructors may require students to complete course work before the absence. Prior to the student’s absence, the sponsoring department will provide the instructor with written notice of the dates of expected absence.

Classroom Conduct
Each instructor has the authority to establish and enforce reasonable rules of conduct in their courses. A student who engages in behavior that interferes with the educational environment of the class may be administratively dis-enrolled with the approval of the academic department head and academic associate dean for the course, and with notification to the Provost. Any student who has been administratively dis-enrolled from a class may appeal that decision to the Dean of the College where the course was offered within 10 days after notification of the dis-enrollment.

Student Performance Assessment
Individual student performance and learning outcomes in a course are measured and evaluated by the course instructor and reported to the student in the form of grades. Each instructor has the authority to establish assignments and other assessments (such as exams and quizzes) and to assign grades based on the student’s performance on those assessments. Final grades for the course are determined by the instructor and reported to the University registrar as described in grading section of this catalog. Any student who believes that their academic performance has been evaluated unfairly may appeal the grade through the University’s Academic Appeals process as provided in this Catalog.

Academic Program Assessment
New Mexico State University is committed to providing its students with a quality education and a supportive learning environment. Academic Program Assessment is a continuous improvement process achieved by identifying a program’s desired learning outcomes, evaluating the extent to which those outcomes are collectively achieved by students in the program, and then implementing changes to enhance and improve the collective program outcomes. For assessment to be effective, students must be actively aware of and engaged in assessment activities.

Academic Program Assessment requires participation of students who are expected to provide feedback on personal, professional and academic development and to participate in a variety of assessment exercises. Assessment activities may be a part of regular graded course assignments, or may require students to engage in other activities. Assessments may include course projects, exams, exit interviews, standardized tests, surveys, focus groups, etc. Data gathered through these assessments is published only in aggregate form. Learn more about NMSU’s Academic Program Assessment at https://assessment.nmsu.edu/

Exam Week and Final Examinations
NMSU designates the last week of each semester as “Exam Week” during which each course has only a single 2 hour meeting time for a mandatory culminating activity which may be a final examination or some other course related activity. The Registrar’s Office establishes the Final Examination Schedule for each semester (http://registrar.nmsu.edu/final-examination-schedule/). Examinations are typically held in the course’s usual lecture/lab room. Some departments hold Departmental Exams where all students for all sections of a particular course are required to take the final examination simultaneously. The date, time and location of the Departmental Exams are indicated on the Final Examination Schedule. For courses that were not scheduled to meet at the specific times listed under “Regular Class Time” on the Registrar’s
Final Examination Schedule, the instructor and course department coordinate examination dates, times and locations with NMSU’s Academic Scheduling office (575) 646-4790. Final exams for weekend courses are held at the regular class period on the last day of class.

The final exam or culminating activity must not be rescheduled for a different date, time or location, except with permission of the department head and the unanimous consent of the enrolled students. During the week before Exam Week, instructors are not allowed to hold examinations lasting more than one class period.

Any student having more than three examinations scheduled in any one day may, no later than the week prior to exam week, notify the instructor of the examination scheduled latest in the day to obtain an alternative date for that examination. (If the fourth exam is a departmental exam, the instructor of the third exam will make alternate arrangements for that exam upon request.)

Students who believe that their instructor(s) have not honored Exam Week requirements may appeal to the instructor’s department head.

Developmental Evaluation

The academic skill level of all entering first-time students at the time of registration is evaluated based upon ACT scores, SAT test scores, and if available, the NMSU Math Placement Exam score. The student’s eligibility to enroll in university level English and Mathematics courses is dependent upon this evaluation. Any new student may choose to take the MPE to test towards a higher math placement than indicated by the ACT and high school graduation scores. All new engineering students must take the MPE. More information on the MPE is available from the Department of Mathematics website. https://www.math.nmsu.edu/msc/MPE/overview.html. Students who have not demonstrated adequate preparation for university level courses are required to take developmental courses. Developmental courses are included on the transcript and will be included in the calculation of the GPA, but the developmental course credits do not count towards a degree.

- **Developmental Courses in English** - Students who score below 15 on the ACT English exam will be placed into appropriate developmental English course or course(s) (prefix CCDE) before enrolling in ENGL 111G (http://nmsu.smartcatalogiq.com/en/2016-2017/Undergraduate-Catalog/Courses/ENGL-ENGLISH/100/ENGL-111G). Students who score below 13 on the ACT English will require two developmental courses before enrolling in ENGL 111G (http://nmsu.smartcatalogiq.com/en/2016-2017/Undergraduate-Catalog/Courses/ENGL-ENGLISH/100/ENGL-111G).

- **Developmental Courses in Math** - Students who score below 23 on the ACT mathematics exam, and who did not achieve a qualifying score on the NMSU Math Placement Exam (MPE), will be placed into the appropriate development mathematics course or courses (prefix CCDM). Placement into CCDM course(s) is dependent upon the student’s ACT score and high school GPA. Students are not allowed to enroll in any other math courses at NMSU until successfully completing any requisite CCDM course(s). (As an alternative to the math developmental course(s), students may complete AS 103 with a C- or better, which does earn credit toward a degree.)

Basic Academic Skills

All undergraduate students must demonstrate Basic Academic Skills in both English and mathematics before enrolling in any upper-division course (numbered 300 or higher). These requirements ensure that each student in the upper-division courses has the ability to succeed without compromising the learning experience of other students. The completion of the Basic Academic Skills requirements does not necessarily result in the award of academic credit nor satisfaction of university general education requirements in English and mathematics. (Students should consult the General Education Courses and Requirements section in this chapter for these requirements.)

Transfer students with 45 or more credits are allowed to enroll in upper-division courses for only one semester before satisfying the Basic Academic Skills requirements. The Basic Academic Skills requirements may be satisfied in a variety of different ways as listed below:

**English Basic Skill Demonstration Options (achieve one of the following):**
- ACT English Score of 30
- Coursework - ENGL 111G, or equivalent, completed with a grade of C- or higher.

Equivalents: the following are deemed equivalents to ENGL 111G for the purpose of satisfying Basic Academic Skills in English:
- ENGL 111H – completed with a grade of C- or higher
- ENGL 111 M - required for International students who took the TOEFL examination
- CLEP Exam score of 57 or higher in freshman college composition
- English Advanced Placement (AP) Exam score of 3, 4, or 5
- English Composition Transfer Credits - 3 or more credits with a grade of C- or above, transferred from accredited post-secondary institutions (International students may be required to take ENGL 111 M as noted above.)

**Credits from Non-accredited Institutions** - As a general rule, NMSU does not accept credits from non-accredited institutions. Students with 3 or more credits of college-level English composition with a grade of C- or higher from a non-accredited institution may, however, challenge the Basic Academic Skills requirement in English and ENGL 111G course requirement by submitting a theme paper written under the supervision of, and demonstrating achievement of English 111G learning outcomes as determined by the Department of English.

**Mathematics Basic Skill Demonstration Options (achieve one of the following):**
- ACT Mathematics Score of 23
- Coursework – any one of the following courses or course combinations completed with a grade of C- or higher in each course:
  - Any mathematics course numbered 120 or above (prefix MATH)
• Basic Skills Exam Passing Score - offered twice a semester by the Department of Mathematical Sciences
• Calculus AB, Calculus BC or Statistics Advanced Placement (AP) Exam score of 3, 4, or 5

IMPORTANT NOTE: Basic Academic Skills Demonstration fulfillment options may not appear on the transcript, result in the award of academic credit, or satisfy general education requirements. The Basic Academic Skills requirements are used solely for the purpose of determining eligibility for enrollment in upper-division courses. All students should seek to complete the Basic Academic Skills requirements as early in their academic program as possible. Students who postpone completion of Basic Academic Skills may be unable to progress toward degree completion in a timely manner.

Independent Study and Directed Reading Courses

Independent study courses and directed reading (other than those designated in the catalog with a subtitle), are for students capable of and sufficiently motivated to undertake self-directed study with limited oversight of a faculty member. Only students who have completed at least 28 credits at NMSU under traditional grading, with a cumulative GPA of 2.5 or better, are eligible to enroll independent study courses. No student is entitled to enroll in independent study and enrollment requires the consent of an instructor who agrees to supervise and evaluate the student’s learning activities in the course. Students seeking enrollment in an independent study course should prepare an independent study proposal to present to individual faculty member(s) in the relevant discipline for consideration. At a minimum, the proposal should include the topic of study, a brief survey of the literature or other resources on the topic, and a description of the proposed written product or other tangible outcome of the independent study. The relevant academic department for the discipline may have additional requirements. Each college determines the maximum number of credits that may be earned in independent study courses.

Adjusted Credit Option

The adjusted credit option provides eligible undergraduate students who earned a low grade-point average (less than 2.0 cumulative) during their first few semesters to reset their GPA calculation. This option may be used only once and is not reversible. These are the consequences of exercising the Adjusted Credit Option:

1. All of the student’s academic history pre-dating the request, including all NMSU course credits previously attempted or completed, transfer coursework, CLEP, ACT, advanced placement, special examination, and/or military service are included in the adjustment and designated as “ADJUSTED CREDITS” on the transcript. These credits are no longer be included in the calculation of the cumulative grade point average.
2. Courses carrying an academic grade of S, CR, C- or better, earned prior to the grading period in which the student requested this option, are treated as earned academic credit and need not be repeated, except where a higher grade is required in the student’s academic program.
3. Courses carrying an academic grade of U, CD, D or F, earned prior to the grading period in which the student requested this option, remain on the student’s transcript, but no academic credit is provided for these courses. The student must repeat these courses to obtain academic credit.
4. The student’s academic transcripts will continue to reflect all coursework, including courses falling under the adjusted credit option. In no circumstances will a transcript be issued that does not include all courses attempted at this university.
5. The student’s current academic status, eligibility for employment, and financial aid may be impacted. Probationary status and eligibility for on-campus employment are not affected by the exercise of the adjusted credit option.
6. The repeat rule for courses starts anew.
7. The student will not be eligible for award of an associate degree until earning thirty (30) or more additional credits after exercise of the Option.
8. The student is eligible for University honors at graduation upon completing a minimum of 60 academic credits at NMSU, after the adjusted credit option is exercised, with a resulting grade point average which satisfies University regulations for honors.

After carefully considering the consequences indicated above, eligible students may exercise the Adjusted Credit Option by paying a fee of $10 and submitting an adjusted credit option application to the Office of the Registrar. The Option can only be exercised during the fall or spring semester before the last day to withdraw from the university. Application forms are available in the offices of the academic deans. Only students meeting the following criteria are eligible to exercise the Option:

1. No awarded baccalaureate degree
2. Enrolled as a degree-seeking or non-degree undergraduate student
3. Cumulative grade-point average of less than 2.0 at NMSU
4. Fewer than 60 credits accumulated (including both transfer and NMSU credits)

Credit by College Level Examination Program (CLEP)

Prior to or during a student’s enrollment at NMSU, credits may be earned through the College Level Examination Program (CLEP) of the College Entrance Examination Board. CLEP is a national program of credit by examination that offers the opportunity to earn credits for college level achievement wherever or however the student learned. Earned CLEP credit will be treated as transfer credit without a grade, will count toward graduation, and may be used in fulfilling specific curriculum requirements. A current NMSU CLEP policy as well as test schedule information is available through Testing Services DACC East Mesa, RM 210. Testing Services may be reached at: (575) 528-7294.

Credit by Examination

Any enrolled student with a cumulative GPA of at least 2.0 currently attending classes may, with permission of the appropriate department, challenge by examination any undergraduate course in which credit has not been previously earned except an independent study, research or reading course, or any foreign language course that precedes the final course in the lower-division sequence. The manner of administering the examination and granting permission shall be determined by the department in which the course is being challenged. Students may not enroll in a single course, challenge it by examination, and drop it during the drop/add period, unless they enroll in an additional course. In exceptional cases in which a student demonstrates outstanding ability in a course in which he is already registered, he may be permitted to challenge the course. A student desiring to apply for special examination may obtain the necessary forms from the Office of the Registrar. The fee for challenging a course is the same as the approved tuition rate. Courses may not be challenged under the S/U option. The special examination
privilege is based on the principle that the student, exclusively, has the responsibility for preparing for a special examination.

Credit for Military Service
New Mexico State University will award academic credit to United States military personnel for courses and Military Occupational Specialties (MOS), based on the American Council of Education Guide (ACE) as well as through national standardized tests, such as CLEP, AP, PEP and DANTES. Credit for military training is in accordance with NMSU Faculty Senate Legislation Proposition 24-07/08, which was passed in May 2008. Military Training and Military Occupational Specialties (MOS) must have a recommendation evaluation by ACE (in the ACE Guide) for credit to be awarded. Courses accepted for transfer credit become part of the student’s official NMSU transcript and academic record. If a student wishes to appeal a decision regarding the acceptance of military training/education and/or MOS for academic credit, the student must submit a written statement of appeal to the Dean of the College to which the student has applied. The Dean will review the merits of the appeal and render a decision. The decision of the Dean is final.

Only Primary MOS (s) are eligible for academic credit in the initial review and evaluation. Credit for Duty and/or Secondary MOS may be eligible for academic credit if the student petitions the college’s Associate Dean. Primary MOS is the primary specialty of a soldier and reflects the broadest and most in-depth scope of military experience. Veterans, active-duty personnel, National Guard and Reservists who are current students or students applying for admission to New Mexico State University may be granted academic credit on a case-by-case basis upon evaluation of military transcripts - the Joint Service Transcript (jst.doded.mil) and the Community College of the Air Force transcripts. Course equivalencies and credit hours awarded for a particular NMSU degree are determined by colleges and/or academic departments. Credit hours may be awarded for specific courses toward degree requirement, or as elective credit. The number of credit hours awarded will be determined by the college and/or academic department.


Graduate Course Deficiencies
Students who have been admitted with departmental deficiencies may be required to take diagnostics tests and additional qualifying examinations. They must complete satisfactorily, in a manner specified by the major department, all undergraduate course deficiencies as prescribed by the department responsible for the graduate program. Courses taken to satisfy deficiencies will be listed on the undergraduate transcript; however, these course grades will not be calculated in the student’s graduate GPA or graduate hours. With the permission of the student’s advisor and the head of department, courses to meet undergraduate deficiencies may be taken under an S/U option (with S being a grade satisfactory to the professor), and such courses will not affect the maximum number of S/U graduate credits permitted.

Short Courses for Graduate Students
Short course(s) that are numbered 450 and above have been approved to carry graduate credit. Graduate students must be registered for the short course(s) to receive graduate credit. Concurrent enrollment of graduate students in regular and short courses for the fall/spring semesters is allowed, provided the combined total credits does not exceed 15. All short courses carrying one semester credit will be graded on an S/U basis and these credits will be counted toward the student’s limit of S/U credits.

Challenging Graduate Courses
A graduate student may challenge a graduate course by examination, please see the Graduate School for more information.

University Grading System
Each course department or instructor establishes the system for assessing student performance in achieving course learning objectives. Students should consult the course syllabus for a description of the grading system used in each course. At the conclusion of each course, instructors are required to report a final grade reflecting the instructor’s assessment of each student’s performance. Shortly after the end of the term, students can access their grades through the MyNMSU portal. No other grade notification will be issued. The final grade is reported on the student transcript. Instructors may elect whether to use fractional grading (the use of the plus and minus) in assigning final letter grades.

The NMSU system for final grades is expressed in letters, which carry grade points that are used in calculating the cumulative grade-point average, as shown in this table:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Grade Points per Unit of Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.0</td>
</tr>
<tr>
<td>A</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>C-</td>
<td>2.0</td>
</tr>
<tr>
<td>D+, D, D-</td>
<td>1.0</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
</tr>
<tr>
<td>W- Withdrawal</td>
<td>0</td>
</tr>
<tr>
<td>N- Grade not submitted</td>
<td>0</td>
</tr>
<tr>
<td>CR- Credit authorized, but not letter grade</td>
<td>0</td>
</tr>
<tr>
<td>IP- In progress</td>
<td>0</td>
</tr>
<tr>
<td>RR- Progress in undergraduate course</td>
<td>0</td>
</tr>
<tr>
<td>PR- Progress in graduate thesis</td>
<td>0</td>
</tr>
<tr>
<td>S- Satisfactory work</td>
<td>0</td>
</tr>
<tr>
<td>U- Unsatisfactory work</td>
<td>0</td>
</tr>
<tr>
<td>I- Incomplete work</td>
<td>0</td>
</tr>
<tr>
<td>AU- Audit</td>
<td>0</td>
</tr>
</tbody>
</table>

1 S grades are grades that are satisfactory to the professor and are normally equivalent to the letter grade of C- or higher.

Any courses for which only CR, S or PR is awarded, but no traditional letter grade is given, will be included in the total number of earned hours but is not computed in the grade-point average. Traditional letter grades are those which are used in the grade point average determination: A+, A, A-, B+, B-, C+, C, C-, D+, D, D- and F. In computing the overall grade-
point-average, the total credits in which grades of A+ through F have been assigned is divided into the total number of grade points earned.

**Midterm and Six-Week Early Performance Grades**

A Six-Week Early Performance Grade (sometimes referred to as Midterm Grade) for courses numbered 100-299 will be posted and available to students through the MyNMSU portal. The purpose of the early grade posting is to ensure that students have an opportunity to address any performance issues. Students should be mindful that the Six-Week Early Performance Grade reflects a students' performance on only that portion of the total coursework that has been graded at that time. Any student who is doing poorly, or not as well as they would like, should meet with the instructor to discuss how they can improve. Students who have concerns about their progress in multiple courses or who are considering withdrawal from course(s) must meet with their academic advisor.

In courses numbered 300 or higher, the posting of Early Performance Grades is optional and may occur through the online course management system rather than the MyNMSU portal. However, prior to the last day to withdraw from a course, upon request, instructors will provide information to students about their progress in the course.

**Retention of Grading Records**

Individual assignments and exams that are not returned to students should be retained by the instructor or department through the end of the subsequent regular semester. The records used to compute individual final grades should be retained for two years after the completion of a course. If a final grade is appealed, these records are kept for at least two years after the completion of the appeal. Departments, colleges or the library may require that records be kept for longer periods.

**Minimum Grade Requirement for Graduate Students**

Graduate degrees require a cumulative graduate G.P.A. of 3.0 or higher. Although B- and C grades (including C+ and C-) earned at NMSU may be counted toward the requirements for a graduate degree in some programs, this grade does not reflect acceptable graduate-level performance and may cause the cumulative G.P.A. to fall below the 3.0 required for graduate students. Some departments have higher grading requirements for courses in their programs. Students should check with their departments regarding specific course grading requirements for their particular degree program.

Courses in which a student earns a D or F grade do not ever satisfy graduate degree requirements; however these grades will be calculated in determining the students’ cumulative grade-point average. To obtain academic credit, students must retake courses in which a grade of D or F was earned.

**S/U Grading**

S/U grading allows the student to attempt to earn course credit without having a course grade included in their grade point average calculations. Under S/U grading, the instructor assigns an S grade for satisfactory achievement of the course learning objectives (normally equivalent to the letter grade of C- or higher) and a U grade for unsatisfactory performance in the class.

**Designated S/U Courses**

Each academic college may designate courses in which the grading will be on a basis of S or U for all students enrolled in the courses. Credits in designated S/U courses are not included in the limitations on the number of S/U credits a student may take, and are not subject to the student eligibility requirements described below.

**Election of the S/U Grading Option - Undergraduate Students**

In courses other than those designated as S/U for all students, eligible individual students may elect the S/U Grading Option, subject to the regulations stated below. To be eligible for the S/U (satisfactory/unsatisfactory) Grading Option, undergraduate students must meet the eligibility requirements and obtain approval of an academic advisor. Eligibility requires completion of 28 credits at NMSU under traditional grading, with an overall average of 2.5 or better. (Upon approval of the adjusted credit option, students must re-establish eligibility.) Non-degree seeking students may take courses under the S/U option without regard to eligibility requirements. However, these courses may not be subsequently applied toward an undergraduate degree at NMSU.

The S/U option must be elected as part of the course registration and may not be added once the course registration period closes. Other than honors courses and courses officially designed as S/U, the following limitations apply to courses in which the S/U option is elected:

1. No more than 7 credits per semester or 4 credits per summer session.
2. Not to exceed a total of 21 credits towards a degree.
3. Not a required course for the student’s major.

Students electing the S/U option should be mindful that upon a change of majors, the new major department may require a traditional grade for a course within that major that was previously completed with an S grade. In such cases, the student may request that the original instructor process a change of grade form to apply a traditional grade, however, if more than 2 years have elapsed or if the instructor is no longer at NMSU, such a change will not be possible and the student may be required to retake the course or obtain a traditional grade through a course challenge.

**Election of the S/U Grading Option Election - Graduate Students**

With an approval from their advisor and department head, graduate students in good academic standing may elect the S/U option, at the time of registration, for courses taken outside the major department, subject to the regulations stated below:

1. No more than a total of 6 credits of elected S/U courses are permitted in the master’s degree.
2. Doctoral candidates may take an additional 6 credits under the S/U option after application to candidacy.

**I Grade Designation**

The letter grade of I (incomplete) is given for passable work that could not be completed due to circumstances beyond the student’s control that develop after the last day to withdraw from the course. In no case is an I grade to be used to avoid the assigning of D, F, U or RR grades for marginal or failing work. Examples of appropriate circumstances include documented illness, documented death or crisis in the student’s immediate family, unexpected military deployment and
similar circumstances. Other job related circumstances are generally not appropriate grounds for assigning an I grade. Students requesting an I grade are responsible for providing satisfactory evidence of such circumstances. (In the case of medical records, instructors should review the information provided, note that adequate medical documentation was provided for review, and return the documentation to the student. Under no circumstances should the instructor retain any medical records or indicate the specifics of any medical condition in the academic records.) The refusal to grant an I grade may be appealed in the same manner as any other final grade.

To assign an I grade, the instructor must complete the "I grade Information Form" and have the form delivered to the associate dean of the course college. The instructor must indicate on the form whether the student will be given the option to complete the remaining coursework and have the I grade changed to the earned letter grade. If so, the instructor should indicate the steps necessary to complete the remaining coursework. The I grade form should either be signed by the student in person, or the associate dean must send a copy of the document to the student’s official permanent address, as recorded in the Registrar’s Office, with a notation on the form that the student was not available for signature.

The I grade will be permanent in instances where (1) the instructor did not provide an option to complete the coursework, (2) the instructor left NMSU prior to completion of the coursework and grade change, or (3) the student failed to complete the coursework by the relevant deadline, and the instructor did not indicate that the I grade would be changed to the earned grade upon failure to complete. In such instances, the student will be required to re-enroll in the course to receive credit (in which case the permanent I grade and the subsequent earned letter grade will both appear on the transcript).

The student is entitled to have the I grade removed from the transcript only if, within 12 months or any earlier deadline established by the instructor on the "I Grade Information Form" and prior to graduation, the student completes the remaining coursework, as specified on the Form, in a manner satisfactory to the instructor. If the student fails to complete the coursework, the instructor may change the I grade to any appropriate grade (including D, F or U) only if the instructor stated that this would occur on the "I Grade Information Form." The instructor should assign whatever grade was earned for the entire course.

To change the I grade, the instructor must complete a "Change of Grade Form," obtain the signature of the associate dean for the course, and submit the form to the Registrar’s Office.

RR Grade

The RR grade may be assigned only in undergraduate developmental courses (CCDE, CCDL, CCDM & CCDR) and indicates that the student has made substantial progress toward completing the requirements of the course. It carries neither penalty nor credit, so a student must re-enroll and successfully complete the course in order to earn credit. The grade of RR may be received only once in any given course, and is a permanent notation on the student’s transcript.

W Grade Designation

The W grade is assigned only in courses when the student withdraws or is administratively dis-enrolled from the course after the last day to drop the course. The W grade is permanent.

Effect of Change of Grade

The effect of a change of grade on a student’s academic standing (scholastic warning, probation or suspension) depends on the date the transaction is officially recorded on the student’s academic record. If the transaction is recorded before the student begins another semester, the grade change (such as replacing the I grade with an earned grade) is included in the grade-point average calculation in order to establish the student’s academic standing. If the transaction is recorded after the student begins another semester, for the purpose of calculating academic standing, the new grade is included with any other grades earned for the semester in which the grade change is processed.

Grade Point Average

Grade point average (GPA) calculations are based solely on courses taken at NMSU or under an approved National Student Exchange.

Grading in Graduate Research

In grading both master’s and doctoral research, thesis and dissertation work in progress, the instructor reports for each enrollment period the grade PR (progress) or U (unsatisfactory) rather than a traditional letter grade. These assigned grades are permanent notations on the student’s transcript. Only those credits graded PR (Progress) accumulate toward the minimum number of research credits required.

PR indicates that the student has devoted an adequate amount of time to the work scheduled but does not indicate the quality. U indicates that the student has stopped work or is doing work of unacceptable quality.

At the conclusion of the final oral examination, or when the thesis/dissertation is submitted for the final signature of the graduate dean, the instructor will report the final S or U grade for that semester. If the thesis/dissertation and the performance in the final oral examination are found to be acceptable, the instructor will report an S (satisfactory) grade. If the thesis/dissertation or the performance in the final oral examination is found to be unacceptable, the instructor will report an U (unsatisfactory) grade.

If a student accumulates a total of two U (unsatisfactory) grades in courses numbered either 598, 599, 600, 699 or 700, the student will be placed on provisional status. If three U (unsatisfactory) grades are reported for these courses, the student will be dismissed from the Graduate School.

Withdrawal from a Single Course

Any student wishing to formally withdraw from a single course, after the last day to drop has passed, can do so through their Academic Advisor or the Registrar’s Office. All such withdrawals will be registered on the student’s transcript with the “W” grade indication.

For students wishing to withdraw from all courses, please see the section on Withdrawal from NMSU.

Leave of Absence from the Graduate School

Students who are working on advanced degrees and plan to have an interruption in studies, for a calendar year, should request for a leave of absence through their department head. The student must submit a formal letter through their department head to the Dean of the Graduate
School, an email will not be accepted. The request should include the beginning date and the anticipated ending date for the period of absence.

A graduate student on leave of absence will be expected not to use university facilities and place no demands upon the university faculty and staff, and, therefore will pay no fees. Time spent in the “leave-of-absences” status will not be counted toward the advanced degree time limits.

A graduate student who fails to register for one calendar year without obtaining a leave of absence from the Graduate School will be considered withdrawn from the university, by the Graduate School. In order to resume their studies after such absences, the student must go through the formal readmission process.

**Administrative Withdrawals**

An administrative withdrawal is initiated for a student who is representing the university at an official out-of-town event and becomes effective when the student returns from the event or five class days after the signed drop slip gets to the dean’s office.

**Military Withdrawal**

New Mexico State University understands that our military students may be called to active duty, specialized training or up for disaster relief efforts with little notice active duty who wish to withdraw from the U.S. all their classes: armed forces; this includes an order for mobilization of the Reserve Forces as a result of a national emergency. However, the below policy does not pertain to a student’s basic and/or annual training. Military and Veterans Programs:A student who has an order for training is encouraged VA students ordered to formally request, through the proper chain Active Duty must provide a copy of command, a postponement of their orders until the summer or the end of the semester they are currently enrolled in. to the MVP office, Garcia Annex, room 144. If a student’s request for postponement is denied, the student may then follow the below steps but must provide documentation that their postponement request was formally denied.

All NMSU students that have been called up for active duty must take the following steps in order to withdraw from all their classes:

1. **Military and Veterans Programs (MVP):** VA students ordered to Active Duty must provide a copy of orders to the MVP office, in Corbett Center Student Union, Room 244. To assist in reporting accurate information to the VA Regional Office, student should also provide, in writing, last day of class attendance.

2. **NMSU Registrar:** All students presenting their orders to the Registrar’s Office, (575) 646-3411, will receive a military withdrawal from classes and a full tuition and fees refund for that semester.

3. **Bookstore:** Students who still have their receipts for textbooks purchased the semester in which they are called to active duty will be given a full refund for these textbook purchases when they present their orders. (575) 646-4431.

**Student Medical Withdrawal**

A student medical withdrawal applies to a student who becomes seriously ill, injured or hospitalized and is therefore unable to complete an academic term for which they are enrolled. This action applies to all courses a student is registered for in the affected semester(s). The student cannot select which courses they want to withdraw from and which they want to remain registered for when exercising this option. The students’ attending physician must provide a letter, on official letterhead with an original signature, stating the date(s) within the semester that the student was under medical care and must withdraw because of that medical condition. This letter must be submitted within the semester or no later than one academic year after the end of the term for which the withdrawal is being requested.

Once the information is reviewed a final determination will be made if the student is eligible for the consideration of tuition or other refunds (students receiving funds awarded by the University Financial Aid and Scholarship Services should be aware of policies regarding withdrawal from the University.) At the Las Cruces campus, medical withdrawal begins and ends at the Registrar’s Office. At all other campuses, medical withdrawal begins at the Student Services Office but is ultimately finalized with the Registrar’s Office on the Las Cruces campus.

**Medical Conditions of a Family Member Withdrawal**

A student who is withdrawing because of a medical condition of an immediate family member must submit a letter from the family member’s attending physician. This action applies to all courses a student is registered for in the affected semester(s). The student cannot select which courses they want to withdraw from and which they want to remain registered for when exercising this option. It must be on official letterhead with an original signature, stating the date(s) within the semester that the student’s immediate family member was under medical care and that the student must withdraw to attend to the immediate family member’s medical condition. This letter must be submitted within the semester or no later than one academic year at the end of the term for which the withdrawal is being requested.

Immediate family member, in this instance, includes a spouse; a domestic partner, as defined in the NMSU Policy Manual 7.04; a child, parent or legal guardian; a sister or brother and a grandparents or a grandchild. Familial relationships that are created by law are also included (i.e. mother/father in law; half or step siblings); any other relationships can be considered on a case-by-case basis.

Once the information is reviewed a final determination will be made if the student is eligible for consideration of tuition or other refunds (Students receiving funds awarded by the University Financial Aid and Scholarship Services should be aware of policies regarding withdrawal from the University.) At the Las Cruces campus, medical withdrawal begins at the Registrar’s Office. At all other campuses, medical withdrawal begins at the Student Services Office.

**Withdrawal from NMSU**

Withdrawal from any NMSU campus is an official procedure that must be:

1. Initiated by the student (using the Withdrawal form)
2. Have all necessary signatures (as indicated on the form)
3. Be approved and processed through the Registering Office, located on the Las Cruces Campus

Students who withdraw from all courses for the semester should do so in person through the Registrar’s Office. However, students who are unable to come in person may submit an e-mail using their NMSU e-mail account to registrar@nmsu.edu. Students who leave without following the official procedure are graded appropriately by the instructor.

Applicable dates for the last day to withdrawal are published on the approved university academic calendar or under important dates at: http://registration.nmsu.edu.
A student who withdraws from all classes for the semester will retain access to their NMSU account per current policy but will lose access to other services and privileges available to enrolled students.

Financial information concerning drops and withdrawals can be found at http://uar.nmsu.edu/withdrawals/. Financial Aid Recipients should contact University Financial Aid and Scholarship Services before withdrawing. Students receiving funds awarded by the University Financial Aid and Scholarship Services should be aware of policies regarding withdrawal from the University.

The Federal Higher Education Act requires the University to calculate a Return of Federal Student Aid Funds for students who withdraw (officially or unofficially) from all classes on or before the 60 percent attendance point in the semester. Using a pro-rata schedule, the percentage of the semester attended is used to calculate the amount of the student’s earned versus unearned Federal student aid funds. The unearned portion of Federal student aid funds will be returned to the appropriate aid program(s). Students withdrawing from classes are responsible for payment of any balance due after the required return of Federal student aid funds.

**Graduation Requirements**

For specific graduation requirements for any degree offered at NMSU please see the Degrees, Majors, Minors and Other Academic Programs of Study (p. 53) section (http://catalogs.nmsu.edu/nmsu/regulations-policies/nmsu/regulations-policies/#academicprogramsotstudytext), as well as the departmental sections for those requirements. These requirements will include the minimum GPA, total credits and specific course requirements for graduation.

**Applying for a Degree**

Any students that are in their final semester of classes are considered degree candidates and are required to submit an “Application for Degree” as well as pay graduation fees for each degree being sought. The application for Degree form is available online through the MyNMSU website. It must be completed and submitted by the designated deadline for that semester. The fees for the Las Cruces campus are all listed in the Tuition, Fees and other Expenses (p. 26) section of the catalog, once a student submits the application the fee will be included in the total cost for the semester or session in which the candidate anticipates completing their degree requirements.

If degree requirements are not completed during the semester/session the student originally applied for, the student must then reapply and pay the appropriate fees. A $25 late fee applies to applications received after the application deadline, and no applications will be accepted after the posted deadline date.

A student must specify which catalog they are using for their degree requirements in order for the university to determine if the requirements are met and if a degree can be certified. The latest date for substitution or waiver of required courses for degree candidates is two weeks after the last date of registration for regular or summer terms.

**Attendance at the Commencement Ceremony**

Commencement is a symbolic ceremony. Participation in commencement does not, in itself, mean that a student is considered an NMSU graduate. In order to be awarded a degree, a student must fulfill university requirements as determined by academic colleges. The degree will reflect the graduation date from the application for degree in which all degree requirements were determined by the academic colleges.

The academic colleges will confirm the students eligibility to participate in the commencement ceremony that is held at the close of the fall and spring semesters. Eligible candidates who are in the process of completing their final degree requirements and degree recipients from the previous summer session will participate in the fall ceremony. Students who are in the process of completing their final degree requirements in the spring must attend the spring ceremony. However, Bachelor degree candidates that wish to participate in a spring commencement, prior to completing degree requirements in summer school may do so if they meet the following conditions:

1. Receive permission the Dean of their college
2. Show a minimum cumulative grade-point average of 2.0
3. Only need 12 or fewer credit hours to complete their degree requirements
4. These remaining credit hours must be offered in the upcoming summer schedule of classes
5. Submit a degree application and approved petition form (available in the Dean’s office) by the last day to apply for a degree in the spring semester.

**Academic Regalia**

Each college may approve distinctive symbols to be worn by the top 10 percent of its graduates at commencement. Only one symbol may be worn by each graduate. In addition, the student with the highest honors in each college may wear a crimson-colored gown. No other symbolic additions to academic regalia are allowed without the approval of the Academic Deans Council.

**Diploma**

All fees and bills owed the university must be paid in full before a student may receive a diploma or official transcripts. The degree title and major(s) will be printed on the diplomas, in accordance to the degree application award, determined by the academic colleges. Academic honors will also be printed on the diplomas below the degree and major(s). The name on the diploma will reflect the student’s current official NMSU records. Name changes are only processed for currently admitted students.

Diplomas will be mailed to graduates approximately eight weeks after the individual colleges certify the degree requirements and the final grades have been processed by the Registrar’s Office. The diploma will be mailed to the address specified on the degree application, unless an address change was requested before the last day of the semester.

**Undergraduate Academic Standing**

When a student does not maintain adequate academic standing, he/she is placed in Academic Warning. If the student’s academic standing does not improve, the placement progresses to Academic Probation I. Continued unimproved academic standing moves a student into Academic Probation II, then finally, Academic Suspension. Each stage imposes more structure and limitations on the student in order to help them return to normal academic standing. The intent is not to punish, but to help the student return to normal academic standing and success. Since some of these limitations involve limitations on the number of credit hours, students on Probation or Suspension may be subject to loss of financial aid. It is the responsibility of the student to determine the impact of their changed academic standing on their financial aid.
Notification to students of academic warning, probation, or suspension appears on the student’s grade report at the end of each grading period.

**Undergraduate Academic Warning**

Issued only once, the first time a student’s cumulative GPA falls below a 2.0 while in good academic standing. The relevant Associate Dean for Academics or Campus Academic Officer (CAO) will send the student a letter detailing the consequences should the cumulative grade point remain below a 2.0 at the conclusion of the semester. A student on Academic Warning remains eligible for all extracurricular activities as governed by the rules of the specific activity.

While under Academic Warning the following restrictions apply:

1. The student may be required to enroll in a 3-credit hour special study skills/time management course specifically designed for students on Academic Warning, or an equivalent course approved by the appropriate associate dean or CAO of their campus.
2. Students will be required to enter into a contract with their advisor, approved by their department head that places further stipulations on Academic Warning. The contract may include, but is not limited to the following:
   3. The student may be required to take at least one repeat course to try to improve their GPA.
   4. Except for the special study skills/time management course, the student’s coursework may be restricted to their major.
   5. The student may be required to get tutoring help.
   6. The student may be required to see an academic counselor on a specified time schedule.
   7. The number of credit hours a student may register for may be restricted (due to extenuating circumstances such as the student's workload commitments).

The associate dean or CAO may place the student on Academic Probation I should the student not adhere to the stipulations of the contract.

If the student’s semester GPA is less than a 2.0, and the cumulative GPA remains below a 2.0 at the end of the semester on Academic Warning, the student is placed on Academic Probation I. If the semester GPA is greater than 2.0 but the cumulative GPA is still less than 2.0, the student will remain on Academic Warning. If the cumulative GPA is greater than a 2.0 at the end of the semester then the student is returned to good academic standing.

**Undergraduate Academic Probation I**

This occurs when a student under Academic Warning has a semester GPA less than 2.0, and the cumulative GPA remains below 2.0 at the conclusion of the semester or if the student maintains a semester GPA greater than 2.0 while on Academic Probation I but the cumulative GPA is still less than 2.0.

Under Academic Probation I the following conditions apply:

1. The student cannot enroll in more than 13 hours of coursework during the semester. **Note: Students falling below 12 credits in any one semester will jeopardize their financial aid.** Should this occur, students should see the associate dean in their college as soon as possible to try to implement corrective measures.
2. The student will enter into a contract or individualized education plan with their advisor and approved by the associate dean or CAO that place further stipulations on Academic Probation I. The associate dean or CAO may place the student on Academic Probation II or Academic Suspension should the student not adhere to the stipulations of the contract.
3. Students on Academic Probation receiving educational benefits from the Veterans’ Administration must obtain counseling from the Military & Veterans Programs Office.
4. Students admitted under special provisions whose transcripts indicate less than a 2.0 GPA are admitted on Academic Probation I.

The student must maintain a semester GPA equal to or greater than 2.0 until such time that the cumulative GPA is greater than 2.0 at which time the student goes back to good academic standing. Until the transition happens the student remains on Academic Probation I. The student will be placed on Academic Probation II if he/she is unable to maintain a 2.0 semester GPA and the cumulative remains below 2.0 GPA, while under Academic Probation I. A student on Academic Probation I remains eligible for all extracurricular activities as governed by the rules of the specific activity.

**Undergraduate Academic Probation II**

Academic Probation II is issued in two ways.

- The first is when a student falls below a semester 2.0 GPA and the cumulative GPA remains below a 2.0 while on Academic Probation I.
- The second is when a student maintains a semester GPA greater than 2.0 while on Academic Probation II but the cumulative GPA is still less than 2.0.

The following restrictions are in place for student’s in Academic Probation II:

1. The student cannot enroll in more than 7 credit hours of coursework during the semester.
2. As with rule 2 under Academic Warning and Academic Probation I and at the discretion of the associate dean or CAO, the student will be required to enter into a contract with their advisor, approved by the associate dean or CAO, to place further stipulations on Academic Probation II.

The associate dean or CAO may place the student on Academic Suspension should the student not adhere to the stipulations of the contract.

The student must maintain a semester 2.0 GPA or higher until the cumulative GPA reaches a 2.0 or higher at which time they are placed on good academic standing. A student unable to maintain a semester GPA of 2.0 or higher, and the cumulative remains below 2.0 GPA, while under Probation II will be placed on Academic Suspension. A student on Academic Probation II remains eligible for all extracurricular activities as governed by the rules of the specific activity.

**Continuing in Probationary Status**

Students may continue to enroll while on Academic Probation I or II provided they maintain a semester GPA of 2.0 or higher. If they withdraw from the university while on Academic Probation, they continue on that same level of Academic Probation.

**Removal of Academic Probation**

Such academic standing is removed when the cumulative GPA is raised to 2.0 or higher, with the following exceptions:

1. A transfer student may not remove probation by summer work alone;
2. if an I grade is removed after the student has enrolled, the new grade’s effect on academic standing is based on its inclusion with grades for the term for which the student is enrolled;
3. exercise of the Adjusted Credit Option does not change academic status until subsequent grades are earned.

Academic Suspension
When a student does not achieve a semester 2.0 GPA or higher, and the cumulative remains below a 2.0 while under Academic Probation II, they are placed on Academic Suspension. Students under Academic Suspension are not allowed to take NMSU courses while under suspension. Students on Academic Suspension must sit out a minimum of 1 semester and then petition the Provost or designee to be removed from Academic Suspension. At this time the suspension status will be evaluated for possible removal. Should the suspension be lifted, the student is placed on Academic Probation II until such time as the cumulative GPA equals or exceeds a 2.0. At the discretion of the Provost or designee, the student will enter into a contract approved by the Provost or designee and the student’s Dean or CAO, setting stipulations to have the suspension removed. Failure to adhere to the contract will return the student to Academic Suspension.

Under certain conditions, a student may be re-admitted at NMSU under regular status while under Academic Suspension when satisfactory progress has been demonstrated at another college or university (see Readmission- Degree Seeking). Credits earned at another university or college while under Academic Suspension from NMSU or another university or college will be accepted at NMSU only after the student demonstrates satisfactory progress over a period of two semesters after being re-admitted or admitted to NMSU. Acceptance of transfer credits that count toward degree requirements is still governed by the rules established by the student’s respective college or campus.

Rescinding Academic Suspension for Summer Attendance
A student may use summer classes to try to get warning or probationary status removed. Students suspended at the close of the spring semester may have their Academic Suspension rescinded if they attend summer session at NMSU or one of its Community College colleges. Such attendance must raise the combined spring semester and summer GPA to 2.0 or better. Under no circumstances may a student on Academic Warning or Academic Probation be allowed to register for an overload. Academic Warning status is continued if the student withdraws from the university and the probation or suspension status applies to all subsequent enrollments.

A certification of eligibility to attend summer sessions at NMSU after a spring semester Academic Suspension is available to the suspended student who wishes to attend summer sessions at other institutions.

Graduate Academic Probation and Suspension
Graduate Academic Standing is based on both the student’s semester GPA and cumulative GPA.

Graduate Academic Probation I: A graduate student is placed on Graduate Academic Probation I when a graduate student’s semester GPA is above a 3.0 and the cumulative GPA drops below 3.0; or when the semester and cumulative GPA’s drop below 3.0 and the previous academic standing is Graduate Regular Good Standing.

Graduate Academic Probation II: Is issued when a graduate student semester GPA is above a 3.0 and the cumulative GPA drops below 3.0 and the previous academic standing is one of Graduate Academic Probation I or Graduate Re-admit on Probation I.

The student must maintain a semester GPA of 3.0 or higher until the cumulative GPA reaches a 3.0 or higher at which time the graduate student is placed on Good Academic Standing. If the graduate student is unable to maintain a semester GPA of 3.0 or higher and the cumulative remains below 3.0 GPA while under Graduate Academic Probation II, the student will then be placed on Graduate Academic Suspension.

Graduate Academic Suspension: When a graduate student does not achieve a semester GPA of 3.0 or higher, and the cumulative graduate GPA remains below a 3.0 while under Graduate Academic Probation II or Graduate Re-Admit on Probation II, the graduate student is placed on Graduate Academic Suspension.

Graduate students under Graduate Academic Suspension are barred from enrolling in graduate level courses at NMSU while under Graduate Academic Suspension. Graduate students on Graduate Academic Suspension must sit out a minimum of one semester. Graduate students on suspension who wish to continue Graduate School after suspension must re-apply to the Graduate School and petition the Graduate Dean or College Academic Dean to be removed from Graduate Academic Suspension. At this time the graduate academic suspension status will be evaluated for possible removal. Should the suspension be lifted, the graduate student is placed on Graduate Academic Probation II or Graduate Re-admit on Probation II until such time that the graduate cumulative GPA equals or exceeds 3.0.

If you have questions about your academic standing, please contact the advising center or Graduate Dean’s office.

Academic Misconduct and Grievances
Both Undergraduate and Graduate students at NMSU are expected to observe and maintain the highest academic, ethical, and professional standards of conduct. Students should consult Section III of the Student Code of Conduct in the Student Handbook (http://studenthandbook.nmsu.edu) for more specific information regarding the rules of conduct and definitions of misconduct. Any student found guilty of academic misconduct shall be subject to disciplinary action. Academic misconduct includes, but is not limited to, the following actions:

1. Cheating or knowingly assisting another student in committing an act of cheating or other forms of academic dishonesty.
2. Plagiarism, which includes, but is not necessarily limited to: submitting examinations, themes, reports, drawings, laboratory notes, undocumented quotations, computer-processed materials, or other material as one’s own work when such work has been prepared by another person or copied from another person.
3. Unauthorized possession of examinations, reserve library materials, or laboratory materials.
4. Unauthorized changing of grades on an examination, in an instructor’s grade book, or on a grade report or unauthorized access to academic computer records.
5. Nondisclosure or misrepresentation in filling out applications or other university records in, or for, academic departments or colleges.

Disciplinary Suspension or Expulsion Due to Academic Misconduct
NMSU expects all students, both Undergraduate and Graduate, to regard themselves as responsible citizens on all campuses (including Alamogordo, Carlsbad, Dona Ana and Grants) and in the community.
Repeted misconduct and major violations will cause the student to be subject to immediate suspension or expulsion from the university.

Students are subject to the general rules and regulations applicable in the Student Code of Conduct of the Student Handbook (http://studenthandbook.nmsu.edu).

Procedures to Deal with Cases of Alleged Academic Misconduct

Policies and procedures for dealing with such cases are detailed in the Student Code of Conduct http://studenthandbook.nmsu.edu. Procedures include all course levels and all of the campuses of New Mexico State University, including Alamogordo, Carlsbad, Dona Ana, Grants and Las Cruces.

- Undergraduate Students: Questions concerning these policies and procedures should be addressed to the Dean of the Academic College
- Graduate Students: Questions concerning these policies and procedures should be addressed to the Dean of the Graduate School.

Undergraduate Academic Appeals Board

Within each college of the university or the library, an academic appeals board will be appointed by the associate dean for academics to hear student appeals. The appeals board will consist of three faculty members and two students.

Procedure for Initiating Grievance Complaints for Undergraduate Students

This procedure has been established to provide a method to resolve undergraduate student grievances at the lowest administrative level in a fair and expeditious manner.

For the purpose of this procedure, grievances are limited to alleged violations of university policy or procedures by the university or its employees, student's disputes with faculty and/or alleged unfair treatment. Usually this method is used to appeal a grade the student feels was not justified. Under no condition should these policies be used when the student has allegedly violated the University Code of Conduct or a contractual agreement, and at no hearing should either party have a lawyer. Any student who believes that he/she has been unjustly treated within the academic process may proceed as far as necessary in the steps described below. Should the alleged grievance not involve a faculty member or course, the student is to appeal directly to the department head or associate dean for academics in whose area or college the alleged grievance occurred.

The following are the steps and procedures for initiating a Grievance Complaint:

1. Appeal to the faculty member: The student is to submit a written appeal to the faculty member within 30 days after the start of the semester following the semester in which the alleged grievance occurred. Semester in this case refers to fall and spring only. If the alleged grievance occurs during the summer session, the student is to submit an appeal no later than 30 days into the fall semester following the summer session in which the alleged grievance occurred. The faculty member and the student are to discuss the problem. The faculty member will submit a written report outlining his or her decision to the student and department head or appropriate unit designee within ten working days of receiving the student's written appeal.

2. Appeal to the department head or appropriate unit designee: If a decision satisfactory to the student cannot be reached, the student may submit a written appeal to the department head or appropriate unit designee in which the course in question is taught. This is to be done within ten days of the receipt of the faculty member’s written decision. The faculty member, the department head or appropriate unit designee, and the student are to meet to discuss the problem. The department head or appropriate unit designee will send a written response outlining his or her decision to the student and faculty member within ten days of this meeting.

3. Appeals to the associate dean for academics or associate dean of the library: If a satisfactory decision cannot be reached among the department head or appropriate unit designee, the faculty member, and the student, the student or the faculty member may submit a written appeal to the associate dean for academics of the college in which the course was taught. This is to be done within ten working days after the receipt of the written decision by the department head. The associate dean may request a written recommendation from an Academic Appeals Board. Should this be the case, the Academic Appeals Board will conduct a hearing with the student and faculty member (not necessarily at the same time) to review the merits of the appeal. They may also ask for supporting evidence for or against the appeal. The Academic Appeals Board will submit the written recommendation to the associate dean within five working days following the conclusion of their process. The associate dean may meet with the student, faculty member, and department head to discuss the appeal (not necessarily at the same time). The associate dean will submit a written response outlining his or her decision to the student, faculty member, department head, and dean within ten days of the last meeting.

4. Appeals to the dean: The dean of the college or library in which the course is taught or in whose college the alleged grievance occurred may, at his or her discretion, review the appeal upon the written request of the student or faculty member and render a final decision. An appeal to the dean is the last step in the appeals process and the dean's decision cannot be appealed further. Should the dean not choose to review the appeal, the decision of the associate dean for academics or associate dean of the library is final.

5. Exceptions to the time involved: The associate dean for academics or associate dean of the library may waive the normal time frame for appeals for compelling reasons. Regardless of circumstances, academic appeals must be initiated with the course instructor within two years of the conclusion of the semester or summer session in which the course was taken.

6. Enrollment: A student need not be enrolled at the university to initiate an appeal.

Graduate Student Appeals Board

Each academic year a standing committee, consisting of three members of the graduate faculty and two graduate students, is appointed by the dean of Graduate School to handle grievance complaints including grade appeals. Any graduate who believes that he has been unjustly treated within the academic process may proceed as far as necessary in the following steps to resolve his or her grievance. In general, there are three levels at which a grievance can be addressed:

- a course instructor or advisor,
- a department head, or
- the dean of the Graduate School.
If the initial grievance is with an instructor or advisor, the process begins at Step 1. If the initial grievance is with a departmental committee, the process begins at Step 3. In all instances, the process must begin at the lowest possible level.

1. Under normal circumstances, the student should discuss the issue with the instructor/advisor.

2. If the student is unable to resolve the issue through consultation with the faculty member, the student must submit a written memorandum detailing the grievance to the course instructor or advisor within 10 calendar days of the beginning of the following full (i.e., fall or spring) semester. The person to whom the memorandum is addressed must respond in writing within ten calendar days to the student.

3. If the student is not satisfied with the response from Steps 1-2, he or she must submit a written appeal to the department head within ten working days of the initial decision. If the student is initiating the appeal at the departmental level, he or she must do so, in writing, within ten calendar days of the beginning of the following full (i.e., fall or spring) semester. The department head must respond in writing within ten working days to the student, the instructor or advisor (if one is involved), and the dean of Graduate School.

4. If the student is not satisfied with the response from Steps 1-3, they must submit a written grade appeal letter to the academic dean’s office of the college where the course is taught. If it is a grievance against a faculty member, then the academic dean’s office where the course is taught would be that of the faculty member’s college. The student has ten calendar days after receiving the decision of the department head. The associate dean of the given college has ten days to collect the necessary documents to make a decision on the student’s appeal or grievance. Please note that additional days may be required to collect information from the faculty and/or student involved in the case. The academic dean’s office where the course is taught may convene an ad hoc committee to investigate the case.

5. If after the fourth step the student or any of the other parties involved is still not satisfied with the response, he or she must present to the dean of the Graduate School within ten working days a formal letter that provides specific details regarding the nature of the grievance. Copies of all documents including course materials and grades must accompany the letter. In the letter, the student can request that their case be presented to the Graduate Student Appeals Board. After receiving a letter complaint (not an email), the dean of the Graduate School will determine whether the complaint has merit. He or she will do so after reviewing the letters from the faculty member, the department head and the office of the academic dean as well as the materials from the student and all those involved in the case. If the graduate dean determines that the appeal does not have merit, he or she will inform the appellant and other parties, in writing, within ten working days of receiving the appeal. Please note that additional days may be required to collect information from the faculty and/or student involved in the case. If the graduate dean decides that the appeal does have merit, he or she will convene the Graduate Student Appeals Board, normally within three weeks. The Graduate Student Appeals Board will conduct, within 60 days of their convening, whatever investigations and deliberations are necessary, and will forward to the dean of the Graduate School a recommendation to resolve the grievance.

6. After reviewing the recommendation of the Graduate Student Appeals Board, the dean of Graduate School will, within ten working days, inform all parties involved of his or her decision in writing.

7. The dean of the Graduate School may waive the normal time frame for grievances when either party presents compelling evidence justifying such a delay, but grievances must be launched within one year. Grade appeals involving charges of plagiarism must follow the process established on academic misconduct in the Student Code of Conduct., the web site is http://studenthandbook.nmsu.edu/. The Graduate School strongly encourages students to study and use the Plagiarism web site of the Library to learn of ways to avoid plagiarism: http://nmsu.libguides.com/plagiarism.

Privacy Rights

The following information has been designated as directory information and is subject to release to the public under the Buckley Amendment (PL 98-380), “The Family Educational Rights and Privacy Act of 1974:” student’s name, address, telephone number, date and place of birth, student ID number, honors and awards and dates of attendance.

Other information regarding disclosure of student data is posted at the Registrar’s Office in compliance with the Act.

Requests for withholding directory information must be filed in writing with the Registrar’s Office. A student may choose to hide his/her address and phone number from the campus phonebook through the myNMSU portal. This will only hide the information from the public but the records will still be officially kept within the Registrar’s Office.

Social Security Numbers in Student Records

As required by law, social security numbers are collected from prospective and current students who are either applying for admission to the university or plan to seek employment on campus. The social security number is a confidential record and is maintained as such by the university in accordance with the Family Educational Rights and Privacy Act.

In addition, the university is mandated by federal tax regulations to provide tuition and fee payment information to the student and the Internal Revenue Service so that applicable educational tax credits may be computed. The social security number will be necessary to submit this tax reporting.

Change in Demographic Information

Students wishing to make a formal name change, social security number update or a gender update can do so through the Registrar’s Office. All students will need to fill out the “Demographic Change form” located at https://registrar.nmsu.edu/forms/ and provide one of the following documents to the Registrar’s Office.

1. Name change: students will need one legal documentation with the new name on it. This can be a Government Issued ID (drivers license, state card or valid passport), a Birth Certificate, a Court Order, a Marriage Certificate/Divorce Decree or a Certificate of Naturalization/Green Card. * Note: Documentation is not required to add/delete hyphen, space, apostrophe, or to abbreviate a middle name to initial.

2. Social Security Number Update: students will need to bring the updated and signed Social Security Card. Unsigned cards will not be accepted until the signature is added.

3. Gender Update: students will need to bring a Government Issued ID (drivers license, state ID card or valid passport) and a Revised Birth Certificate

For more information about the specific documents that are needed please contact the Registrar’s Office at (575) 646-3411.
Students may update their “preferred name” which is the name used in lieu of a student’s legal name on certain documents, such as, the email display name, learning management system, the phonebook, class rosters and advisee lists. This can be done by the student through the myNMSU portal and does not need to be done at the Registrar’s Office.

**Changes in Residency Status**

The Registrar’s Office does not determine the laws and rulings for determining Residency, these are state laws that the Registrar’s Office simply administers. An individual must establish legal residency in New Mexico before he or she is entitled to pay in-state tuition rates.

The student’s initial residency status is determined at the time of admission, any changes to this status must be initiated by the student through the Registrar’s Office. A continuing student, classified as a non-resident, who has satisfied the requirements to establish residency may submit a Petition for In-State Residency Tuition Classification along with the required supporting documentation to the Registrar’s Office. Petitions must be filed on or before the census date of the semester effective.

For specific information about the process of petitioning for In-State Residency or for information about who is eligible for residency for tuition purposes please visit the https://registrar.nmsu.edu/residency/ website or the Registrar’s Office on the Las Cruces campus.

**Official Transcripts**

An official transcript is the University's certified statement of your complete NMSU academic record in chronological order by semester and year. It includes the student's coursework, grades and any degrees that were awarded. Any credit hours earned through transfer work are not listed in detail, but do appear as cumulative totals. Official transcripts will not be released if the student is in debt to the university.

Transcripts can either be ordered in person at the Registrar’s Office or online at https://registrar.nmsu.edu/transcripts/, there will be a fee for these that may vary depending on the total number of transcripts ordered and the type of delivery method that is selected. A student can request two types of transcripts an electronic one, which is sent as a secured PDF or a printed hard copy that can be delivered in a sealed envelope.

The name that will appear on the student's transcript will match the name on the student's official NMSU record. Name changes will only be processed for current NMSU or Community College students.

**Purging of Student Files**

All academic files for students who attend NMSU are kept for five years following the student’s final enrollment. Only archival documentation will be retained. The files of students who do not enroll for one year after being admitted are destroyed.
THE GRADUATE SCHOOL

A number of academic departments of the university have a long history of providing formal graduate study. The first master’s degree from NMSU was awarded in 1896. In 1921, the president of NMSU appointed a committee to oversee graduate study. The Graduate School was formally established in 1956 with a full-time dean, and in the same year, 57 master’s degrees were awarded.

The Graduate School mission is to facilitate the exchange of ideas and the creation of knowledge, while fostering academic excellence. The Graduate School promotes a high-quality learning environment that embraces diversity. New Mexico State University is one of the few research extensive universities that reflect Hispanic, Native American, and other American cultures and the world. Our international students from Latin American, Asian, African and European countries add to the richness of our diversity. The quality of life for our students is of critical importance to the Graduate School and NMSU. We cultivate the marriage of academic, professional and personal skills while helping students graduate in a timely manner.

Policies

Since graduate degrees are awarded for attainment in scholarship, the requirements stated in this catalog are to be considered as minimal. The major department or the dean of the graduate school may make additional requirements as deemed necessary for each candidate. Each student’s program is subject to the approval of the respective department head. Responsibility for securing approval of the proposed program of study rests with the student. Frequent consultation with the advisor is essential to satisfactory progress toward degree completion.

Graduate Degree Programs

For a full listing of the Graduate Programs offered at New Mexico State University, please see the Graduate Admissions webpage http://gradadmissions.nmsu.edu/graduate-programs/.

Admission for Graduate Students

A student seeking admission to graduate school at New Mexico State University must hold a minimum of a bachelor’s degree or an advanced degree from a regionally accredited institution. The program of preparation should be substantially equivalent in the distribution of academic subject matter to the requirements for a comparable degree at NMSU.

No student is officially admitted into a graduate program until a Certificate of Admission has been issued by the Graduate School. Although the Graduate School considers this certificate valid for a one year period, academic departments may require re-application if the admitted applicant does not enroll in the semester noted in the certificate.

Formal application is required of all prospective students, including graduates of NMSU, who seek admission to a graduate program.

- Students must submit: the Application for Admission as well as other supplemental documents required by the academic department.
- Supplemental documents may include, but are not limited to, unofficial college transcripts, test scores (TOEFL, IELTS, GRE, and GMAT), statement of purpose, writing samples, and letters of recommendation.

If a student is recommended for admission by the academic department, the student will be required to submit official transcripts, test scores, and the appropriate application fee directly to the Graduate School. Other official documents may be required. Official transcripts must be sent directly from the prior colleges or university directly to the Graduate School.

Categories of Graduate Students

A student seeking admission to a graduate program is assigned one of the following categories based upon previous academic performance:

Doctoral Student

To be considered for admission to a doctoral program, an applicant must have a minimum grade-point average of 3.0. Some doctoral degree programs also require a master’s degree or its equivalent.

Master’s Regular

An applicant whose scholastic record is satisfactory will be admitted as a regular student. This classification includes:

1. an applicant whose grade-point average is greater than or equal to 3.0, or a grade-point average greater than or equal to 3.0 in the last half of undergraduate work,
2. an international applicant whose grade-point average (or its equivalent) is greater than or equal to 3.0,
3. a continuing graduate student whose grade-point average is greater than or equal to 3.0, or
4. a student with prior graduate work at another institution whose minimum grade-point average is 3.0.

Master’s Provisional

An applicant whose scholastic record is not satisfactory can be admitted as a provisional student. Students admitted with this classification can be either:

1. transferring graduate students whose cumulative grade-point average is less than a 3.0
2. Students whose grade-point average the last half of undergraduate work is less than a 3.0, but who does have a minimum grade-point average of 2.5

A student admitted provisionally must complete his or her first three courses, a total of 9 credits of graduate work, with a minimum grade-point average of 3.0. A provisional student who does not meet the 3.0 grade-point average after at least 9 credits of graduate work is subject to dismissal. A student admitted on a provisional basis is prohibited from working as a teaching assistant. However, he or she may work as a research assistant or a grader for one semester. A provisional student can be employed for one semester as a grader. To hire a provisional student, departments must submit an official letter to the Graduate School requesting permission.

Master’s Undeclared

An applicant that has not decided on a specific graduate degree program and has an undergraduate minimum grade-point average of 2.5 may be considered for admission as an undeclared master student. International students with an F-1 visa are not eligible for undeclared master status. Advising for an undeclared master student can be obtained from the Graduate School.
Only undeclared regular status students who meet all Title IV eligibility requirements are eligible to receive federal financial aid for one consecutive 12-month period beginning the first term of enrollment. Questions about financial aid and undeclared master’s should contact Financial Aid and Scholarship Services. An applicant admitted as an undeclared master is not eligible to receive a graduate teaching assistantship.

**Student Enrollment Restrictions**

- Students in this standing are restricted to enrolling in 9 graduate credit hours. To continue enrollment the student must apply and be admitted into a degree-seeking program.
- Course restrictions placed by the graduate department may constrain enrollment by an undeclared student.
- An undeclared master student is restricted to transferring 9 graduate credit hours to a degree program.

**Transfers**

Transferring from an undeclared master’s to a degree program requires a new Application for Admission.

- If the student has nine or more graded graduate credit hours, the cumulative minimum grade-point average (GPA) must be 3.0 for the request to be considered.
- If the student transferring to a degree program has fewer than nine graded graduate credits and the undergraduate GPA is between 2.5 to 2.9 the recommendation for admission will be provisional student status.
- If the undergraduate GPA is 3.0 or greater, the admission recommendation will be regular student status.

**Admission to a Graduate Certificate Program**

The graduate certificate program of study is designed to develop or enhance a focused area of expertise. The primary purpose of a graduate certificate program is to provide specific skill training to meet employment needs locally, regionally, nationally and globally.

A graduate certificate is a focused collection of courses, consisting of 12-18 credits, successfully completed by a student in a given discipline or a set of related disciplines. A graduate certificate is not an official graduate degree of NMSU. A student that successfully completes a certificate program at the graduate level will receive a certificate of completion statement on his or her official transcript and a formal certificate from the Graduate School. A student has three years to complete a graduate certificate program.

The graduate certificate program is offered to both currently enrolled, degree-seeking students and students who enroll solely to obtain a certificate. Currently enrolled degree-seeking students must apply separately to the graduate certificate program. Students wishing to enroll solely in the certificate program must still meet all admissions criteria. Successful completion of a certificate program does not guarantee admission into a graduate degree program.

A student enrolled in a graduate certificate program cannot transfer credits from another institution towards the completion of the program. However, transfer credits taken in a graduate certificate program may be applied towards a graduate degree program in the same area of focus. The number of transfer credits will be determined by the program of study. The time limit on transfer credits is 5 years after the completion of the certificate.

Students only enrolled in a graduate certificate program are not eligible for a graduate assistantship.

**Graduate Certificate Student**

A student enrolled in a certificate program is not automatically enrolled in a graduate degree seeking program at NMSU. The status will change if he or she applies and is accepted to a graduate degree program. A student enrolled in a graduate certificate program is not eligible for a graduate assistantship.

**Application Dates and Deadlines**

Contact the graduate degree program for published application deadlines. If the graduate program does not publish a deadline, the Graduate School encourages the applicant to apply by March 15th for fall enrollment and by October 15th for spring enrollment to be considered for financial support. The Graduate School will continue to accept applications 30 days prior to the first day of classes.

**Transcripts**

An applicant is required to arrange to have one official transcript from each institution attended sent directly to the Graduate School.

If the applicant’s undergraduate coursework is not complete at the time of application, she or he must submit a transcript showing the completion this course work directly after the degree has been granted. No application materials will be returned to the applicant.

**Standardized Tests**

Certain graduate programs may require standardized test scores for admission. An applicant may be required to take one or more of the following examinations as determined by the academic department:

- Graduate Record Examination,
- the Miller Analogies Test,
- the Graduate Management Admission Test.

(See academic department description for required testing.)

**Readmission**

An NMSU student who has been out of school for more than two consecutive terms is required to make formal application for readmission to the institution. The application will be reviewed by the academic department and the Graduate School. The application should be submitted at least 30 days prior to the start of the semester.

A student who has attended other institutions during the absence is required to submit official transcripts to the Graduate School prior to the date of registration and be eligible to return to the college or university last attended. Admission status will be determined by previous NMSU academic standing. Academic performance at other institutions attended during the applicant’s absence from NMSU may be taken into consideration in determining the student’s admission status.

**Renewal of Application for Admission**

The admission credentials for an applicant who does not register for the semester admitted are retained at the Graduate School for a period of one calendar year from the date of application. At the end of this
period, credentials are discarded. A student wishing to renew his or her application after the one-year lapse must submit a new application.

Denied Admission

The Graduate School or the department may deny admission if the scholastic record or program of study is judged inadequate. If denied admission by a specific academic department, the applicant may be eligible to seek undeclared status as described in Categories of Graduate Students. If denied by the department, the student may wish to contact the department for additional information.

Admission may be denied to an otherwise qualified applicant when the desired program lacks resources to accommodate additional enrollment.

A student who is denied admission to one program and wishes to be considered for another program must complete a new application for the second program.

Application documents are retained by the Graduate School for one calendar year.

Non-Degree Admission

Non-degree admission is designed to meet the needs of an applicant who does not wish to pursue a degree or who has not yet completed the application process to a specific department. Academic advising for non-degree students is obtained from the academic department. No more than 9 graduate credits earned in non-degree status may be transferred to a graduate degree program. NMSU only recognizes graduate credit for non-degree work from the University of New Mexico (UNM). Transfer credit is restricted to 6 credits with the approval of the appropriate department, the college dean, and the graduate dean. A student classified as non-degree is not eligible to receive financial aid, student employment, or institutional tuition waivers; nor is he or she eligible to participate in student government or intercollegiate athletics; and is not eligible to receive benefits from veterans’ programs.

Visiting Student

A visiting student is a student taking graduate credit to transfer to his or her parent institution. An Application for Admission to the Graduate School must be submitted 30 days prior to registration. The student is required to submit unofficial transcripts; however, the academic department must concur and admit a visiting student. Visiting students are not eligible for undeclared status or for graduate assistantships.

Out-of-State Students and Legal Jurisdiction

By applying for admission/enrollment, both the student and parents agree that New Mexico law prevails and all litigation will be held in New Mexico federal court or state court in Dona Ana County, New Mexico.

Contact Information

For more information, contact:

Graduate School, MSC 3-GS
New Mexico State University
PO Box 30001
Las Cruces, NM 88003-8001
Phone: (575) 646-5746
http://gradschool.nmsu.edu/

International Graduate Students

English Proficiency for Admission

- TOEFL 79 IBT; 550 PBT
- 6.5 IELTS

International students admitted with TOEFL 68 to 78 IBT, 520 to 549 PBT or 6.0 IELTS are required to sit for the English Placement Exam prior to beginning academic coursework. (The International Student and Scholar Services Office arranges this test upon arrival). If the results of the English Placement Exam do not meet the requirements for academic coursework the student may be required to take additional academic English classes (SPCD 110 and/or SPCD 470).

English Proficiency

International students that wish to become teaching assistants must demonstrate that they are proficient in the English language. This is done by participating in an International Teaching Assistant Screenings (ITAS). The purpose of the ITAS exercise is to determine whether candidates will be required to take COMM 485 International Teaching Assistant Development before being allowed to be assigned a teaching assistant position.

The ITAS requires that a teaching assistant candidate deliver a short, ten minute teaching demonstration of a typical introductory undergraduate level course in a specific area relevant to the his or her area of studies. The demonstration is observed by CELP faculty and an actual undergraduate student.

Based on the results of this exercise, a full report by the CELP observers will be presented to the head of the department in which the graduate student wishes to be a teaching assistant.

- COMM 485 International Teaching Assistant Development not required
- COMM 485 International Teaching Assistant Development recommended, but not required
- COMM 485 International Teaching Assistant Development required

Ultimate authority to enforce the recommendation lies with the Department Head.

Preferably during Summer Session II, or before the start of the first semester of enrollment, all international students that wish to be considered for a teaching assistantship must take the ITAS, which is administered by the CELP. The ITAS can be waived for international students who hold a degree from an accredited university in the United States, or a country where English is the official language of instruction. Departments also have the discretion to allow waivers for special circumstances.

Enrollment

All international graduate students on F-1 or J-1 visas are required to comply with Department of Homeland Security regulations governing maintenance of status related to full-time enrollment and making normal progress toward completing a degree. Therefore, all international graduate students are required to enroll in 9 or more credits (exclusive of audited work) during fall and spring semesters.
Transfer of Graduate Credits into a Degree Program

1. Graduate credits taken at NMSU as undergraduate electives may be transferred to the student’s graduate program at NMSU.
2. Graduate credits from another university may be transferred to NMSU, provided the credits were earned on the campus of an accredited institution.
3. Transferred course work (grades and hours) is maintained separately from NMSU course work.
4. Immediately after initial enrollment in the Graduate School, students must submit forms to obtain formal permission from their advisor, department head, and the dean of the Graduate School to transfer graduate-level course work. The department has the responsibility to accept or reject any number of transferred credits based on such elements as whether the work fits into a logical program for a degree, if grades of A or B have been earned in the courses proposed for transfer, and any other elements it deems relevant. Credit granted for work done at another institution is tentative until proved by satisfactory work in residence. The department may also require work to be validated by examination.
5. Transfer credits must meet the same time-limit requirements (seven years) as graduate classes at NMSU.
6. Course work taken at other institutions after initiation of Graduate School at NMSU must have prior approval of the department head and the dean of the Graduate School if such work is to be transferred. All requirements as to accreditation, level, grades and other elements described for initial transfer work will apply. Request for Transfer of Credit forms are available online at http://gradschool.nmsu.edu/wp-content/uploads/sites/5/2015/04/transfer_of_credit_form.pdf

Graduate Certificates

Students enrolled in certificate programs may not transfer credits from another institution towards the completion of the certificate program offered by NMSU. However, they can transfer credits taken in a graduate certificate program at NMSU into a graduate degree program at NMSU, provided that the courses will lead towards a graduate degree in the focused area of the certificate program. The number of transfer credits will be determined by the program of study. The time limit on course transfer is five years after the completion of the certificate.

Master's level

In order to meet residency requirements at the master’s degree level, students must take at least 50 percent of their required coursework at NMSU.

Masters of Fine Arts

Before consideration for candidacy, the department head and the graduate advisor will determine the number of transferable credits from a previous graduate program.

Specialist in Education Degree

A maximum of 6 graduate credits earned at another approved institution may apply to the Specialist in Education degree. Transfer credits must have been earned during the five-year period prior to completion of the specialist in education degree.

Doctorate Level

At the doctoral level, students may transfer course work required for their master’s degree.

Funding Opportunities for Graduate Students

The Graduate School offers awards, assistantships and fellowships to qualified graduate students. All awards require faculty nominations. Continuing and newly admitted students can request either a faculty member or the department head to nominate them for the awards of the Graduate School. In selecting individuals for any assistantship or fellowship and in the administration of appointments, New Mexico State University will not discriminate on grounds of age, ancestry, color, disability, gender, national origin, race, religion, sexual orientation or veteran status. The University limits the number of years a student may be supported on funds from the state of New Mexico. Departments may place additional limitations on the years of support. The student must be admitted to the Graduate School before a request for an assistantship or fellowship will be considered by the department or the Graduate School. For detailed information, application process and deadlines please consult http://gradschool.nmsu.edu/ga-resources/ (http://gradschool.nmsu.edu/ga-resources)

A student should check Graduate Assistant Employment Guidelines of the Graduate School at http://gradschool.nmsu.edu/ga-resources/. Departments may place additional limitations on the years of support.

Assistantships

Graduate assistantships, including teaching and research, offered by New Mexico State University are awarded primarily by the students’ academic department. Employment guidelines may be found at: http://gradschool.nmsu.edu/ga-resources/.

Students with assistantships must ensure that they are enrolled in, as well as successfully complete, 9 graded credits for full-time status. Graduate assistants should take no more than 15 course credits per semester. Students must also maintain a 3.0 grade-point-average. Courses taken for audit may count for the total course load, but may not be counted in the minimum graduate assistant course load requirement. If course deficiencies are identified, the student can register for 3 undergraduate credits and a minimum of 6 graded graduate credits during their first semester at NMSU to be eligible for a graduate assistantship. The duties of a graduate assistantship normally require about 20 hours per week (full-time, fall and spring) of student’s time.

Teaching Assistantships

A student seeking appointment as a teaching assistant will be required to demonstrate proficiency in communication skills necessary for satisfactory service in the classroom. All graduate students awarded an assistantship must attend a mandatory orientation offered by the Graduate School. Departments may also require students to complete workshops/orientations in order to qualify for assistantships.

Eligibility for teaching assistantships includes:

- Acceptance by and subsequent registration in the Graduate School and academic department
- Classification as a “regular” graduate student

All international students seeking a teaching assistantship must demonstrate proficiency in English and competency in pedagogy.
Prior to the first semester in which the teaching assistantship is to be received, international students must undergo the NMSU International Teaching Assistant (ITA) screening administered by the Center for English Language Programs (CELP) on behalf of the Graduate School. Students who pass the screening exam are immediately eligible for assignment to a teaching assistantship. Those who do not pass the screening exam must enroll in and satisfactorily complete COMM 485 International Teaching Assistant Development before being eligible for a teaching assistantship. To aid those incoming international students who plant to teach in the fall semester, COMM 485 International Teaching Assistant Development is offered in the summer. International graduate students wishing to hold a teaching assistantship should check with their department to determine when they should arrive on campus to meet the screening requirement. International students who don’t pass the screening exam may be eligible to serve as graders for their academic departments. The academic departments must receive approval from the Graduate School in order to hire these students.

**Assistantships for Provisional Graduate Students**

Graduate students accepted on a provisional basis cannot serve as teaching assistants. However, they can serve as research assistants. Eligibility includes:

- Acceptance by and subsequent registration in the Graduate School and academic department
- Classification as a provisional graduate student
- Enrolling in and successfully complete 9 graded credits
- Funded on research projects of the faculty of NMSU

Provisional students can also be hired as graders for one semester. The department must submit a formal letter to the Graduate School requesting that the student be allowed to work as a grader. The Graduate School can approve or deny the request.

**Diversity Graduate Assistantships**

The diversity awards are allocated to departments on a competitive basis to help increase the diversity and quality of the student body. Departments will commit matching funds to support these awards for the student. The diversity award can be used to recruit domestic students. Please note that the award is for an academic year. Departments will need to commit funds to the selected student for at least one additional semester or preferably a year. The selected student must be admitted to the department prior to applying for the diversity award.

**Fellowships**

The Graduate School maintains a Fellowship and Grant Information webpage [http://gradschool.nmsu.edu/funding-opportunities/](http://gradschool.nmsu.edu/funding-opportunities/) providing a database of grants, fellowships and assistantships for graduate students. The university offers a number of fellowships available to both new and continuing students.

**Graduate Assistant Tuition Fellowships**

As an opportunity for departments to recruit outstanding graduate students to their programs, the Graduate School awards tuition fellowships to graduate assistants. Master’s degree students will receive up to two years of support and doctoral degree students will receive up to three years of support. In order for students to qualify for a second and third year of support, they must maintain their status as graduate assistants for the duration of the tuition fellowship period. These awards are for students receiving 10 hour and 20 hour graduate assistantships. The tuition fellowships do not include fees.

**McNair Graduate Assistantships**

The Graduate School wishes to support and recognize the success of the McNair program by offering several McNair Graduate Assistantships for one academic year with a match of one year from a department.

**Merit-Based Enhancement Fellowships for Current Graduate Assistants**

To help departments reward outstanding graduate assistants, the Graduate School offers Merit-Based Enhancement Fellowships to graduate assistants who are engaged in the teaching or research mission of New Mexico State University. The amount of the award is $4,000 for an academic year. Nominations must come from faculty.

**The Mike Watts Outstanding Leadership Graduate Fellowships**

The Graduate School encourages faculty to nominate outstanding graduate assistants for a Mike Watts Outstanding Leadership award. The fellowship is made available through the generosity of the family and friends of Michael E. Watts. The Watts Fellowships are available to graduate assistants from any area of Graduate School.

If awarded, the fellowship will be paid as salary supplement to the regular assistantship. Please note that for those students who also receive financial aid, the fellowship can have an impact on the amount of financial aid received. The Graduate Council Fellowship Committee will review the applications and select recipients.

**Outstanding Graduate Assistantship Award**

We also offer Outstanding Graduate Assistant awards of $2,000 to recognize the contributions of graduate assistants to the teaching and research mission of New Mexico State University. The awards allow faculty to show appreciation for the excellent work of graduate assistants. Current graduate assistants must be nominated by their faculty to be considered for the awards.

**State of New Mexico Department of Higher Education (NMHED) Graduate Scholarship Programs**

The State of New Mexico Higher Education Department Graduate Scholarship Program offers Graduate Fellowships/Assistantships for women and minority persons who are citizens or permanent U.S. residents and who are a first year student or a student that is beginning graduate studies in any graduate department at the master’s or doctoral level at NMSU. The selected student must be admitted to a graduate program prior to applying for this award.

NMHED fellowships carry stipends of $7,200 per annum and matched with half-time (10 hours per week) teaching assistantship provided by the student’s department for a total award of $15,800.

The total amount of this award is based on the salary for a 20 hour graduate assistantship and usually increases from year to year, based on raises awarded by the State of New Mexico.

Fellowships are available for two years for master’s students and four years for doctoral students. One of the NMHED fellowships is, when possible, designated for a McNair Scholar. The nomination process can be found at: [http://gradschool.nmsu.edu/](http://gradschool.nmsu.edu/).

In order for the student to establish financial need, students must complete a Free Application for Federal Student Aid (FAFSA) form available in the Financial Aid Office. This form is not to be returned to the Graduate School. The form must be mailed to the Federal Student Aid...
Preference will be given to those students that have a current FAFSA form on file at the NMSU Financial Aid office.

Graduate Assistants Salaries and Tax Withholding Guidelines

Internal Revenue Service tax withholding guidelines require undergraduate and graduate students employed through New Mexico State University to maintain at least 6 credits of course work during the fall and spring semesters and 3 credits of course work for summer sessions to be eligible for the student FICA tax exemption. Student employees who do not meet this requirement during any given pay period will be subject to Social Security taxes at the rate of 6.2% and Medicare taxes at the rate of 1.45%. Salaries for graduate assistants in 2017-2018 are as follows:

<table>
<thead>
<tr>
<th>Level</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>I- G1</td>
<td>$16,964</td>
</tr>
<tr>
<td>II- G2</td>
<td>$17,368</td>
</tr>
<tr>
<td>III- G3</td>
<td>$17,772</td>
</tr>
</tbody>
</table>

Level I (G1) - Applies to regularly enrolled students pursuing a master’s degree. This level is also for a first year student seeking a doctoral degree who does not currently hold a master’s degree. On the doctoral student becomes a second year student and passes their qualifying exam, they can obtain support as a Level II (G2) student.

Level II (G2) - Applies to students

1. pursuing the education specialist or doctoral degree who have passed the qualifying exam or
2. who have a master’s degree in the same or cognate field and the recommendation of the head of their major department.

Level III (G3) - Applies to a doctoral student who has passed the comprehensive examination and has advanced to candidacy.

Graduate assistants employed at least ten hours per week will be given in-state tuition during the first 12 months of tenure if Human Resources approve the hiring process prior to census data (stated by the Registrar’s Office as the third Friday of the semester each spring and fall semester).

If New Mexico resident status has not been established by the time of any reappointment, the graduate assistant may be subject to non-resident tuition rates.

Applications for state residency may be obtained in the Registrar’s Office located in the Educational Services building.

Social Security Numbers in Student Records

As required by law, social security numbers are collected from prospective and current students who

1. plan to seek employment on campus or
2. wish to receive financial aid.

In addition, the university is mandated by federal tax regulations to provide tuition and fee payment information to the student and the Internal Revenue Service, so that applicable educational tax credits may be computed. The social security number will be necessary to submit this tax reporting. The social security number is a confidential record and is maintained as such by the university in accordance with the Family Educational Rights and Privacy Act.

In order to be employed by New Mexico State University all students must have obtained a social security number within eight weeks of being hired or risk losing their assistantship.

When an official social security number is issued to an international student, it is the student’s responsibility to inform Human Resources or the Registrar’s Office as soon as possible.

Hourly Work

Eligibility for student payroll requires that a graduate student

1. be admitted to the Graduate School as well as to a department,
2. have a GPA of 3.0, and
3. be enrolled for at least 9 graded credits.

A student may not work more than 20 hours per week during the academic year. Students looking for current job postings should check with Career Services, Garcia Annex, Room 204; or visit http://careerservices.nmsu.edu/.

Students not classified as residents of New Mexico but working at an hourly rate are not eligible to receive in-state tuition.

Contact Information

For more information, contact:

Graduate School, MSC 3-GS
New Mexico State University
PO Box 30001
Las Cruces, NM 88003-8001
Phone: (575) 646-5746
http://gradschool.nmsu.edu/

Postdoctoral Fellowships

Those individuals who are exemplary scholars, who have recently been awarded a doctoral degree, but who wish to continue their education and research experience under the direction of a professor at New Mexico State University are classified as postdoctoral. The postdoctoral fellowship is a regular professional appointment normally for one or two years. Under no circumstances will an individual remain in this classification for more than three years.

Postdoctoral fellowships are advertised and applications are submitted to the hiring department in compliance with the guidelines for hiring professional staff, but without the requirement for a position description questionnaire. An "E-Hire" staffing authorization request must be submitted to the office of Human Resources by the hiring department. No offer of employment may be made until approval has been given by Human Resources.

A postdoctoral fellow has the following privileges:

- may take 6 credits in spring and fall semesters, 4 credits per summer session without tuition charge
- is eligible to purchase an employee parking permit

Programs address listed on the application or submitted via computer at the Financial Aid Office. The results will be sent to the student and the Financial Aid Office. **Students must have a complete file and have been approved for financial aid to be considered for this fellowship.**
• is eligible for other employee benefits available to regular employees, including annual and sick leave, as well as health, dental, and life insurances
• may purchase athletic tickets, activity tickets, and gymnasium privileges
• is eligible for library privileges

Persons classified as postdoctoral fellows pay Social Security and New Mexico State Educational Retirement.
Requirements for Bachelors of Science in Agriculture; Conservation Ecology; Family and Consumer Sciences; Genetics; and Hotel, Restaurant and Tourism Management

1. Courses required of all qualifying for this degree.
2. General education requirements.
3. Courses to be taken in the particular field of your major interest.
4. Free electives sufficient to bring the total number of credits to a minimum of 120 semester credits. Of this total at least 48 semester credits must be in upper-division courses (numbered 300 or above).
5. A grade-point average of no less than 2.0.
6. All students will have an official degree check on file in the Academic Dean's Office prior to start of senior year.

Typical Curricula in Agriculture

The following suggested curricula are presented for your guidance. With the consent of the head of the department in which you are majoring, you may select electives and changes in a curriculum except in the case of constants.

Bachelor Degrees

Bachelor in Conservation Ecology

Bachelor of Science in Agriculture

Majors in:

- Agricultural Biology (p. 114);
- Agricultural Economics and Agricultural Business (p. 91);
- Agriculture and Community Development (p. 85);
- Agricultural and Extension Education (p. 85);
- Agronomy (p. 145);
- Animal Science (p. 100);
- Fisheries and Wildlife Science (p. 141);
- General Agriculture (p. 144);
- Horticulture (p. 145);
- Natural Resource Economics and Policy (p. 91);
- Range Science (p. 100);
- Soil Science (p. 145);
- Turfgrass Science and Management (p. 145);
- Programs in also in Preveterinary Medicine (p. 144) and Preforestry.

Bachelor of Science in Environmental Science

Bachelor of Science in Family and Consumer Sciences

Majors in:

- Clothing, Textiles, and Fashion Merchandising (p. 120);
- Family and Child Science (p. 120);
- Family and Consumer Sciences Education (p. 120);
- Human Nutrition and Dietetic Sciences (p. 120)

Bachelor of Science in Food Science and Technology

Bachelor of Science in Genetics

Bachelor of Hotel, Restaurant and Tourism Management

Masters Degrees

Master of Agriculture

Major in Agriculture:

- Concentration in Agribusiness (p. 91)
- Concentration in (p. 91) Domestic Animal Biology (p. 100)

Master of Arts

Major in Agricultural and Extension Education: (p. 85)

Master of Business Administration

Major in Business Administration:

- Concentration in Agribusiness (p. 98)

Master of Science

Majors:

- Agriculture Biology (p. 114);
- Agricultural Economics (p. 91);
- Animal Science (p. 100);
- Family and Consumer Sciences (p. 120);
- Fish, Wildlife and Conservation Ecology; (p. 143)
- Horticulture (p. 145);
- Plant and Environmental Sciences (p. 145);
- Range Science (p. 100);
- Water Science and Management (p. 171);

Doctoral Degrees

Doctor of Economic Development

Major in Economic Development (p. 91)

Doctor of Philosophy

Majors in:

- Animal Science (p. 100);
- Plant and Environmental Science (p. 145);
- Range Science (p. 100);
• Water Science and Management (p. 171)

Undergraduate Minors

• Agricultural & Extension Education (p. 85)
• Agricultural & Natural Resource Leadership (p. 85)
• Agricultural Business Management (p. 91)
• Agronomy (p. 145)
• Child Advocacy Studies (p. 120)
• Clothing, Textiles and Fashion Merchandising (p. 120)
• Conservation Ecology (p. 135)
• Culinary Science (p. 120)
• Entomology (p. 114)
• Family and Child Science (p. 120)
• Food Studies (p. 120)
• Horse Management (p. 100)
• Horticulture (p. 145)
• Hotel, Restaurant and Tourism Management (p. 168)
• Human Animal Interaction (p. 100)
• Livestock Production (p. 100)
• Natural Resource Economics (p. 91)
• Nutrition (p. 120)
• Pest Management (p. 114)
• Plant Pathology (p. 114)
• Ranch Management (p. 100)
• Range Science (p. 100)
• Soil Science (p. 145)
• Turfgrass Science and Management (p. 145)
• Weed Science (p. 114)
• Wildlife Science (p. 135)

Graduate Minors

• Agricultural & Extension Education (p. 85)
• Animal Science (p. 100)
• International Agricultural Development and Extension (p. 85)

Accreditation

The two teacher education options (Agricultural Education Teaching and Advanced Technology Education) in the Department of Agricultural and Extension Education are accredited by the National Council for the Accreditation of Teacher Education. It is critical that students consult their academic advisor prior to selection of courses for the agriculture, secondary science and teaching endorsements.

Agricultural and Extension Education

Undergraduate Program Information

The department offers a broad-based curriculum with majors, options and minors that prepare students for many careers as professional educators, communicators and leaders in agricultural, natural resource, technology and related disciplines. Example occupations the department prepares its students to enter are agriculture teacher, media specialist, technology teacher, Extension agent, NMDA or USDA professional, industry educational specialist, and development specialist. Graduates work in domestic and/or international settings.

The department offers major work for a Master of Arts in Agricultural and Extension Education. The degree can be obtained with emphasis in

• Agricultural or Technology Teacher Education,
• Extension Education,
• International Extension and Development, and
• Adult Non-formal Education.

General Undergraduate Degree Requirements

You must meet the general education and departmental requirements for the degree and the major, option or minor chosen. You must establish a cumulative grade-point average of not less than 2.5 before you are admitted into the student teaching or other internship program. You need a minimum of 48 hours in technical agriculture for the secondary teaching certificate program in agriculture.

You may select technical courses required for completion of the majors and options from the following areas:

• agricultural economics (p. 91);
• agricultural mechanics;
• animal and range sciences (p. 100);
• entomology, plant pathology and weed science (p. 114);
• fish, wildlife and conservation ecology (p. 135);
• engineering (p. 525);
• also plant and environmental sciences (p. 145).

Graduate Program Information

The Department of Agricultural and Extension Education requires the following items for admission:

• Three letters of recommendation - Applicants should request letters of recommendation from individuals who know them well enough to comment on their professional skills and abilities, and on their ability to complete graduate-level work.
• Career statement - The two-page letter of application should clearly identify applicant’s professional and career goals as well as reasons for pursuing the degree.
• Personal Interview - Upon receipt of all application materials, a personal interview may be required at the discretion of the Departmental Graduate Committee.

The above requested materials should be sent directly to the department. Do not send to the Graduate School as this will cause a delay on your admission status.

Courses in research methods, teaching methods and data collection and analysis; a graduate seminar; and a thesis or creative component are required for the major. Two 9 credit minors are available to students completing major work in other departments.

A minimum of 30 semester credits (including 4-6 credits of thesis) is required under the thesis plan. A non-thesis plan is available and requires 32 semester credits of course work (includes a focused creative component). Both plans require a final oral examination.

Flexibility in each program allows students to pursue professional interests and to develop specialized competencies in agricultural and extension education, technology education, and in technical and scientific areas. The department delivers courses in evening, weekend and distance formats (go to http://distance.nmsu.edu and click on
degree programs, and then Agricultural and Extension Education) to accommodate student needs. Previous experience in teaching, extension and/or other professional education positions is highly recommended to be considered for a graduate teaching assistantship.

Degrees for the Department

Agricultural and Community Development - Bachelor of Science in Agriculture (p. 90)

Agricultural and Extension Education - Bachelor of Science in Agriculture (p. 90)

Agricultural and Extension Education - Master of Arts (p. 91)

Agricultural and Extension Education - Bachelor of Science in Agriculture and Natural Resource Leadership - Undergraduate Minor (p. 91)

Agricultural and Extension Education - Graduate Minor (p. 91)

International Agricultural Development and Extension - Graduate Minor (p. 91)

Minors for the Department

Agricultural and Extension Education - Undergraduate Minor (p. 91)

Agricultural and Natural Resource Leadership - Undergraduate Minor (p. 91)

Agricultural and Extension Education - Master of Arts (p. 91)

Professor, Frank E. Hodnett, Department Head

Professors Dormody, Hodnett, Seevers, VanLeeuwen; Associate Professor Rosencrans, Assistant Professor Easterly

F. Hodnett, Department Head, Ph.D. (New Mexico State) – youth development, youth leadership, youth program development; B. Chamberlin, Ph.D. (University of Virginia) – informal and non-formal learning, educational media design; T. J. Dormody, Ph.D. (Cornell) – agricultural education, leadership, and agricultural communications; R.G. (Tre) Easterly, Ph.D (University of Florida) – agricultural education, pre-service teacher preparation, teacher professional development, J. Gleason, Ed.D. (Virginia Tech) – instructional technology, agricultural communications, and multimedia education; C. Rosencrans, Ph.D. (Iowa State) – agricultural mechanics, technology education and youth development; B. Seevers, Ph.D. (Ohio State) – adult and extension education; P. Skelton, Ph.D. (University of Nebraska) – youth development, sustainable agriculture and natural resource management; D. VanLeeuwen, Ph.D. (Oregon State) – statistics and research design

AXED 100. Introduction to Agricultural, Extension, and Technology Education

3 Credits

Orientation to programs, philosophies, competencies and leadership skills needed by professionals in agricultural and technology education, extension education, agricultural communications, and related career opportunities in industry, governmental agencies, and international organizations.

AXED 105. Techniques in Agricultural Mechanization

3 Credits (2+2P)

Development of competencies in agricultural mechanics including safety, tool identification, operation and maintenance of hand and power tools, cold metal, drafting, and plumbing procedures. Designed for any major wishing to improve mechanical skills needed in agriculturally related occupations in education and industry.

AXED 200. Special Topics

1-4 Credits

Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 6 credits toward degree.

AXED 201G. Effective Leadership and Communication in Agricultural Organizations

3 Credits (2+2P)

Theory and practice in leadership and communication for professionals who must work effectively in leadership and supervisory roles with people in agricultural business, industry, government agencies, and education. Course focuses on contemporary leadership theories. Oral communication skills in informative and persuasive speaking, parliamentary procedure, and for small groups are developed.

AXED 205. Metal Technology-Fabrication

3 Credits (2+4P)

Processes and procedures of metal fusion, including gas and electric welding techniques and safety. Designed for any major wishing to improve mechanical skills needed in agriculturally related occupations in education and industry.

AXED 230. Early Field-Based Experience in Extension and Industry

2 Credits (2)

First Hand view of the roles of professional educators through field experiences with Cooperative Extension or other government agencies. Includes 4 weeks of classroom instruction and 30 hours of observation in a work setting. Consent of Instructor required. Restricted to Las Cruces campus only.

AXED 232. Early Field-Based Experience in Agricultural and Technology Education

2 Credits

First-hand view of the roles of professional educators through field experiences in a secondary agricultural or technology education setting. Includes 4 weeks of classroom instruction and 30 hours of observations in a classroom setting. Consent of Instructor required.

AXED 240. Introduction to Agricultural Communication

3 Credits

Students will learn about the history and theories of agricultural communications, be introduced to the degree program, explore careers in the field, and examine the role of media in agricultural communications

AXED 300. Special Topics

1-4 Credits

Course addresses specific subjects and issues as identified by department. Topics and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 6 credits may be applied to a degree.

AXED 303. Small Engine Technology

3 Credits (2+2P)

Development of competencies in small gasoline engines; theory, operation, design, maintenance and safety. Designed for any major wishing to improve mechanical skills needed in agriculturally related occupations in education and industry.

AXED 331. Agricultural Structures

3 Credits (2+3P)

AXED 348. Advanced Technology in the Agricultural Mechanization
3 Credits (2+3P)
Students will construct a project in the area of agricultural mechanization under the direction of instructor. Project must be completed within a semester and of sufficient complexity for 3 credits.
Prerequisite(s): AXED 105 and 205 or consent of instructor.

AXED 360. Agricultural Communications
3 Credits
Principles and practical experience in news writing, radio production, newsletter design, public meeting presentations, video productions, graphics, and public relations activities, especially as related to the fields of agriculture and family and consumer sciences.

AXED 380. Philosophy and Methods of Contests
3 Credits
Covers the roles that career development events (contests) play in agricultural and technology education and in extension programs. Topics include competition and cooperation, winning and losing, ethics, use of community resources, and academic and employability skills taught through contests. Coaching as a teaching method is introduced and expanded. Students will assist with the coordination of various career development events. May be repeated up to 3 credits.

AXED 400. The Diffusion and Adoption of Agricultural Innovations
3 Credits
Factors that influence the rates of diffusion and adoption of innovations. Consequences of adopting or rejecting innovations. Processes by which change agents influence introduction and adoption of innovations. Same as AXED 500.

AXED 415. Youth Program Development and Management
3 Credits
Designed for professionals involved in youth group activities. Basic concepts in planning, conducting, and managing educational youth programs in a variety of organizations.

AXED 430. Teaching Adults in Nonformal Settings
3 Credits
The adult and postsecondary learner; adult learning styles and principles; use of community resources and problem-solving techniques; and learning strategies for adults in formal and nonformal education.

AXED 436. Keys for Agricultural and Rural Development
3 Credits
Introduction to concepts of development, the process of change, key factors that contribute to agricultural and rural development in a community, and strategies employed to effect change with implications for international students or domestic students planning to work internationally.

AXED 443. Curriculum Development and Assessment in Agricultural Education
3 Credits
This course prepares students to develop curriculum, design lessons, and prepare appropriate assessments in an agricultural education setting. An emphasis will be placed on the developing curriculum using the currently established resources that are available to agriculture teachers. Restricted to: AXED majors.
Prerequisite(s): 2.5 GPA.

AXED 444. Planning and Methods in Nonformal Education
3 Credits
Identifying trends and resources of a community and planning community-based extension and nonformal education programs. Preliminary methods for teaching and evaluating nonformal education programs.

AXED 445. Developing Excellent Programs in Career and Technical Education
3 Credits
Students learn to develop excellence in the three components of a successful secondary school program in career and technical education: classroom and laboratory instruction, career and technical student organizations, and career development activities. Community-based program planning, utilizing partners, program marketing, and professional development are addressed as strategies for achieving excellence. Methods of obtaining financing and maintaining accountability for the program are discussed.

AXED 446. Methods for Teaching Agricultural and Technology Education
3 Credits
Methods of instruction and presentation, selection of teaching aids and support materials, classroom management, development of a complete educational program, and microteaching experiences. Restricted to AXED Majors
Prerequisite: GPA of 2.5 or above.

AXED 447. Directed Teaching in Agricultural or Technology Education
15 Credits
Semester-long off-campus professional experience in directed teaching and observation provided in selected centers under secondary agricultural or technology education supervising teachers. Consent of Instructor required. Restricted to: AXED majors.
Prerequisite(s): AXED 445, 446 and consent of instructor.

AXED 448. Directed Teaching in Extension Education
3-12 Credits (3-12)
Four-to-fourteen-week, professional experiences in directed teaching and observation provided in cooperative extension at the county, regional, or state level. Consent of instructor required.

AXED 449. Directed Field Experience in Agricultural or Technology Education
3-12 Credits (3-12)
Four-to-fourteen-week, supervised learning experience in an approved teaching setting with application to educational, agricultural, technological, communications, public relations, or environmental practices. Consent of instructor required.

AXED 456. Introduction to Research Methods
3 Credits
Introduction to research design and methodology in education and behavioral sciences. Overview of common research designs and data collection strategies. Prepares students to critique published research and understand basic skills including hypothesis development and conducting a literature search.
Prerequisite: junior standing.

AXED 460. Methods in Career and Technical Laboratory Instruction
2 Credits
For students planning to teach agricultural or technology education at a secondary or postsecondary level. Focus on planning, delivering, and evaluating instruction in laboratories; and on CPR, first aid, and NCCER certifications. Laboratory safety and tool, equipment, and laboratory management systems are also emphasized. Restricted to AXED Majors.
AXED 466V. John Muir: Lessons in Sustainability
3 Credits
This course examines the life of John Muir in the context of sustainability. Muir was a farmer, inventor, explorer, botanist, glaciologist, conservationist, and noted nature author. He was influential in the National Parks movement and in starting the Sierra Club. Living in the natural world influences his faith and philosophy. By examining his life and the themes that shaped it, students will develop an understanding of what it means to live sustainably and to contribute beyond their personal lives to a sustainable past.

AXED 475. Leadership On Agricultural and Natural Resource Issues
3 Credits
Investigates leadership concepts and group dynamics as they relate to a changing world and complex agricultural and natural resource issues. Topics include emotional intelligence, leading change, political leadership, facilitating agreement, team building, and managing conflict in agricultural and natural resource settings.

AXED 480. International Agricultural Development
3 Credits
Introduction to Agricultural topics (products, people, environment, culture, etc) that affect international development. Topics provide students with awareness, knowledge and understanding of teaching, research and service opportunities for those seeking experience or careers in international agricultural development. Taught with AXED 580.

AXED 484. Methods of Teaching Biological, Earth and Physical Sciences in Agriculture
3 Credits
Students learn to set up and teach in a modular agriscience laboratory, utilizing a variety of technologies. Modules covered focus on incorporating biological, earth and physical sciences into agricultural instruction and may include: Tissue culture, animal anatomy, hydroponics microscopy, electrophoresis, microbiology, soils and plant nutrients, water quality, water systems, entomology, integrated pest management, and renewable energy applications. Students develop their own modules and/or experiments. May be repeated up to 3 credits.

AXED 486. Effective Management of Volunteer Programs
3 Credits
For individuals currently involved in, or interested in being involved in, the management and supervision of volunteer programs. Emphasis on practical application, utilizing a research and academic base. Explores the roles, functions, and tasks of volunteers and managers of volunteers including recruitment, orientation and training, supervision, evaluation, recognition and retention.

AXED 488. 4-H Youth Development
1 Credit
On-line course explores 4-H Youth Development as an integral part of the Cooperative Extension Service. Topics to be addressed include mission, philosophy, delivery modes, audiences and partnerships. Course is relevant for anyone interested in pursuing a career in Cooperative Extension.

AXED 489. The FFA Organization: An Overview
1 Credit
Online course addressing the history, mission, philosophy and structure of the New Mexico and National FFA Organizations and their relationship to supervised agriculture experiences and the agricultural education curriculum. Course is relevant for anyone interested in pursuing a career in agricultural education.

AXED 490. Independent Study in Agricultural, Extension, or Technology Education
1-3 Credits
Specific subjects are agreed upon by the student and instructor. May be repeated for a maximum of 6 credits.
Prerequisites: junior or senior standing and consent of instructor.

AXED 499. Undergraduate Research
1-4 Credits
Research experience in agricultural, extension, and technology education with applications to selected issues and problems.
Prerequisites: consent of instructor.

AXED 500. The Diffusion and Adoption of Agricultural Innovations
3 Credits
Factors that influence rates of diffusion and adoption of innovations. Consequences of adopting or rejecting innovations. Processes by which change agents influence introduction and adoption of innovations. Taught with AXED 400 with differential assignments for graduate students.

AXED 515. Youth Program Development and Management
3 Credits
Designed for professionals involved in youth group activities. Basic concepts in planning, conducting, and managing educational youth programs in a variety of organizations. Same as AXED 415 with differentiated assignments for graduate students.

AXED 525. Graduate Teaching Methods
3 Credits
Examines the teaching and learning process, emphasizing the use of appropriate methods for teaching career and technical education subjects to youth or adults in formal and nonformal educational settings. Includes principles of teaching and learning styles, levels of cognition, syllabus development, lesson planning, teaching using a variety of methods, and evaluating students. For students who have no prior education in teaching methods.

AXED 530. Teaching Adults in Nonformal Settings
3 Credits
The adult and postsecondary learner; adult learning styles and principles; use of community resources and problem-solving techniques; and learning strategies for adults in formal and nonformal education. Same as AXED 430 with differentiated assignments for graduate students.

AXED 536. Keys for Agricultural and Rural Development
3 Credits
Introduction to concepts of development, the process of change, key factors that contribute to agricultural and rural development in a community, and strategies employed to effect change with implications for international students or domestic students planning to work internationally.

AXED 543. Curriculum Development and Assessment in Agricultural Education
3 Credits
This course prepares students to develop curriculum, design lessons, and prepare appropriate assessments in an agricultural education setting. An emphasis will be placed on the developing curriculum using the currently established resources that are available to agriculture teachers. Restricted to: AXED majors.
Prerequisite(s): 2.5 GPA.
Prerequisite:

for a problem of their choice. Same as FCSC 556. Students. Restricted to majors. Main campus only.

ethics of research also stressed. Students develop a research proposal practices. Same as AXED 449 with reduced credit hours for graduate research and to diffuse research findings. Implications, applications, and technological, communications, public relations, or environmental in the behavioral sciences. Prepares students to conduct and critique identified teaching and learning methods and strategies for achieving excellence. Methods of obtaining financing and maintaining accountability of the program are discussed. Same as AXED 445 with differentiated assignments for graduate students.

AXED 546. Methods for Teaching Agricultural and Technology Education
3 Credits
Methods of instruction and presentation, selection of teaching aids and support materials, classroom management, development of a complete educational program, and microteaching experiences. Same as AXED 446. Restricted to AXED Majors
Prerequisites: GPA of 3.0 or above.

AXED 547. Directed Teaching in Agricultural or Technology Education
4-9 Credits (4-9)
Semester-long off-campus professional experience in directed teaching and observation provided in selected centers under secondary agricultural and technology supervising teachers. Consent of instructor required. Restricted to: AXED majors.
Prerequisite(s): A teaching methods class and consent of instructor.

AXED 548. Directed Teaching in Extension Education
4-9 Credits (4-9)
Four- to fourteen-week professional experiences in directed teaching and observation provided in cooperative extension at the county, regional, or state level. Same as AXED 448 with reduced credit hours for graduate students. Restricted to majors. Main campus only.
Prerequisite: consent of instructor.

AXED 549. Directed Field Experience in Agricultural or Technology Education
4-9 Credits (4-9)
Preliminary methods for teaching and evaluating nonformal education programs. Same as AXED 444 with differentiated assignments for graduate students.

AXED 554. Planning and Methods in Nonformal Education
3 Credits
Identifying trends and resources of a community and planning community-based extension and nonformal education programs. Preliminary methods for teaching and evaluating nonformal education programs. Same as AXED 444 with differentiated assignments for graduate students.

AXED 555. Research Methods
3 Credits
Students learn the research process as it is applied to solving problems in the behavioral sciences. Prepares students to conduct and critique research and to diffuse research findings. Implications, applications, and ethics of research also stressed. Students develop a research proposal for a problem of their choice. Same as FCSC 556.

AXED 556. New Mexico Water Issues
3 Credits
Designed for agricultural and natural resource professionals who must educate others or provide leadership on complex water issues in New Mexico. Students will travel to four distinct geographic and cultural regions of the state and study water policies, issues, and delivery technologies in each region. Specific areas covered will be determined by resource professionals who will present past, current and future issues involved in the distribution of water. Urban impacts on water use will also be investigated.

AXED 571. Data Collection and Analysis
3 Credits
Introduction to basic concepts of data collection and analysis. Interpretations from observational studies and controlled experiments. Roles of descriptive and inferential statistics in a complete data analysis. Mean, median, standard deviation, and graphical summaries of data. Correlation and simple regression. One- and two-sample tests and confidence intervals. Chi-square tests and basic analysis of variance. Competency in arithmetic and algebra required. An undergraduate statistics course recommended.

AXED 575. Leadership on Agricultural and Natural Resource Issues
3 Credits
Investigates leadership concepts and group dynamics as they relate to a changing world and complex agricultural and natural resource issues. Topics include emotional intelligence, leading change, political leadership, facilitating agreement, team building, and managing conflict in agricultural and natural resource settings. Taught with AXED 475 with differential assignments for graduate students.

AXED 578. International Agricultural Development
3 Credits
Introduction to agricultural topics (products, people, environment, culture, etc.) that affect international development. Topics provide students with awareness, knowledge and understanding of teaching, research, and service opportunities for those seeking experience or careers in international agricultural development and education. Taught with AXED 480.

AXED 580. Effective Management of Volunteer Programs
3 Credits
For individuals currently involved in, or interested in being involved in, the management and supervision of volunteer programs. Emphasis on practical application, utilizing a research and academic base. Explores the roles, functions, and tasks of volunteers and managers of volunteers including recruitment, orientation and training, supervision, evaluation, recognition and retention. Taught with AXED 486 with differentiated assignments for graduate students.

AXED 590. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 6 credits toward degree.

AXED 594. Workshops in Agricultural, Extension, and Technology Education
1-3 Credits
Workshop procedures applied to current trends in agricultural, extension, and technology education. Maximum of 7 credits toward a degree.
AXED 595. Internship/Cooperative Experience  
1-6 Credits  
Supervised professional on-the-job learning experience. Maximum of 6 credits toward a degree.  
Prerequisite: Consent of instructor.

AXED 598. Creative Component  
1-4 Credits  
For nonthesis program. Individual investigations or projects, either qualitative or quantitative studies. Maximum of 6 credits toward a degree.  
Prerequisite: Consent of instructor.

AXED 599. Master's Thesis  
1-6 Credits  
Thesis.

Name: Dr. Frank Hodnett  
Office Location: Gerald Thomas Hall, Room 111  
Phone: (575) 646-4511  
Website: http://aces.nmsu.edu/academics/axed

Agricultural and Community Development - Bachelor of Science in Agriculture

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXED 100</td>
<td>Introduction to Agricultural, Extension, and Technology Education</td>
<td>3</td>
</tr>
<tr>
<td>AXED 201G</td>
<td>Effective Leadership and Communication in Agricultural Organizations</td>
<td>3</td>
</tr>
<tr>
<td>AXED 360</td>
<td>Agricultural Communications</td>
<td>3</td>
</tr>
<tr>
<td>AXED 400</td>
<td>The Diffusion and Adoption of Agricultural Innovations</td>
<td>3</td>
</tr>
<tr>
<td>or AXED 436</td>
<td>Keys for Agricultural and Rural Development</td>
<td></td>
</tr>
<tr>
<td>AXED 415</td>
<td>Youth Program Development and Management</td>
<td>3</td>
</tr>
<tr>
<td>or AXED 430</td>
<td>Teaching Adults in Nonformal Settings</td>
<td></td>
</tr>
<tr>
<td>AXED 444</td>
<td>Planning and Methods in Nonformal Education</td>
<td>3</td>
</tr>
<tr>
<td>AXED 475</td>
<td>Leadership On Agricultural and Natural Resource Issues</td>
<td>3</td>
</tr>
<tr>
<td>Agriculture Economics (at least 12 credits)</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Agricultural Mechanics and Technology</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Plant and Pest Sciences (at least 13 credits)</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Animal Science (at least 9 credits)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Natural Resources (at least 9 credits)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Internship/Emphasis Area (at least 12 credits)</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td>82</td>
<td></td>
</tr>
</tbody>
</table>

Agricultural and Extension Education - Bachelor of Science in Agriculture

Concentration: Advanced Technology Education

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXED 100</td>
<td>Introduction to Agricultural, Extension, and Technology Education</td>
<td>3</td>
</tr>
<tr>
<td>AXED 201G</td>
<td>Effective Leadership and Communication in Agricultural Organizations</td>
<td>3</td>
</tr>
<tr>
<td>AXED 232</td>
<td>Early Field-Based Experience in Agricultural and Technology Education</td>
<td>2</td>
</tr>
<tr>
<td>AXED 445</td>
<td>Developing Excellent Programs in Career and Technical Education</td>
<td>3</td>
</tr>
<tr>
<td>AXED 446</td>
<td>Methods for Teaching Agricultural and Technology Education</td>
<td>3</td>
</tr>
</tbody>
</table>

Technology Education

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXED 447</td>
<td>Directed Teaching in Agricultural or Technology Education</td>
<td>15</td>
</tr>
<tr>
<td>AXED 460</td>
<td>Methods in Career and Technical Laboratory Instruction</td>
<td>2</td>
</tr>
<tr>
<td>RDG 414</td>
<td>Content Area Literacy</td>
<td>3</td>
</tr>
<tr>
<td>SPED 350</td>
<td>Introduction to Special Education in a Diverse Society</td>
<td>3</td>
</tr>
</tbody>
</table>

Upper Division Technical Education

Select at least 18 credits, which may include: 18

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXED 331</td>
<td>Agricultural Structures</td>
<td></td>
</tr>
<tr>
<td>AXED 348</td>
<td>Advanced Technology in the Agricultural Mechanization</td>
<td></td>
</tr>
<tr>
<td>AXED 484</td>
<td>Methods of Teaching Biological, Earth and Physical Sciences in Agriculture</td>
<td></td>
</tr>
<tr>
<td>E T 300</td>
<td>Special Topics</td>
<td>1-3</td>
</tr>
<tr>
<td>E T 317</td>
<td>Advanced 3-D Modeling and Design</td>
<td>3</td>
</tr>
<tr>
<td>E T 365</td>
<td>Building Utilities</td>
<td>3</td>
</tr>
<tr>
<td>E T 480</td>
<td>Innovation and Product Development</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 65-67

Concentration: Agricultural Communications

This degree option includes a certificate in Creative Media Technology and a minor in either Journalism and Mass Communication or Communication Studies. See your academic advisor for more information.

Concentration: Agricultural Education Teaching

Required Courses

Select 28-33 credits from the following: 28-33

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACES 111</td>
<td>Freshman Orientation</td>
<td></td>
</tr>
<tr>
<td>AXED 100</td>
<td>Introduction to Agricultural, Extension, and Technology Education</td>
<td></td>
</tr>
<tr>
<td>AXED 201G</td>
<td>Effective Leadership and Communication in Agricultural Organizations</td>
<td></td>
</tr>
<tr>
<td>AXED 232</td>
<td>Early Field-Based Experience in Agricultural and Technology Education</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 28-33
Agricultural and Extension Education - Undergraduate Minor

The department offers a minor in agricultural and extension education, which may be earned by completion of 18 credits in the department. The minor must include 9 credits of upper-division courses.

Agricultural and Natural Resource Leadership - Undergraduate Minor

The department offers a minor in agricultural and natural resource leadership, which may be earned by completing

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership Related Courses in the Department of Agricultural and Extension Education</td>
<td>12</td>
</tr>
<tr>
<td>Leadership Related Course from Outside the Department of Agricultural and Extension Education</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural or Natural Resource Policy Course</td>
<td>3</td>
</tr>
<tr>
<td>Total Credits</td>
<td>18</td>
</tr>
</tbody>
</table>

The minor must include 9 credits of upper division courses.

International Agricultural Development and Extension - Graduate Minor

A student who wishes to have a minor in Agricultural Development and Extension must complete nine credits of approved courses. Two courses are required for the minor: AXED 500—Diffusion and Adoption of Agricultural Innovations and AXED 580—International Agricultural Development. A third three credit course may be selected from several approved electives.

Agricultural Economics and Agricultural Business

Undergraduate Program Information

Specific courses meeting these and the university general education requirements are included for each major. A total of 120 credits are required for graduation. At least 48 credits must be at the 300+ level. You will develop schedules for specific semesters with the help of your academic advisor.

Graduate Program Information

The Department of Agricultural Economics and Agricultural Business cooperates with the Department of Economics, Applied Statistics, and International Business and the College of Business to offer graduate programs in agricultural economics and economics and a Master of Business Administration with specialization in Agribusiness. The programs are jointly administered by faculty from the two colleges. Graduate degrees include

- a Master of Science in agricultural economics,
- a Master of Agriculture with an agribusiness emphasis, and
- an MBA degree with specialization in agribusiness.
The objectives of the three programs differ in emphasis. The two departments also offer a doctoral program, Doctor of Economic Development.

- Master of Agriculture (MAG-AB) with Specialization in Agribusiness provides students with backgrounds or interests in agriculture with graduate-level training in agribusiness and applied economics. It is a degree alternative for individuals holding undergraduate degrees in various agricultural and food science fields.
- Master of Business Administration with Specialization in Agribusiness (MBA-AB) prepares students for business and public sector careers in agriculture and the food and fiber industry. Graduates from this program are knowledgeable about U.S. and international food and fiber sectors and hold an AACSB International accredited MBA degree.
- Master of Science (MS) in Agricultural Economics program provides rigorous training in economic theory, applied economic analysis and quantitative methods and is designed to prepare students for professional careers in business, government, research, and for continued education in pursuit of a Ph.D.
- Doctor of Economic Development (DED) is a professional doctorate designed to provide advanced training for economic development professionals. It is not designed to prepare graduates for academic careers.

All students in these programs must meet the requirements specified in the general regulations and requirements for admission to the Graduate School and to candidacy. To transfer between the program options requires a change of major form be submitted through the Graduate School and approved by the program to which the application is made.

Teaching and research assistantships are available to qualified applicants on a competitive basis. It is not necessary to have a degree in economics or agricultural economics to enter the graduate program or to qualify for a teaching or research assistantships. An application and three letters of reference are required to be considered for any available assistantships. These forms can be obtained from the department.

### Degrees for the Department

**Agricultural Economics and Business - Bachelor of Science in Agriculture** (p. 97)

**Natural Resource Economics and Policy - Bachelor of Science in Agriculture** (p. 100)

**Agriculture - Master of Agriculture** (p. 98)

**Agriculture - Master of Business Administration** (p. 98)

**Agricultural Economics - Master of Science** (p. 96)

**Economic Development - Doctor of Economic Development** (p. 99)

### Minors for the Department

**Agricultural Business Management - Undergraduate Minor** (p. 96)

**Natural Resource Economics - Undergraduate Minor** (p. 99)

**Professor, Jay Lillywhite, Department Head**

**Professors** Gorman, Gutierrez, Hawkes, Hurd, Libbin, Lillywhite, Ward

**Associate Professors** Acharya, Patrick;

**Assistant Professors** McNelis

### College Professors

**Bulloch; Townsend**

**College Assistant Professor** Robinson

### Department of Agricultural Economics and Agricultural Business:

J. Lillywhite, Department Head, Ph.D. (Purdue) – agribusiness management and marketing; R.N. Acharya, Ph.D. (Auburn) – food safety, logistics management, technology adoption, and marketing; T. L. Crawford, Ph.D. (Emeritus Cornell) – marketing, policy and pricing, quantitative methods, trade; J. M. Fowler, Ph.D. (Emeritus) (Iowa State) – forestry and range economics; W. D. Gorman, Ph.D. (Emeritus) (Oregon State) – agricultural business management, international marketing; P. Gutierrez, Ph.D. (Oklahoma State) – extension, ranch economics, economic development; J. Hawkes, Ph.D. (New Mexico State) – extension, range management; B. H. Hurd, Ph.D. (California-Davis) – water and natural resource economics; J. D. Libbin, Ph.D. (Iowa State) – farm management, production economics; M. Patrick, Ph.D. (Michigan State University) – Economic Development; R. Skaggs, Ph.D. (Emeritus) (Utah State) – agriculture and natural resource policy; L. A. Torell, Ph.D. (Utah State) – range, ranch economics, production economics; F. A. Ward, Ph.D. (Colorado State) – resource economics, welfare economics

### Department of Economics, Applied Statistics and International Business:


### AEEC 501. Microeconomic Theory

**3 Credits**

A rigorous re-examination of the pricing mechanism in the goods and factor markets. Development of theoretical tools of general applicability.

**Prerequisite(s):** ECON 371 and ECON 457, or consent of instructor.
AEEC 502. Macroeconomic Theory
3 Credits
Contemporary aggregative theory regarding the interrelationships among national income, employment, the price level, money supply and interest rates, and implications of this theory for public policy in a mixed economy.

AEEC 511. Advanced Futures and Options Markets
3 Credits
Advanced hedging and speculating strategies using futures and options contracts. Coverage includes interest rates, stock indexes, metals, currencies, livestock, and grains. Concepts of price analysis (technical and fundamental) and basis analysis; technical paper is required. Same as AG E/FIN 311 with additional coursework required at the graduate level. Cannot receive credit for both AG E/FIN 311 and AEEC/FIN 311. Crosslisted with: FIN 511.

AEEC 520. International Agricultural Trade Theory and Policy
3 Credits
Review and analysis of international trade models. Analysis of the effects of trade instruments such as tariffs, quotas, and subsidies on welfare and income distribution. Analysis of bilateral, regional, and multilateral trade agreements and their effect on the agricultural sector from both country-specific and global perspectives. Prerequisite: ECON 371.

AEEC 522. Public Sector Economics I
3 Credits
Introduction to the economic rationale for government intervention in the economy and the effects of that intervention on economic agents and the economy in general. Emphasis on the expenditure side of government policies. Same as GOVT 522.

AEEC 523. Public Sector Economics II
3 Credits
A continuation of AEEC 522. Concentrates on the economic effects of taxation. Same as GOVT 523.

AEEC 526. Global Food Supply Chain Management
3 Credits
This course aims to provide students a basic understanding of supply chain management issues, and encourages them to analyze problems from a systems perspective, and introduce them to a number of decision tools that are currently being used by the industry such as process analysis, product design, waiting line management, quality control, just-in-time, and inventory management.

AEEC 528. Economic Development
3 Credits
A graduate-level exposition of microeconomic and macroeconomic theory of why and how nations allocate resources to grow and develop. Strong emphasis is given to understanding the economic problems facing developing nations.

AEEC 540. Econometrics I
3 Credits
An integration of quantitative and statistical techniques for research and management in economics and business. Prerequisite(s): ECON 457 and ECON 405 or A ST 505.

AEEC 545. Advanced Agricultural Policy
3 Credits
Historical and cultural background of food and agricultural policy in the United States. Analysis of food and agricultural problems, policy-making and implementation. Economic evaluation of specific U.S. food and agricultural policy instruments, their domestic and international impacts. Same as AG E 445V with additional work required at the graduate level. Cannot receive credit for both AG E 445V and AEEC 545. Prerequisite: consent of instructor.

AEEC 550. Advanced Microcomputer Applications in Agriculture
3 Credits (2+2P)
An advanced course in electronic spreadsheets and the concepts and tools of database management emphasizing agricultural applications. Taught with AG E 450 with additional coursework required at the graduate level. Cannot receive credit for both AG E 450 and AEEC 550. Prerequisite(a): AG E 250G or consent of instructor.

AEEC 551. Advanced Agribusiness Marketing
3 Credits
Applications course in which self-managed teams apply marketing theory in the development and presentation of marketing plans for food and agriculture firms. Course includes analysis of marketing problems with emphasis on strategic marketing issues changing trade policies, and global competitiveness. Prerequisite: consent of instructor.

AEEC 556. Advanced Agribusiness Management
3 Credits
Integration of production, marketing, accounting, finance, agricultural policy, human behavior, and business environment concepts in management of agricultural businesses using a decision case approach.

AEEC 575. Economics of Water Resource Management and Policy
3 Credits
Focuses on issues, approaches and methods used in the assessment of water resource management and policy problems. Extends and further develops student understanding and comprehension of specific economic concepts and methods that are useful in the assessment and management of water resources, including cost-benefit analysis, welfare economics, non-market valuation, watershed management, and consideration of equity and ethical concerns. Students will develop critical reasoning, communication and analytic skills through active class discussions and assignments that emphasize both quantitative and written products. May be repeated up to 3 credits.

AEEC 585. Production Economics
3 Credits
Application of microeconomic theory to problems and decisions of food and agricultural firms. The theoretical foundation of production economics and the theory of the firm are developed. Prerequisites: MATH 142G, ECON 371, and ECON 457.

AEEC 590. Special Topics
3 Credits
Seminars in selected current topics in the various areas of agricultural economics and economics. Offerings will carry a subtitle. Prerequisite: consent of instructor.

AEEC 593. Internship
1-6 Credits
Supervised professional on-the-job training experience in policy analysis.
AECC 594. Internship
1-6 Credits
One semester to six months internship with a regulated firm or public utility commission. A faculty member will direct and evaluate the internship. For AECC regulatory option students only.

AECC 595. Internship
3 Credits
Supervised professional on-the-job learning experience.
Prerequisite(s): Consent of instructor.

AECC 596. Individual Study
1-3 Credits
Individual study programs. Each offering will carry a subtitle. Maximum of 3 credits in a semester and 6 credits in a program.
Prerequisite: consent of instructor.

AECC 597. Non-Thesis Research Project
1-3 Credits (1-3)
Individual investigations, either analytical or experimental. Maximum of 3 credits per semester. No more than 3 credits toward a degree.

AECC 598. Creative Component Project
3-6 Credits (3-6)
Individual investigations, either analytical or experimental. A minimum of 3 to 6 credits per semester. No more than 6 credits toward degree. Consent of instructor required. Restricted to AECC majors.
Prerequisite(s): Consent of Instructor.

AECC 599. Master’s Thesis
15 Credits
Thesis.

AG E 100. Introductory to Food and Agribusiness Management
3 Credits
Orientation to agricultural supply businesses, farm and ranch production, food markets, food processing and distribution, and food consumption. Microeconomic principles for managers. May be repeated up to 3 credits.

AG E 101. Careers in Food and Agribusiness
1 Credit
Orientation to agribusiness management. Students will learn about agricultural production and marketing in New Mexico, the United States, and the world. Students will be introduced to faculty and staff within the department, learn about career opportunities available to AEAB graduates, and develop a greater appreciation of agricultural management issues. May be repeated up to 1 credits. Restricted to Las Cruces campus only.
Prerequisite(s): Freshman status only or obtain consent of instructor.

AG E 200. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. Consent of instructor required.

AG E 210G. Survey of Food and Agricultural Issues
3 Credits
Survey of food and agricultural issues, including: geography of food production and consumption; human-agricultural-natural resource relations; agriculture in the United States and abroad; modern agribusiness; food safety; food, agriculture, and natural resources policy; ethical questions; role and impact of technology. Crosslisted with: FSTE 210G.

AG E 236. Principles of Food and Agribusiness Management
3 Credits
Description and application of management and financial principles, market planning, and organization theory in small business situations. May be repeated up to 3 credits.

AG E 250. Technology and Communication for Business Management
3 Credits (2+2P)
Understanding and improving skills for data analysis, information management and communication is the focus of this course. Drawing examples from a variety of management, business, technological and research situations, students discover the versatility and variety of uses of computer applications such as spreadsheet, database, presentation and document software. Emphasizing a ‘hands-on’ approach students learn the foundations of these tools and their use.

AG E 260. Introduction to Food and Agribusiness Accounting
3 Credits
Purpose and methods of keeping and analyzing farm and ranch records. Net worth and income statements, efficiency measures, analysis of the business, and tax computations. May be repeated up to 3 credits.

AG E 300. Internship
1-4 Credits (1-4)
Professional work experience under the supervision of a faculty member. May be repeated up to 6 credits. Consent of Instructor required. S/U Grading (S/U, Audit). Restricted to Las Cruces campus only.
Prerequisite(s): Consent of instructor.

AG E 305. Marketing and Food Agricultural Products
3 Credits
Description of agricultural processes and functions; food production and consumption patterns; agricultural product prices; nature of competition in agricultural product markets; commodity markets. May be repeated up to 3 credits. Crosslisted with: MKTG 305.
Prerequisite(s): ECON 201G or ECON 252G.

AG E 311. Financial Futures Markets
3 Credits
Emphasis on financial instruments, currencies, and stock index futures. Principles of hedging, arbitrage, speculation, technical and fundamental price analysis, and trading strategies. Simulated computer trading game. Same as AECC/FIN 511 with additional coursework required at the graduate level. Cannot receive credit for both AG E/FIN 311 and AECC/FIN 511. Same as FIN 311.

AG E 313. Food and Agricultural Sales
3 Credits
Techniques of salesmanship including application of sales techniques. Identification and classification of buyer type and different approaches to sales based on client base. Improving oral communication skills through individual and/or group sales presentations. May be repeated up to 3 credits.
Prerequisite(s): Junior or above standing.

AG E 314. Agricultural and Natural Resource Law
3 Credits
Relationship of common-law principles, statutory law and regulatory law to problems involving agriculture with an emphasis on New Mexico issues. Legal problems relevant to agribusiness, torts, fencing laws, liability for agricultural pollution, irrigation water rights, corporations and partnerships, land tenure, farm and ranch tenancy, agricultural labor, farm and ranch management and taxation. May be repeated up to 3 credits.
AG E 315V. World Agriculture and Food Problems
3 Credits
Survey of food and agricultural issues in the U.S. and other countries. Covers: role of agriculture in economic development; trade in food and agricultural products; global food production, consumption, and marketing patterns; economics of technical change and food assistance; agriculture and the environment. Same as GEOG 315V.

AG E 325. Food and Agribusiness Finance and Planning
3 Credits
Understanding, using, and constructing financial statements for agribusiness analysis. Learn how to produce integrated pro forma financial statements first on paper and then on a spreadsheet. Prepare and link revenue, cost, and financing input assumptions formulas to the financial outcomes on the spreadsheet. May be repeated up to 3 credits. Crosslisted with: ANSC 325.
Prerequisite(s): AG E 250 or equivalent experience using spreadsheets.

AG E 337V. Natural Resource Economics
3 Credits
Gain insight into important natural resource problems of our time. Apply economic principles to problems in the preservation, use, and development of agricultural, range, mineral, water, forestry, fishery, and environmental resources. Understand the use of cost-benefit analysis for government natural-resource projects, policies, and programs. Same as ECON 337V.
Prerequisite: ECON 201G or ECON 252G.

AG E 340. Economics of Food and Agricultural Markets
3 Credits
Focuses on the analysis of supply and demand characteristics of commodities with particular attention to agricultural products. Pays special attention to empirical analysis. Includes institutional aspects of pricing, temporal and spatial price relationships, price forecasting, and the economic consequences of pricing decisions. May be repeated up to 3 credits.
Prerequisite(s): ECON 252G, MATH 142G, and A ST 311 or A ST/STAT 251G.

AG E 342. Economic Analysis of Food and Agribusiness
3 Credits
A discussion and application of economic, managerial, and financial considerations in agricultural business. May be repeated up to 3 credits.
Prerequisite(s): ECON 251G, ECON 252G.

AG E 384V. Water Resource Economics
3 Credits
Use of economic principles to evaluate current and emerging issues in water resources. Applications focus on use of economic methods of analysis to current policy decisions surrounding agricultural, municipal, industrial, and environmental uses of water. Same as ECON 384V.
Prerequisite: AG E 100 or ECON 252G.

AG E 385. Applied Production Economics
3 Credits
Analysis of economic principles of agricultural production and planning, emphasizing marginal principles. Practical application in budgeting and analyzing profit maximizing agricultural-production strategies. May be repeated up to 3 credits.
Prerequisite(s): ECON 252G, MATH 142G, and A ST 311 or A ST/STAT 251G.

AG E 390. Seminar
1 Credit
Prerequisite(s): Senior standing.

AG E 406. The Economics of Sports
3 Credits
Applying the tools of economic analysis to a particular industry and gaining an in-depth knowledge of the interaction of professional sports teams and leagues with the economy and society. Same as ECON 406.

AG E 420. Special Problems
1-3 Credits
Special problems in agricultural economics or agricultural business of particular interest to the individual student. Maximum of 3 credits per semester. No more than 6 credits toward degree. Consent of instructor required.

AG E 425. Food and Agribusiness Financial Management
3 Credits
Description and application of techniques and principles of financial management to problem situations faced by agricultural businesses, including financial statement development and analysis, capital budgeting, sources and costs of capital. May be repeated up to 3 credits.
Prerequisite(s): ECON 252G and ACCT 221.

AG E 440. Ranch Economics
3 Credits
Economic principles related to western ranch business. Business management, economic characteristics of ranches, ranch land problems and values, and economics of rangeland use.
Prerequisite: ECON 201G or ECON 252G.

AG E 445V. Agricultural Policy
3 Credits
Historical and cultural background of food and agricultural policy in the United States. Analysis of food and agricultural problems, policy-making and implementation. Economic evaluation of specific U.S. food and agricultural policy instruments, their domestic and international impacts.
Prerequisites: ECON 251G and ECON 252G.

AG E 450. Spreadsheet Applications in Food and Agriculture
3 Credits (2+2P)
An advanced course in electronic spreadsheets and the concepts and tools of database management emphasizing agricultural application. Same as AEED 550 with additional work for graduate credit. Cannot receive credit for both AG E 450 and AEED 550. May be repeated up to 3 credits.
Prerequisite(s): AG E 250 or consent of instructor.

AG E 451. Food and Agribusiness Market Assessment and Research
3 Credits
Applications course in which self-managed teams develop and present marketing plans for agribusiness firms. Emphasis on integrating the marketing mix, particularly promotional elements. May be repeated up to 3 credits. Crosslisted with: MKTG 451.
Prerequisite(s): AG E 305 or MKTG 305 or consent of instructor.
AG E 452. Food and Agribusiness Marketing Plan Development
3 Credits
This course focuses on learning marketing research methods applicable
to developing new food and agricultural products and repositioning
existing products for new markets. Students will be required to prepare
precise written and oral marketing plans to industry standards and
will have opportunities to present written and oral plans at national
competitions. May be repeated up to 3 credits.

AG E 456. Case Studies in Food and Agribusiness Management
3 Credits
Integration of production, marketing, accounting, finance, agricultural
policy, human behavior, and business environment concepts in
management of agricultural businesses using a decision case approach.
May be repeated up to 3 credits.

Prerequisite(s): Senior standing.

AG E 458. Economics of Making and Marketing Wine
3 Credits
Economics of making and marketing wine for small commercial wineries
and amateurs. The class starts with selecting, crushing, and fermenting
grapes and all the steps required through bottling the wine. Students
must be 21 to enroll in the class. Consent of instructor required.

AG E 470. Real Estate Appraisal
3 Credits (2+2P)
This course addresses issues influencing the value of real estate with
some emphasis upon rural properties. Topics include courthouse records,
property taxes, appraisal methodology, expert courtroom testimony,
condemnation, and legal issues. Students will take field trips and
write appraisals. Course material is relevant to students in Finance,
Accounting, and Pre-Law, as well as Agriculture. Accredited for hours to
apply to both pre-licensing and continuing education requirements of the
New Mexico Real Estate Commission for both Appraisers and Real Estate
Brokers. Crosslisted with: FIN 470

Prerequisite(s): Junior or above standing.

AG E 499. Senior Thesis
3 Credits
Develop a thesis project with a faculty advisor. The senior thesis requires
students to work creatively to apply business and economic principles to
address a problem of concern. Restricted to AEAB majors.

Prerequisites: consent of department head and have senior standing.

Name: Dr. Jay Lillywhite

Office Location: GT Room 387

Phone: (575) 646-3215

Website: http://www.aeab.nmsu.edu

Agricultural Business Management - Undergraduate Minor

The minor in Agricultural Business Management (ABM) consists of 18
or more credit hours of approved course work from the list below. All
courses must be completed with grades of "C" or better. Once courses
are completed or show "IP" status, students pursuing the ABM minor
need to log in to their mynmsu and print out the STAR Audit for the minor
and obtain departmental approval. The course requirements for the ABM
minor are as follows:

Quantitative/Information - 6 credits

AG E 250 Technology and Communication for Business Management 3
A ST/STAT 251G Statistics for Business and the Behavioral Sciences 3
or A ST 311 Statistical Applications 3

Agricultural Economics, Law and Policy - 6 credits
ECON 252G Principles of Microeconomics 3

Choose 1 from the following:
AG E 314 Agricultural and Natural Resource Law 3
AG E 445V Agricultural Policy 3

Agribusiness Management - 6 credits
AG E 236 Principles of Food and Agribusiness Management 3

Choose 1 from the following - 3 credits 3
AG E 260 Introduction to Food and Agribusiness Accounting 3
AG E/MKTG 305 Marketing and Food Agricultural Products 3
AG E/FIN 311 Financial Futures Markets 3
AG E 313 Food and Agricultural Sales 3
AG E/ANSC 325 Food and Agribusiness Finance and Planning 3
AG E/ECON 337V Natural Resource Economics 3
AG E 342 Economic Analysis of Food and Agribusiness 3
AG E/ECON 384V Water Resource Economics 3
AG E 456 Case Studies in Food and Agribusiness Management 3
AG E/FIN 470 Real Estate Appraisal 3

Total Credits 18

Agricultural Economics - Master of Science

Students entering the MS program are required to have completed

• intermediate microeconomics and intermediate macroeconomics
  (completed with a B grade or better),
• a college-level calculus class, and
• a course in statistics that included linear regression analysis.

Students that have not completed these courses may be admitted with
the requirement that they take them as deficiencies at the beginning of
their graduate program. Prospective graduate students must have at
least a 3.0 undergraduate GPA. Students with a GPA less than 3.25 must
complete the GRE or the GMAT exam.

Completion of the Master of Science degree in agricultural economics
requires completion of a minimum of 33 graduate credit hours. Twenty-
one of the credits must have one of the following three prefixes: AEEC,
ECON, or ECDV. Twenty-four of the credits must be associated with
course numbers greater than 500. All students in the MS program must
successfully complete the following core courses:

M.S. CORE (16-18 hrs)
AEEC 501 Microeconomic Theory 3
AEEC 502 Macroeconomic Theory 3
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEEC 540</td>
<td>Econometrics I</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 585</td>
<td>Production Economics</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 599</td>
<td>Master's Thesis ¹</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

**Choose 3 Classes from AEAB Block (9 hrs) ²**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEEC/FIN 511</td>
<td>Advanced Futures and Options Markets</td>
<td></td>
</tr>
<tr>
<td>AEEC 520</td>
<td>International Agricultural Trade Theory and Policy</td>
<td></td>
</tr>
<tr>
<td>AEEC 526</td>
<td>Global Food Supply Chain Management</td>
<td></td>
</tr>
<tr>
<td>AEEC 550</td>
<td>Advanced Microcomputer Applications in Agriculture</td>
<td></td>
</tr>
<tr>
<td>AEEC 551</td>
<td>Advanced Agribusiness Marketing</td>
<td></td>
</tr>
<tr>
<td>AEEC 556</td>
<td>Advanced Agribusiness Management</td>
<td></td>
</tr>
<tr>
<td>AEEC 545</td>
<td>Advanced Agricultural Policy ²</td>
<td></td>
</tr>
<tr>
<td>AEEC 575</td>
<td>Economics of Water Resource Management and Policy</td>
<td></td>
</tr>
<tr>
<td>AEEC 590</td>
<td>Special Topics</td>
<td></td>
</tr>
<tr>
<td>AEEC 596</td>
<td>Individual Study</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Additional Graduate Courses (~6 hrs) ³</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

1. AEEC 599 minimum hours are 4 with maximum of 6 toward the degree
2. AEEC 545 must be taken as part of this AEAB Block if not previously completed as an undergraduate under AG E 445V.
3. One of these two choices may include three (3) additional hours of AEEC 596. Or student may select a justifiable minor (9+ hours) per Graduate School policy plus 2 additional courses from the AEAB Block.

MS students are generally required to write a thesis (AEEC 599 Master’s Thesis (4-6 credits). Non-thesis options that include a non-thesis research project (AEEC 597 Non-Thesis Research Project, 3 credits) or an internship (AEEC 595 Internship, 3 credits) must have approval from the student’s committee and the graduate chairman. Students pursuing the MS degree may not complete the graduate program with more than one C grade in the core courses. If a student receives C grades in two of these core classes one of the classes must be repeated with a grade of at least B. In addition to core courses, nine additional credits must be completed from an agricultural economics and agricultural business (AEAB) course block. AEEC 545 Advanced Agricultural Policy must be taken in the graduate program if an agricultural policy course was not taken as an undergraduate. Individual study (AEEC 596 Individual Study) is limited to 6 credits hours. Electives and up to 3 credits from the AEAB course block can be used to pursue a minor. An oral defense is required of all master’s candidates and will be scheduled and completed according to the guidelines of the Graduate School. The oral defense must be preceded by an open seminar to present major research findings to faculty, fellow students and the interested public.

### Agricultural Economics and Business

- **Bachelor of Science in Agriculture**

#### General and Departmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td>MATH 142G</td>
<td>Calculus for the Biological and Management Sciences</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>General Education Science with Lab</strong></td>
<td><strong>8</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Social/Behavior Sciences</strong></td>
<td>6-9</td>
</tr>
<tr>
<td></td>
<td><strong>Humanities and Fine Arts</strong></td>
<td>6-9</td>
</tr>
<tr>
<td></td>
<td><strong>Viewing a Wider World</strong></td>
<td>6</td>
</tr>
</tbody>
</table>

Select one from the following:

- COMM 253G Public Speaking
- COMM 265G Principles of Human Communication
- AXED 201G Effective Leadership and Communication in Agricultural Organizations
- HON 265G Principles of Human Communication Honors

Select one from the following:

- ENGL 203G Business and Professional Communication
- ENGL 211G Writing in the Humanities and Social Sciences
- ENGL 218G Technical and Scientific Communication
- ENGL 311G Advanced Composition
- ENGL 318G Advanced Technical and Professional Communication

**Quantitative**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 120</td>
<td>Intermediate Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>AG E 250</td>
<td>Technology and Communication for Business Management</td>
<td></td>
</tr>
<tr>
<td>AG E 342</td>
<td>Economic Analysis of Food and Agribusiness</td>
<td>3</td>
</tr>
<tr>
<td>AG E 450</td>
<td>Spreadsheet Applications in Food and Agriculture</td>
<td>3</td>
</tr>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
<td>3</td>
</tr>
<tr>
<td>or STAT 251G</td>
<td>Statistics for Business and the Behavioral Sciences</td>
<td></td>
</tr>
</tbody>
</table>

**General Business**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 221</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 222</td>
<td>Management Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BLAW 316</td>
<td>Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>FIN 341</td>
<td>Financial Analysis and Markets</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select one from the following MGT 300+:</td>
<td></td>
</tr>
<tr>
<td>MGT 309</td>
<td>Human Behavior in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>MGT 332</td>
<td>Human Resources Management</td>
<td></td>
</tr>
<tr>
<td>MGT 361</td>
<td>Managing a Startup</td>
<td></td>
</tr>
</tbody>
</table>

**Economic Theory**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select one from the following:</td>
<td></td>
</tr>
<tr>
<td>AG E 340</td>
<td>Economics of Food and Agricultural Markets</td>
<td></td>
</tr>
<tr>
<td>ECON 312</td>
<td>Intermediate Microeconomic Theory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select one from the following:</td>
<td></td>
</tr>
<tr>
<td>ECON 304</td>
<td>Money and Banking</td>
<td></td>
</tr>
<tr>
<td>ECON 311</td>
<td>Intermediate Macroeconomic Theory</td>
<td></td>
</tr>
</tbody>
</table>

**Applied Economics/Business**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACES 111</td>
<td>Freshman Orientation</td>
<td>1</td>
</tr>
</tbody>
</table>
Agriculture - Master of Agriculture

Concentration: Agribusiness

Candidates for the Master of Agriculture (MAG) with specialization in Agribusiness must successfully complete a minimum of 33 graduate credits. Students entering the Master of Agriculture program are required to have completed:

- intermediate microeconomics and intermediate macroeconomics,
- a college-level calculus class, and
- a course in statistics that included linear regression analysis.

All prerequisite courses must be completed with a B grade or better. AEEC 545 Advanced Agricultural Policy must be taken in the graduate program if an agricultural policy course was not taken as an undergraduate. Those students not having completed these courses may be admitted with the requirement that the deficiencies be completed at the beginning of the graduate program. Prospective graduate students must have at least a 3.0 undergraduate GPA. Students with a GPA less than 3.25 must complete the GRE or GMAT exam.

All students in the MAG program must successfully complete the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG E 100</td>
<td>Introductory to Food and Agribusiness Management</td>
<td>3</td>
</tr>
<tr>
<td>AG E 101</td>
<td>Careers in Food and Agribusiness</td>
<td>1</td>
</tr>
<tr>
<td>AG E 236</td>
<td>Principles of Food and Agribusiness Management</td>
<td>3</td>
</tr>
<tr>
<td>AG E/MKTG 305</td>
<td>Marketing and Food Agricultural Products</td>
<td>3</td>
</tr>
<tr>
<td>AG E 385</td>
<td>Applied Production Economics</td>
<td>3</td>
</tr>
<tr>
<td>AG E 400</td>
<td>Seminar</td>
<td>1</td>
</tr>
<tr>
<td>AG E 425</td>
<td>Food and Agribusiness Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>AG E 445V</td>
<td>Agricultural Policy</td>
<td>3</td>
</tr>
<tr>
<td>AG E 456</td>
<td>Case Studies in Food and Agribusiness Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Required Specialty Area

Select and Complete 2 required courses from 1 Specialty Area:

- **Natural Resources**
  - AG E 314 Agricultural and Natural Resource Law
  - AG E/ECON 337V Natural Resource Economics
  - AG E/ECON 384V Water Resource Economics

- **Finance**
  - AG E/FIN 311 Financial Futures Markets
  - AG E/ANSC 325 Food and Agribusiness Finance and Planning
  - AG E/FIN 470 Real Estate Appraisal

- **Marketing**
  - AG E 313 Food and Agricultural Sales
  - AG E/MKTG 451 Food and Agribusiness Market Assessment and Research

Total Credits: 115-121

Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEEC 551</td>
<td>Advanced Agribusiness Marketing</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 556</td>
<td>Advanced Agribusiness Management</td>
<td>3</td>
</tr>
<tr>
<td>FIN 503</td>
<td>Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 503</td>
<td>Accounting for Managers</td>
<td>3</td>
</tr>
</tbody>
</table>

Additional Requirements

- AEAB Block (6 hrs): 6
  - AEAB 511 Advanced Futures and Options Markets
  - AEAB 526 International Agricultural Trade Theory and Policy
  - AEAB 540 Econometrics I
  - AEAB 550 Advanced Microcomputer Applications in Agriculture
  - AEAB 575 Economics of Water Resource Management and Policy
  - AEAB 585 Production Economics
  - AEAB 545 Advanced Agricultural Policy

Internship, Creative Component, or Thesis (3-6 hrs): 3-6

- AEAB 595 Internship
- AEAB 598 Creative Component Project
- AEAB 599 Master’s Thesis

Electives (~9-12): 12

Total Credits: 33-36

Some courses in this degree are core requirements for the MBA and have limitations for participation by non-MBA students. MAGR students cannot take BA 590 and MGT 591. Only 9 hours are allowed for MAGR students from: ACCT 503, BA 590, BLAW 502, BLAW 503. Students can take 2 additional courses with advisor and graduate chairman approval in lieu of AEAB 595, AEAB 598, or AEAB 599.

A thesis (AEAB 599 Master’s Thesis, 4-6 credits) is not required but can substitute for the internship or individual investigation. Individual study (AEAB 596 Individual Study) is limited to 3 credits. An oral defense must be preceded by a public seminar to present major findings, experiences, and contributions of the individual investigation, internship, and/or thesis research to faculty, fellow students, and the interested public.

Agriculture - Master of Business Administration

Concentration: Agribusiness

Candidates for the Master of Business Administration with specialization in Agribusiness (MBA-AB) must successfully complete a minimum of 36 graduate credit hours. Admission to the MBA-AB program is through the College of Business. The program includes numerous prerequisites in economics, accounting, and business as defined in the Business Administration and Economics section of this catalog. AEEC 545 Advanced Agricultural Policy must be taken in the MBA-
Agribusiness program if an agricultural policy course was not taken at the undergraduate level. A written paper and presentation following the guidelines described for B A 590 Professional Paper/Presentation is required. MBA-AB students can take the required minimum 4 thesis credit hours to substitute for B A 590 Professional Paper/Presentation. If a thesis (AEEC 599 Master’s Thesis) is written in-lieu of taking B A 590 Professional Paper/Presentation, an examining committee and thesis defense must be organized similar to that of the MS degree program. For more information about the requirements for the MBA specialization refer to the MBA section (p. 422) of this catalog.

Core (21 hs)
- ACCT 503 Accounting for Managers 3
- BCIS 502 Business Information Systems 3
- B A 590 Professional Paper/Presentation 1 3
- BLAW 502 Legal Environment of Business 3
- FIN 503 Financial Management 3
- MGT 503 Organizational Behavior and Management Processes 3
- MGT 590 Strategic Management 3

AEAB Block Requirements (15 hrs) 2
- AEEC/FIN 511 Advanced Futures and Options Markets 3
- AEEC 520 International Agricultural Trade Theory and Policy 3
- AEEC 526 Global Food Supply Chain Management 3
- AEEC 551 Advanced Agribusiness Marketing 3
- AEEC 556 Advanced Agribusiness Management 3

Total Credits 36

1 MBA-Agribusiness majors, with advisor approval, may take the required minimum 4 thesis hours (maximum of 6 hrs) in lieu of BA 590
2 AEEC 545 must be taken as part of this AEAB Block if not previously completed as an undergraduate under AG E 445V.

Economic Development - Doctor of Economic Development

The Doctor of Economic Development (DED) is a professional doctorate designed to provide advanced training for economic development professionals. It is not designed to prepare graduates for academic careers.

Candidates for the DED enter the program with the equivalent of a master’s degree. DED students must successfully complete approximately 60 graduate credits beyond the hours required for entry. All students must meet the requirements specified in the general regulations and requirements for admission to the Graduate School and to candidacy. DED minimum admission requirements include:

1. related master’s degree or equivalent coursework;
2. one course in intermediate microeconomic theory and one course in macroeconomic theory with minimum grades of B;
3. one course in college-level calculus with a minimum grade of B; and
4. one course in statistics, including simple regression with a minimum grade of B.

Additionally, students who have not completed graduate level courses in microeconomic theory, macroeconomic theory, and econometrics with grades of B or better will be required to successfully complete these courses early in the DED program.

All students in the DED program must successfully complete the following:

Core Courses
- AEEC 501 Microeconomic Theory 3
- AEEC 502 Macroeconomic Theory 3
- AEEC 540 Econometrics I 3
- ECDV 550 Introduction to Local and Regional Development 3
- ECDV 651 Economic Development Theory 3
- ECDV 661 Regional Economic Modeling I 3
- ECDV 662 Regional Economic Modeling II 3
- ECDV 664 Population Economics 3
- ECDV 668 Economic Development Finance 3
- ECDV 671 Sustainable Economic Development 3
- ECDV 692 Seminar in Economic Development (taken twice) 6
- ECDV 681 Urban Economic Development 3
- ECDV 682 Rural Development 3
- ECDV 683 Seminar in National Economic Development 3

Specialty Area 6
- Internship and Final Project (12-15 hrs) 12-15
- Elective credits to fulfill the 60+ hour requirement 3

Total Credits 66-69

NOTE: Doctor of Economic Development (DED) students who enter the DED program with a master's degree may, upon completion of all requirements for the MA in Economics, apply for the MA in Economics degree and count courses that overlap with the DED requirements toward the DED. Students must apply separately for the MA in Economics program and the master’s degree must be conferred before the DED.

Comprehensive and oral exams will be given and will determine eligibility to continue in the program and/or to graduate.

Teaching and research assistantships are available to qualified applicants, however, admission to the program does not imply or guarantee funding.

Detailed and updated information is available at https://business.nmsu.edu/academics/graduate-programs/ded/.

Natural Resource Economics - Undergraduate Minor

The minor in Natural Resource Economics (NRE) consists of 18 or more credit hours of approved course work of which at least 9 hours must be numbered 300 or above and completed with grades of "C" or better. Once courses are completed or show "IP" status in the audit, students pursuing the NRE minor need to log in to their mynmsu and print out the STAR Audit and obtain departmental approval. The course requirements for the NRE minor are as follows:

Required Courses - 6 credits
- ECON 252G Principles of Microeconomics 3
Select 1 course from the following: 3
AG E/ECON 337V Natural Resource Economics
AG E/ECON 384V Water Resource Economics

Select 2 courses from the following - 6 credits 6
FWCE 255 Principles of Fish and Wildlife Management
AG E 445V Agricultural Policy
GOVT 330 Introduction to Public Administration

Select 2 courses from the following - 6 credits 6
FWCE 110 Introduction to Natural Resources Management
FWCE 301 Wildlife Ecology
GEOG 281 Map Use: Reading, Analysis and Interpretation
RGSC 294 Rangeland Resource Management
PHIL 300+

Total Credits 18

Natural Resource Economics and Policy - Bachelor of Science in Agriculture

General and Departmental Requirements
ENGL 111G Rhetoric and Composition 4
Select one from the following: 3
COMM 253G Public Speaking
COMM 265G Principles of Human Communication
AXED 201G Effective Leadership and Communication in Agricultural Organizations
Select one from the following: 3
ENGL 203G Business and Professional Communication
ENGL 211G Writing in the Humanities and Social Sciences
ENGL 218G Technical and Scientific Communication
ENGL 311G Advanced Composition
ENGL 318G Advanced Technical and Professional Communication
MATH 142G Calculus for the Biological and Management Sciences 3

General Education Science with Lab 8
Social/Behavior Sciences 6-9
Humanities and Fine Arts 6-9
Viewing a Wider World 6

Applied Economics Core
ACES 111 Freshman Orientation 1
ACES 121 Financial Fitness for College Students 1
AG E/ECON 337V Natural Resource Economics 3
AG E/ECON 384V Water Resource Economics 3
AG E 385 Applied Production Economics 3
AG E 400 Seminar 1
AG E 450 Spreadsheet Applications in Food and Agriculture 3
ECON 251G Principles of Macroeconomics 3
ECON 252G Principles of Microeconomics 3
ECON 311 Intermediate Macroeconomic Theory 3
ECON 312 Intermediate Microeconomic Theory 3

Science, Policy and Ethics
AG E 445V Agricultural Policy 3
AG E 314 Agricultural and Natural Resource Law 3
or BLAW 316 Legal Environment of Business 3
ECON 300+ 3
FWCE 110 Introduction to Natural Resources Management 4
FWCE 255 Principles of Fish and Wildlife Management 3
FWCE 301 Wildlife Ecology 3
GEOG 281 Map Use: Reading, Analysis and Interpretation 3
or FWCE 450 Special Topics 3
GOVT 330 Introduction to Public Administration 3
RGSC 294 Rangeland Resource Management 3
PHIL 300+ 3

Quantitative Skills
MATH 120 Intermediate Algebra 3
MATH 121G College Algebra 3
A ST 311 Statistical Applications 3
or STAT 251G Statistics for Business and the Behavioral Sciences 3
AG E 250 Technology and Communication for Business Management 3

Electives: to bring the total to 120 11

Total Credits 120-126

Animal and Range Sciences
Undergraduate Program Information

The Department of Animal and Range Sciences provides opportunities for you to follow a variety of interests in modern scientific agriculture. The animal science curriculum provides a background for many phases of the food animal industry, from farm animal production on rangelands to management positions in the food processing industry to highly technical careers in research and companion animal management. The range science curriculum provides you with knowledge and skills necessary to sustainably manage rangelands for multiple uses. These curricula allow you to acquire the background necessary to adjust easily to variations in specific job opportunities. If you are majoring in either animal science or range science, you must meet general education requirements, have a minimum of 48 credits of upper-division courses (numbered 300 and above), and complete a minimum of 35 credits in courses in the College Agricultural, Consumer and Environmental Sciences.

Graduate Program Information

The Department of Animal and Range Sciences offers graduate work leading to the Master of Science and the Doctor of Philosophy degrees with majors in animal science and range science. The Doctor of Philosophy degree in animal science is only in the areas of reproductive physiology or ruminant nutrition.
Prerequisite for admission as a regular graduate student in the department is the completion of a curriculum, substantially equivalent to that required of undergraduate students in animal or range science at this institution, 3.0 GPA, and three letters of reference.

For the Master of Science degree, a minimum of 30 semester credits of graduate work in the major and related subjects will be required, together with a thesis for most majors. A non-thesis option is available for certain students.

For the Master of Agriculture with specialization in Domestic Animal Biology, students must complete 32 credit hours of graduate courses which include 2 credits of ANSC 598 Special Research Programs for the creative component.

The Doctor of Philosophy student must demonstrate proficiency in a foreign language or research tool, such as experimental statistics, philosophy of science, computer science, or mathematics. Choice of the research tool will remain the option of the student subject to approval by the student's graduate committee. Demonstration of proficiency may be accomplished by satisfactory completion of courses or by other suitable evidence acceptable to the student's committee. In addition, doctoral students are required to complete advanced courses in a field of study closely related to animal science or range science. The number of courses to be completed in the related area will be determined by the student's committee. Related areas of study often are biology, chemistry, or experimental statistics.

The Department of Animal and Range Sciences is a sponsoring department in the recently approved interdisciplinary graduate degree program that offers both a MS and Ph.D. degree in Water Science Management. The degree program is being handled through the College of Agricultural, Consumer and Environmental Sciences (ACES), and the program description, including application guidelines, classes involved, and topic areas being supported can be found in the catalog under the section describing ACES Programs. Interested students are encouraged to contact the Department Head of Animal and Range Sciences, Shanna Ivey at (575) 646-2515 for more information.

Graduate work in the department is designed to prepare the student for work in the fields of research, extension, teaching, production, and conservation.

Facilities available to graduate students include herds and flocks of the major livestock species, animal nutrition laboratories, physiology laboratories, meats laboratory, small animal laboratory, 25,000-specimen herbarium, two ranches of approximately 92,000 acres, and a 1,000-head experimental feedlot. Active cooperation is maintained with federal research agencies located on and off the campus. Related areas of study often are biology, chemistry, or experimental statistics.

A number of graduate assistantships will be available each year. Inquiries should be addressed to the head of the department.

**Degrees for the Department**

Animal Science - Bachelor of Science in Agriculture (p. 108)

Range Science - Bachelor of Science in Agriculture (p. 112)

Agriculture - Master of Agriculture (p. 108)

Animal Science - Master of Science (p. 111)

Range Science - Master of Science (p. 113)

Animal Science - Doctor of Philosophy (p. 110)

Range Science - Doctor of Philosophy (p. 113)

**Minors for the Department**

Horse Management - Undergraduate Minor (p. 111)

Human Animal Interaction - Undergraduate Minor (p. 112)

Livestock Production - Undergraduate Minor (p. 112)

Ranch Management - Undergraduate Minor (p. 112)

Range Science - Undergraduate Minor (p. 114)

Range Science - Graduate Minor (p. 113)

Animal Science - Graduate Minor (p. 111)

**Professor, Shanna Ivey, Interim Department Head**

**Professors** Bailey, Cibils, Duff, Fernald, Hubbert, Holechek, Löest, Soto, Wise

**Associate Professors** Ashley, Burcham, Fasenko, Ganguli, Scholljegerdes, White

**Assistant Professors** Geli, Summers

**College Track Assistant Professors** Campbell, Fuentes, Pridhoko

**Instructors** Priest

**Co-operators (USDA)** Estell, Herrick, Peters

**Emeritus Faculty** Abbott, Allred, McDaniel, Ross, Thomas


**Adjunct faculty**:

C. D. Allison, Ph.D. (Texas A&M University) – range management; K. M. Harvstad, Ph.D. (Utah State University) – range animal nutrition; J.E. Herrick, Ph.D. (Ohio State University) – soils; M.R. Levi, Ph.D. (University of Arizona) - soil morphology/classification; T.J. Nagaraja, Ph.D. (Kansas State University) - rumen microbiology; D.P. Peters, Ph.D.
ANSC 100. Introductory Animal Science
3 Credits
Orientation and survey of livestock industry in the United States; introduction to feeding, breeding, and management practices for producing farm animals and select companion animals.

ANSC 101. Introductory Animal Science Laboratory
1 Credit
Students will observe and participate in activities related to farm animal and reproductive physiology, animal ID and animal health. This lab is required for animal science majors. Pre/Corequisite(s): ANSC 100.

ANSC 103. Introductory Horse Science
3 Credits (2+2P)
The light horse industry; breeds; introduction to feeding, breeding, marketing and management; handling and selecting horses for breeding and performance.

ANSC 112. Companion Animals in Society
3 Credits
Examination of the historical, current, and potential future roles of companion animals in human society. Topics include animal domestication, breeds, exotic companion animals, the companion animal industry, and competitions and sports involving companion animals. Emphasis is on canine and feline species. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

ANSC 190. Western Equitation I
2 Credits
Basic principles of Western riding, including care and management of the riding horse, equitation equipment, and development of riding skills.

ANSC 200. Introduction to Meat Animal Production
3 Credits (2+2P)
Production and utilization of beef cattle, sheep and swine; emphasis on feeding, breeding, management problems and marketing; selection of animals for breeding and market.

ANSC 201. Introduction to Genetics for Animal Production
3 Credits
Introduction to genetics and inheritance relative to livestock production. Introduction to procedures for collection and use of performance information in livestock improvement programs. Prerequisites: BIOL 111G.

ANSC 220. Animal Science Career Development
1 Credit
Introduction to scientific disciplines and career options in animal-agriculture career skill development, including resume preparation, networking, importance of internships, and leadership experiences in animal agriculture.

ANSC 250. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

ANSC 261. Introduction to Animal Metabolism
3 Credits
Principles underlying the mechanisms of animal metabolism as they relate to production, maintenance, and health of animals. Prerequisite: CHEM 111G.

ANSC 262. Introduction to Meat Science
3 Credits (2+3P)
Fundamental aspects of the red meat industry. Lecture topics and laboratory exercises include the nutrient value of meat, meat preservation, meat safety, muscle structure and contraction, slaughter and processing of beef, lamb, and pork, sausage manufacture, meat curing, meat cookery, and muscle and bone anatomy.

ANSC 285. Introduction to Companion Animal Science
3 Credits
Introduction and application of business skills necessary to effectively manage the equine operation. Students will learn how to use strategic thinking and sound business management practices to succeed in the demanding equine industry. Prerequisite(s): ANSC 103 or consent of instructor.

ANSC 288. Horse Fitting and Selling
3 Credits
Preparation of horses for sale; planning and conduct of auction sale; application of marketing principles relating to selling horses. Prerequisite: ANSC 103 or consent of instructor.

ANSC 289. Management of Equine Operations
3 Credits
Introduction and application of business skills necessary to effectively manage the equine operation. Students will learn how to use strategic thinking and sound business management practices to succeed in the demanding equine industry. Prerequisite(s): ANSC 103 or consent of instructor.

ANSC 290. Western Equitation II
2 Credits
Intermediate principles of Western riding, including reading horse behavior, limbering-up exercises, and developing riding skills. Introduction to rollbacks, turnarounds and stops. Prerequisite: consent of instructor.

ANSC 295. Team Competition in Animal Science
1-2 Credits
Training in team competition in the animal sciences. May be repeated for a maximum of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

ANSC 301. Animal and Carcass Evaluation
3 Credits (2+2P)
Determination of the market value of meat animals by relating live animal and carcass traits. Topics include the identification of economically important traits, grading, growth and development, wholesale and retail pricing, and futures and options markets.

ANSC 302. Therapeutic Horseback Riding I
3 Credits
Basic principles and understanding of horsemanship and therapeutic riding, including equipment, safety, how to be an effective volunteer, side walker, and horse handler. Consent of instructor required.
ANSC 303. Livestock, Meat and Wool Evaluation
4 Credits (3+2P)
Selection, classification, grading, and judging of livestock, meat, and wool.

ANSC 304. Feeds and Feeding
3 Credits (2+2P)
Digestibility of feeds, their nutritive values, grades, and classes, principles of ration formulation and computer ration formulations, and practical feeding of farm animals.
Prerequisite(s): CHEM 111G, General Chemistry I.

ANSC 305. Principles of Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals. Crosslisted with: AGRO 305, BIOL 305, HORT 305 and GENE 305
Prerequisite(s): BIOL 111G, BIOL 211G and either CHEM 111G or CHEM 115.

ANSC 308. Horse Evaluation
4 Credits (2+4P)
Students will acquire a working knowledge of selection and classification of horses, learn criteria for evaluation and selection of breeding and show animals, gain a broad understanding of judging conformation and performance in the horse, and learn effective oral and written communication skills through defense of class placings. This course is considered an introduction to the NMSU Horse Judging Team.

ANSC 310. Exhibiting Livestock
3 Credits (1+4P)
Fitting and showing beef cattle, dairy cattle, sheep and swine.

ANSC 312V. Companion Animals and the Human-Animal Interaction
3 Credits
The science behind human-animal interactions (HAI). An examination of the interactions between humans and companion animals and the effects on human and animal health and wellness. Cultural differences in HAI will be explored. Topics will include Animal Assisted Activity (AAA), Animal Assisted Therapy (AAT), and service animals. Emerging and future uses of companion animals in HAI will be discussed.

ANSC 320. Equine Behavior and Training
3 Credits
Basic principles, methods and philosophies of handling, breaking and training the two-year-old Western horse. May be repeated up to 6 credits.
Prerequisite(s): ANSC 290 or consent of instructor.

ANSC 321. Advanced Equine Behavior and Training
3 Credits
Continuation of ANSC 320. Further development of skills required to advance the training of the two-year-old Western horse. Emphasis will be placed on lateral work, lead changes, turn-arounds, obstacles, and making the horse accustomed to ranch and trail riding situations.
Prerequisite(s): ANSC 320 or consent of instructor.

ANSC 325. Food and Agribusiness Finance and Planning
3 Credits
Same as AG E 325. May be repeated up to 3 credits. Crosslisted with: AG E 325.

ANSC 350. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

ANSC 351V. Agricultural Animals of the World
3 Credits
Global study of the development and use of animals for production of food and nonfood products. Climatic, cultural, and economic influences on systems of livestock production and species and breeds of livestock utilized will be evaluated.

ANSC 353. Advanced Livestock Evaluation
2 Credits
Advanced selection, classification and grading of livestock. May be repeated up to 2 credits. Consent of Instructor required.

ANSC 363. Meat Technology
3 Credits
Structure function and composition of muscles; factors influencing conversion of muscle to meat; buying, palatability and nutritive value of meat and meat products.

ANSC 370. Anatomy and Physiology of Farm Animals
4 Credits (3+2P)
Structure and function of the animal body. Includes studies of the horse, cow, sheep, pig, and comparisons with the human body.
Prerequisite(s): CHEM 111G and BIOL 111G or BIOL 211G.

ANSC 383. Equine Reproductive Management
3 Credits (1+4P)
Anatomy, physiology, and endocrinology of reproduction of the mare and stallion; training in modern reproductive techniques employed in the horse industry.
Prerequisites: ANSC 103, ANSC 289, and ANSC 370.

ANSC 390. Internship
1-3 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 3 credits toward a degree. Graded S/U.
Prerequisite: consent of instructor.

ANSC 391. Undergraduate Research Experience
1-3 Credits (1-3)
Formal laboratory, library, or field study of problems related to animal sciences, emphasizing hypothesis development, testing, and reporting results. Projects are preplanned, reviewed, and approved. Students submit periodic written reports and final written and oral reports. May be repeated for a maximum of three credits. Consent of Instructor required.
Prerequisite(s): Consent of Instructor.
Corequisite(s): NO.

ANSC 392. Animal Sciences Teaching/Extension Experience
1-3 Credits (1-3)
Formal teaching experience related to animal sciences supervised by a faculty member. May involve classroom instruction, educational material development, and/or student evaluation and assessment. Students may also be involved in development, implementation, or assessment of adult or youth educational programs related to animal sciences, supervised by a faculty member. Students submit periodic written reports and a final written and oral report. May be repeated for a maximum of three credits. Consent of Instructor required.

ANSC 395. Team Competition II
1-2 Credits
Advanced training in team competition in the animal sciences. May be repeated for a maximum of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.
ANSC 402. Animal Science Seminar
1 Credit
Review of the current literature in animal sciences. Oral and written reports.

ANSC 411. Canine and Feline Behavior and Training
3 Credits
The influence of domestication, breeds, genetics, and physiology on the behavior of canine and feline species. Training methods and modification of problem behaviors are examined. The impact of the pet parent on their animal’s behavior is addressed. May be repeated up to 3 credits.
Prerequisite(s): Junior or Senior status or consent of the instructor.

ANSC 412. Canine and Feline Health and Diseases
3 Credits
A review of common infectious and non-infectious diseases and the basics of the immune response. Pathophysiology and treatment of these diseases and the role the pet parent plays in pre-disposing their animals to disease. May be repeated up to 3 credits.
Prerequisite(s): ANSC 285 or consent of instructor.

ANSC 421. Physiology of Reproduction
4 Credits (3+2P)
Fertility and the role of hormones, nutrition, selection, management and environment in the maintenance of high reproductive rate.
Prerequisite(s): ANSC 370.

ANSC 422. Animal Nutrition
3 Credits
Nutrient utilization and measurement and nutrient requirements for the various body functions.
Prerequisite(s): CHEM 211 or CHEM 313 or ANSC 261.

ANSC 423. Animal Breeding
3 Credits (2+2P)
Mating systems, and selection procedures; calculation of inbreeding coefficients, genetic relationships, and gene frequency.
Prerequisite(s): ANSC 201 or 305.

ANSC 424. Swine Production
3 Credits (2+2P)
Breeding, feeding, and care of swine.
Prerequisite(s): ANSC 304.

ANSC 425. Horse Science and Management
3 Credits (2+2P)
Senior level course requiring students to apply basic knowledge acquired in the previous courses to solve typical problems encountered in the horse industry. Specific topics include genetics and animal breeding, business and legal issues, reproduction, health, nutrition and exercise physiology.
Prerequisite(s): ANSC 304 and ANSC 370 or concurrent registration.

ANSC 426. Beef Production: Cow-Calf Management
3 Credits (2+2P)
Senior level course examining management practices for the cow-calf producers. Specifically focusing on nutrition, reproduction, genetics, marketing, and health. May be repeated up to 3 credits.
Prerequisite(s): ANSC 304 and (ANSC 201 or ANSC 305) or concurrent registration.

ANSC 427. Dairy Production
3 Credits (2+2P)
Breeding, nutrition, physiology and management of dairy cattle.
Prerequisite(s): ANSC 304 and (ANSC 201 or ANSC 305) or concurrent registration.

ANSC 428. Sheep and Wool Production
3 Credits (2+2P)
Genetics, nutrition, physiology and management of sheep. Wool grading, shearing, and disease control.
Prerequisite(s): ANSC 304 and junior status.

ANSC 429. Beef Production: Feedlot Management
3 Credits
Senior level course in feedlot management of beef cattle. Topics of interest include cattle handling and processing, health and nutrition, intake management, and growth. Feed mill operation, marketing strategies, and regulatory concerns associated with finishing cattle production may also be discussed.
Prerequisite(s): ANSC 304 or Consent of Instructor.

ANSC 448. Problems
1-4 Credits
Individual investigation in a specific area of animal science. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

ANSC 458. Livestock Behavior, Welfare and Handling
3 Credits (2+3P)
Principles of animal behavior and evaluation of management practices on animal welfare in confined and rangeland livestock operations. Low stress livestock handling techniques. Design of livestock handling facilities. Crosslisted with: RGSC 458
Prerequisite(s): RGSC 294 or ANSC 100.

ANSC 462. Parasitology
3 Credits
Same as EPWS 462.

ANSC 462 L. Parasitology Lab
1 Credit
Classification, biological effects, and management of animal parasites of man, domestic animals, and wildlife. One-hour lab is optional. Same as EPWS 462.

ANSC 468. Advanced Dairy Herd Management
3 Credits
The course is offered through the Southern Great Plains Dairy Consortium in Clovis, NM, and will include breeding, nutrition, physiology, and management of large herd dairies of the Southwest. Students must apply for the course through the Consortium, and can take it more than once, as topics vary. Consent of instructor required.
Prerequisite(s): ANSC 304.

ANSC 480. Environmental Physiology of Domestic Animals
3 Credits
Influence of environmental factors on physiological processes of domestic animals.
Prerequisite: ANSC 370.

ANSC 484. Ruminant Nutrition
3 Credits
Energy, nitrogen, and mineral nutrition of ruminants with special emphasis on digestive physiology and metabolism of nonprotein nitrogen compounds.
Prerequisite: ANSC 422.
# ANSC 488. Equine Nutrition and Exercise Physiology
3 Credits (2+2P)
Students will gain an in-depth understanding of nutrition and exercise physiology in the horse. Students will investigate the response of major physiological systems to exercise, conditioning and training, gastrointestinal physiology, nutrition requirements and clinical nutrition of the horse.

**Prerequisite(s)/Corequisite(s):** Junior standing or consent of instructor.

# ANSC 501. Advanced Animal Nutrition (so)
3 Credits
Emphasis on digestive physiology and metabolism. Basic mechanisms involved in the intake, digestion, and absorption of nutrients studied. Crosslisted with: HNDS 501

**Prerequisite(s):** CHEM 211 or consent of instructor.

# ANSC 504. Animal Physiology Techniques (se)
4 Credits
Radioimmunoassay procedures. Methods and procedures for conducting reproductive physiology research in livestock. Includes animal preparation, sample collection, laboratory and cell culture procedures.

**Prerequisite:** consent of instructor.

# ANSC 507. Laboratory Techniques in Nutrition (f)
4 Credits (2+6P)
Methodology and experimental procedures in measuring nutrient requirements and value of diets. Same as HNDS 507.

**Prerequisites:** ANSC 422 or consent of instructor.

# ANSC 509. Endocrinology of Domestic Animals (f)
3 Credits
The role of hormones in growth, development, metabolism, temperature regulation, lactation, and reproduction of domestic animals, including commercial applications.

# ANSC 510. Range Nutrition Techniques (se)
3 Credits
Animal and plant methods of determining quantity and quality of range forage. Same as RGSC 510.

**Prerequisite:** ANSC 484 or consent of instructor.

# ANSC 512. Research Methods in Animal Science (s)
4 Credits (3+2P)
Procedures used in animal science research, including planning and conduct of investigations and interpretation of results. Same as HNDS 512.

# ANSC 515. Graduate Seminar
1 Credit
Current topics. Same as HNDS 517.

# ANSC 520. Advanced Nutritional Management I: Feedlot (se)
3 Credits
Emphasis on feeding systems for beef cattle from weaning to slaughter. Primary focus on feedlot nutrition and management.

**Prerequisite:** ANSC 484 or consent of instructor.

# ANSC 521. Advanced Nutritional Management II: Cow Calf/Stocker (so)
3 Credits
Emphasis on nutritional management for cow-calf and stocker operations. Primary focus on applications to range animal nutrition and management.

**Prerequisite:** ANSC 484 or consent of instructor.

# ANSC 522. Animal Nutrition (f)
3 Credits
Nutrient utilization and measurement; nutrient requirements for the various body functions. Taught with ANSC 422 and same as HNDS 522 with additional requirements for graduate students. Recommended for nonmajors. Crosslisted with: HNDS 522

**Prerequisite(s):** CHEM 211.

# ANSC 560. Rumen Microbiology (so)
3 Credits
Issues in ruminal and gastrointestinal microbiology. Includes physiological and genetic mechanisms in carbohydrate and nitrogen utilization. Same as FSTE 560.

**Prerequisites:** ANSC/HNDS 501 and CHEM 546.

# ANSC 580. Environmental Physiology of Domestic Animals
3 Credits
Influence of environmental factors on physiological processes of domestic animals. Specific focus on fetal and developmental programming, heat and cold stress.

# ANSC 588. Equine Nutrition and Exercise Physiology
3 Credits
Students will gain and in-depth understanding of nutrition and exercise, conditioning and training, gastrointestinal physiology, nutrition requirements and clinical nutrition of the horse.

**Prerequisite(s)/Corequisite(s):** ANSC 304 and ANSC 422.

# ANSC 598. Special Research Programs
1-4 Credits (1-4)
Individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

# ANSC 599. Master's Thesis
15 Credits

# ANSC 600. Research
1-15 Credits
This course is for Ph.D. students before they have completed qualifiers. Consent of Instructor required. Thesis/Dissertation Grading.

**Prerequisite(s):** ANSC 421 or consent of instructor.

# ANSC 602. Advanced Reproductive Physiology (fo)
3 Credits
Mechanisms of reproductive function; research methodology.

**Prerequisite(s):** ANSC 421 or consent of instructor.

# ANSC 602 L. Molecular Techniques in Reproductive Physiology (fo)
2 Credits
Molecular biology techniques used in the study of reproductive physiology in domestic animals. Extraction of RNA, DNA from endocrine tissues, northern analysis, culture of pituitary/ovarian tissue. Mechanisms of hormone action.

**Prerequisite:** consent of instructor.

# ANSC 604. Hypothalamo-Hypophyseal-Pineal Endocrinology (fe)
1 Credit
Hormones and other neurochemicals synthesized and secreted by the hypothalamus, pituitary, and pineal glands. Neuroendocrinology of the hypothalamo-hypophyseal axis.

**Prerequisite:** ANSC 509.
ANSC 605. Gonadal and Uterine Endocrinology (fe)  
1 Credit  
Endocrinology of mammalian ovaries, testes, and uteri including developing trophoblasts.  
Prerequisite: ANSC 509.

ANSC 606. Endocrinology of Pregnancy, Parturition, and Lactation (fe)  
1 Credit  
Hormones and other chemical messengers involved in maintenance of pregnancy, control of parturition, and initiation and maintenance of lactation in farm animals.  
Prerequisite: ANSC 509.

ANSC 621. Metabolic Functions and Dysfunctions (fe)  
3 Credits  
Physiological chemistry of ruminants and other domestic animals, with attention to metabolic dysfunctions and nutritional toxicology. Same as HNDS 621.  
Prerequisites: CHEM 345 and ANSC 501.

ANSC 625. Nutrient Metabolism I: Mineral, Vitamin, and Nitrogen Metabolism (fo)  
4 Credits  
Cellular metabolism, physiological function(s), toxicities, and deficiencies of minerals, vitamins and nitrogen in ruminants and nonruminants. Same as HNDS 625.  
Prerequisite: ANSC/HNDS 501.

ANSC 626. Nutrient Metabolism II: Carbohydrates, Lipids, and Energetics (se)  
4 Credits  
Basic principles of carbohydrate, lipid, and energy metabolism; integration of metabolism with emphasis on nutritional and biochemical processes related to efficiency of nutrient use. Same as HNDS 626.  
Prerequisite: ANSC 501 or HNDS 501.

ANSC 698. Special Research Programs  
1-4 Credits  
Advanced individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

ANSC 700. Doctoral Dissertation  
15 Credits  

RGSC 150. Rangeland Science Profession  
1 Credit  
Introduction to scientific disciplines and career opportunities in rangeland science and management.

RGSC 250. Special Topics  
1-4 Credits  
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

RGSC 294. Rangeland Resource Management  
3 Credits  
Overview of arid and semi-arid ecosystems in the US and abroad, rangeland plant physiology, ecology of rangeland plant communities and ecosystems, sustainable management for multiple uses including grazing livestock production, wildlife habitat, recreation and ecosystem services, and economics of rangeland-based enterprises. Restricted to: Main campus only.

RGSC 302V. Forestry and Society  
3 Credits  
Global study of the development and use of forest resources for production of wood, fuel, fiber, and food products. Climatic, edaphic, cultural, and economic influences on forests of the world evaluated. Same as HORT 302V.

RGSC 316. Rangeland Plants  
3 Credits (2+3P)  
Identification, classification, cultural uses, and economic importance of native and introduced rangeland plants.

RGSC 317. Rangeland Communities  
3 Credits  
Rangeland associations and communities, their plant species composition, and ecological factors affecting management of communities.

RGSC 318. Watershed Management  
3 Credits (2+2P)  
Management of rangeland and forest watersheds with emphasis on hydrologic cycle and land use effects on runoff and water quality.

RGSC 325. Rangeland Restoration Ecology  
3 Credits  
Principles and practices of vegetation management and ecological restoration. Course emphasizes problems associated with rangeland degradation, and implementation of rangeland restoration and improvements.  
Prerequisite(s): Sophomore standing or consent of instructor.

RGSC 350. Special Topics  
1-4 Credits  
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

RGSC 357. Grass Taxonomy and Identification  
3 Credits (1+4P)  
Taxonomy of grasses; grass anatomy, variation in reproductive structures, and identification of grasses by sight and through the use of dichotomous keys.  
Prerequisite/Corequisite(s): Junior Standing or consent of the instructor.

RGSC 390.Internship  
1-3 Credits  
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 3 credits toward a degree. Graded S/U.  
Prerequisite: consent of instructor.

RGSC 402. Seminar  
1 Credit  
Topics in range science. Oral and written reports.  
Prerequisite: senior standing.

RGSC 406. Rangeland Team Competition  
1 Credit  
Description and characteristics of range plants. May be repeated for a maximum of 4 credits.

RGSC 440. Rangeland Resource Ecology  
3 Credits  
Prerequisite(s): Senior standing.
RGSC 440 L. Rangeland Resource Ecology Lab
1 Credit
Living and nonliving factors of the range environment, the life forms and role of range plants and animals on succession and interactions in range ecosystems. Corequisite(s): RGSC 440.

RGSC 448. Problems
1-4 Credits (1-4)
Individual investigation in a specific area of range science. Maximum of 4 credits per semester and a grand total of 6 credits. Consent of Instructor required.

RGSC 452. Vegetation Measurements for Rangeland Assessment
4 Credits (2+4P)
Sampling principles, sampling design, and measurement methods used to quantify vegetation attributes and to assess the structure and function of rangeland ecosystems. Laboratory emphasizes practical field techniques, quantitative analysis, and interpretation of results.
Prerequisite(s): RGSC 294 and A ST 311.

RGSC 458. Livestock Behavior, Welfare and Handling
3 Credits (2+3P)
Principles of animal behavior and evaluation of management practices on animal welfare in confined and rangeland livestock operations. Low stress livestock handling techniques. Design of livestock handling facilities. Crosslisted with: ANSC 458
Prerequisite(s): RGSC 294 or ANSC 100.

RGSC 460. Rangeland and Natural Resource Planning and Management
4 Credits (3+3P)
Planning and problem solving in rangeland and natural resource management. Public land planning and policy. Application of land management principles to resolve rangeland, riparian and habitat issues.
Prerequisite(s): Senior or graduate student standing.

RGSC 509. Approaches to Rangeland Research
3 Credits
Experimental design and statistical analysis of experimental results.
Prerequisite(s): A ST 505 or consent of instructor.

RGSC 513. Advanced Rangeland Ecology
3 Credits
Overview of the current state of knowledge in selected areas of rangeland ecology, with emphasis on currently developing ideas and issues relevant to rangeland management.
Prerequisite(s): RGSC 440 or equivalent.

RGSC 515. Graduate Seminar
1 Credit
Current topics. Graded S/U.

RGSC 516. Arid Land Management
3 Credits
Survey of seminal and current literature dealing with management of arid and semiarid lands including soil-plant-animal interactions, plant community ecology, arid land assessment methods, and arid land hydrology.

RGSC 518. Watershed Methods and Management
3 Credits
Management of rangeland and forest watersheds with emphasis on the hydrologic cycle and land use effects on runoff and water quality. Hydrologic monitoring methods problem sets required for graduate credit.

RGSC 520. Arid Land Plant Herbivore Interactions
3 Credits
Survey of seminal and current literature dealing with plant- and animal-related factors that influence herbivory patterns in arid landscapes. Although ungulate herbivory is a central focus of the course, the role of plant defenses in deterring both vertebrate and invertebrate herbivores is discussed in detail.

RGSC 525. Advanced Rangeland Restoration Ecology
3 Credits
Principles and practices of vegetation management and ecological restoration. Course emphasizes problems associated with rangeland degradation, and implementation of rangeland restoration and improvements. Research paper required for graduate credit.

RGSC 550. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

RGSC 557. Advanced Grass Taxonomy and Identification
3 Credits
Taxonomy of grasses; grass anatomy, variation in reproductive structures, and identification of grasses by sight and through the use of dichotomous keys. Additional writing and grass identification assignments are required for graduate credit.

RGSC 558. Special Research Program
1-4 Credits
Individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

RGSC 559. Master's Thesis
15 Credits

RGSC 560. Doctoral Research
1-15 Credits

RGSC 561. Advanced Arid Land Management
3 Credits
In depth discussion of seminal and current literature dealing with management of arid and semiarid lands including land tenure systems, soil-plant-animal interactions (emphasis on livestock grazing), plant community ecology and assessment methods, and arid land hydrology.

RGSC 562. Advanced Arid Land Plant-Herbivore Interactions
3 Credits
In depth discussion of seminal work dealing with plant- and animal-related factors that influence herbivory patterns in arid landscapes. Although ungulate herbivory is a central focus of the course, the role of plant defenses in deterring both vertebrate and invertebrate herbivores is discussed in detail.

RGSC 569. Special Research Programs
1-4 Credits (1-4)
Advanced individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

RGSC 700. Doctoral Dissertation
15 Credits

Name:
Agriculture - Master of Agriculture

Concentration: Domestic Animal Biology

The Department of Animal and Range Sciences at New Mexico State University offers a non thesis coursework Master of Agriculture degree with a Concentration in Domestic Animal Biology (MAG-DAB) which provides students with graduate training in animal nutrition and physiology. The degree is earned after satisfactory completion of 32 credit hours of upper division and graduate-level courses. The curriculum is completed in two or three academic semesters and includes a creative component which can be met in several ways.

Students having an undergraduate degree in an area of agriculture or a related field may consider the MAG-DAB as an alternative to a Master of Science which traditionally involves preparation of a thesis. Students who may benefit from this program include those in need of additional advanced science-based coursework in preparation for applying to a professional program in veterinary medicine. Other individuals may be interested in careers in the cooperative extension service, education, or the food and pharmaceutical industries where an advanced degree may be of benefit to advancement. The curriculum outlined below will assist students in preparing for a number of career opportunities.

Admission to the Program

The MAG-DAB program is administered through the Department of Animal and Range Sciences and is coordinated by the Animal Science Graduate Committee. Admission to the program requires acceptance by the NMSU Graduate School as well as the Department of Animal and Range Sciences. Basic requirements include an undergraduate degree in an agricultural or a related major from an accredited college or university and an undergraduate GPA of 3.0.

Depending on undergraduate training, some individuals may need to complete deficiency classes. In addition, the graduate school may require international students to complete one or more English language courses. Applications to the Department should include three letters of reference, a resume, and a statement of interest in advanced graduate training.

Once admitted to the program, each student will work with an advisor to develop a course work plan of study. The advisor and the student will also select an advisory committee consisting of two departmental faculty members and a third member from outside the department who will normally serve as the Dean’s representative to the committee.

Inquiries about the MAG-DAB Program should be directed to the Chair of the Animal Science Graduate Committee.

For the Master of Agriculture with a concentration in Domestic Animal Biology, students must complete 32 credit hours of graduate courses which include 2 credits of ANSC 598 Special Research Programs for the creative component.

All students in the MAG-DAB Program will complete the following classes:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 480</td>
<td>Environmental Physiology of Domestic Animals</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 484</td>
<td>Ruminant Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 501</td>
<td>Advanced Animal Nutrition (so)</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 509</td>
<td>Endocrinology of Domestic Animals (f)</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 512</td>
<td>Research Methods in Animal Science (s)</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 515</td>
<td>Graduate Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

Elective Courses

In consultation with their graduate advisor, students choose at least 12 credits from the following list of core courses (other classes may be considered on an individual basis):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 462</td>
<td>Parasitology</td>
<td></td>
</tr>
<tr>
<td>ANSC 504</td>
<td>Animal Physiology Techniques (se)</td>
<td></td>
</tr>
<tr>
<td>ANSC 507</td>
<td>Laboratory Techniques in Nutrition (f)</td>
<td></td>
</tr>
<tr>
<td>ANSC 520</td>
<td>Advanced Nutritional Management I: Feedlot (se)</td>
<td></td>
</tr>
<tr>
<td>ANSC 521</td>
<td>Advanced Nutritional Management II: Cow Calf/Stock (so)</td>
<td></td>
</tr>
<tr>
<td>ANSC 560</td>
<td>Rumen Microbiology</td>
<td></td>
</tr>
<tr>
<td>ANSC 602</td>
<td>Advanced Reproductive Physiology (fo)</td>
<td></td>
</tr>
<tr>
<td>ANSC 602 L</td>
<td>Molecular Techniques in Reproductive Physiology (fo)</td>
<td></td>
</tr>
<tr>
<td>ANSC 604</td>
<td>Hypothalamo-Hypophyseal-Pineal Endocrinology (fe)</td>
<td></td>
</tr>
<tr>
<td>ANSC 605</td>
<td>Gonadal and Uterine Endocrinology (fe)</td>
<td></td>
</tr>
<tr>
<td>ANSC 606</td>
<td>Endocrinology of Pregnancy, Parturition, and Lactation (fe)</td>
<td></td>
</tr>
<tr>
<td>ANSC 621</td>
<td>Metabolic Functions and Dysfunctions (fe)</td>
<td></td>
</tr>
</tbody>
</table>

1. must take two semesters of seminar

Creative Component

The creative component of the program involves completing at least two credits of ANSC 598 Special Research Programs. This requirement can be met in one of two ways. In consultation with the advisor, the student can select a topic of importance in domestic animal biology and prepare a comprehensive literature review covering that topic. An alternative way to meet this requirement is for the student, in consultation with the advisor, to conduct a research project and prepare a written manuscript for evaluation by the advisory committee. In either case, the student will present results of the project in the graduate Seminar (ANSC 515) and then be examined by the advisory committee.

In certain cases, the student may request approval from the Advisory Committee to complete two additional graduate courses (at least six credits) in lieu of one of the reports described above. If this approach is approved, the oral examination at the end of the program will cover all the courses completed during the MAG-DAB Program. Students pursuing this option must also prepare and present a topical seminar in ANSC 515 at some time during the program.

Animal Science - Bachelor of Science in Agriculture

The animal industry option includes courses that prepare you for work in many phases of the livestock industry, such as livestock production on farms and ranches, the meat industry, the feed industry, livestock breed associations, and livestock publications. The science option provides
you with a strong background in technical science and prepares you for advanced studies leading to graduate or professional degrees.

Requirements

Animal Science Core Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 100</td>
<td>Introductory Animal Science</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 100 L</td>
<td>Introductory Animal Science Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>ANSC 220</td>
<td>Animal Science Career Development</td>
<td>1</td>
</tr>
<tr>
<td>ANSC 303</td>
<td>Livestock, Meat and Wool Evaluation</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 304</td>
<td>Feeds and Feeding</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 370</td>
<td>Anatomy and Physiology of Farm Animals</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 402</td>
<td>Animal Science Seminar</td>
<td>1</td>
</tr>
<tr>
<td>ANSC 421</td>
<td>Physiology of Reproduction</td>
<td>4</td>
</tr>
<tr>
<td>ANSC 422</td>
<td>Animal Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 423</td>
<td>Animal Breeding</td>
<td>3</td>
</tr>
</tbody>
</table>

Ag Electives: choose a total of 6 credit with no more than 3 credits in ANSC Experience

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGSC 294</td>
<td>Rangeland Resource Management</td>
</tr>
<tr>
<td>ANSC 103</td>
<td>Introductory Horse Science</td>
</tr>
<tr>
<td>ANSC 112</td>
<td>Companion Animals in Society</td>
</tr>
<tr>
<td>ANSC 262</td>
<td>Introduction to Meat Science</td>
</tr>
<tr>
<td>ANSC 301</td>
<td>Animal and Carcass Evaluation</td>
</tr>
</tbody>
</table>

ANSC Experience

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 390</td>
<td>Internship</td>
</tr>
<tr>
<td>ANSC 391</td>
<td>Undergraduate Research Experience</td>
</tr>
<tr>
<td>ANSC 392</td>
<td>Animal Sciences Teaching/Extension Experience</td>
</tr>
</tbody>
</table>

Other Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXED 201G</td>
<td>Effective Leadership and Communication in Agricultural Organizations</td>
</tr>
<tr>
<td>or COMM 265G</td>
<td>Principles of Human Communication</td>
</tr>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
</tr>
<tr>
<td>BIOL 111GL</td>
<td>Natural History of Life Laboratory</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
</tr>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
</tr>
<tr>
<td>or MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
</tr>
</tbody>
</table>

A ST 311 Statistical Applications 3

Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 201G</td>
<td>Introduction to Economics</td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
</tr>
</tbody>
</table>

Select one from the following options: 31-36

Industry

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 201G</td>
<td>Introduction to Economics</td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
</tr>
</tbody>
</table>

Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 201G</td>
<td>Introduction to Economics</td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
</tr>
</tbody>
</table>

Total Credits 84-89

1 Required of Industry and Science Options

Concentration: Animal Industry

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG E 260</td>
<td>Introduction to Food and Agribusiness Accounting</td>
</tr>
<tr>
<td>or ANSC 325</td>
<td>Food and Agribusiness Finance and Planning</td>
</tr>
</tbody>
</table>

Electives

Select two from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 200</td>
<td>Introduction to Meat Animal Production</td>
</tr>
<tr>
<td>or ANSC 305</td>
<td>Principles of Genetics</td>
</tr>
<tr>
<td>ANSC 261</td>
<td>Introduction to Animal Metabolism</td>
</tr>
</tbody>
</table>

Production Electives

Select 9 credits from production courses offered in the department.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 424</td>
<td>Swine Production</td>
</tr>
<tr>
<td>ANSC 425</td>
<td>Horse Science and Management</td>
</tr>
<tr>
<td>ANSC 426</td>
<td>Beef Production: Cow-Calf Management</td>
</tr>
<tr>
<td>ANSC 427</td>
<td>Dairy Production</td>
</tr>
<tr>
<td>ANSC 428</td>
<td>Sheep and Wool Production</td>
</tr>
<tr>
<td>ANSC 429</td>
<td>Beef Production: Feedlot Management</td>
</tr>
<tr>
<td>ANSC 468</td>
<td>Advanced Dairy Herd Management</td>
</tr>
</tbody>
</table>

Ranch Management Electives

Select 3 courses from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGSC 316</td>
<td>Rangeland Plants</td>
</tr>
<tr>
<td>RGSC 318</td>
<td>Watershed Management</td>
</tr>
<tr>
<td>RGSC 325</td>
<td>Rangeland Restoration Ecology</td>
</tr>
<tr>
<td>RGSC 458</td>
<td>Livestock Behavior, Welfare and Handling</td>
</tr>
</tbody>
</table>

Business Electives

Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 221</td>
<td>Financial Accounting</td>
</tr>
<tr>
<td>AG E 305</td>
<td>Marketing and Food Agricultural Products</td>
</tr>
<tr>
<td>AG E 456</td>
<td>Case Studies in Food and Agribusiness Management</td>
</tr>
<tr>
<td>MGT 361</td>
<td>Managing a Startup</td>
</tr>
<tr>
<td>MKTG 312</td>
<td>Personal Selling</td>
</tr>
<tr>
<td>or any ACCT, BUSA, MGT, MKTF numbered 300 &amp; above</td>
<td></td>
</tr>
<tr>
<td>that are NOT VWW courses</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 33

Concentration: Science

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
</tr>
<tr>
<td>CHEM 211</td>
<td>Organic Chemistry</td>
</tr>
<tr>
<td>or CHEM 313</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>&amp; CHEM 314</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>&amp; CHEM 315</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>BCHE 341</td>
<td>Survey of Biochemistry</td>
</tr>
<tr>
<td>or BCHE 395</td>
<td>Biochemistry I</td>
</tr>
</tbody>
</table>

Electives

Select two from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 305</td>
<td>Principles of Genetics</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
</tr>
<tr>
<td>BIOL 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
</tr>
<tr>
<td>CHEM 314</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>&amp; CHEM 315</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>&amp; CHEM 313</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>BCHE 341</td>
<td>Survey of Biochemistry</td>
</tr>
<tr>
<td>or BCHE 395</td>
<td>Biochemistry I</td>
</tr>
</tbody>
</table>
Animal Science - Doctor of Philosophy

Requirements for Ph.D. Degree in Animal Science

Admission

1. GPA of 3.0 or greater.
2. Three letters of recommendation.
3. Completion of the form, "Application for Graduate Admission in Animal Science" including a brief letter (personal statement) outlining the student's background, career goals, and research interest.
4. Resume
5. Favorable evaluation for admission will be by consensus of the Animal Science Graduate Committee and will be contingent on availability of an advisor and research funding.
6. A requirement for admission as a doctoral graduate student in the department is completion of a curriculum substantially equivalent to that required of undergraduate students. Therefore, deficiency courses may be required after admission to the program, as determined initially by the Animal Science Graduate Committee.
7. Non-thesis MS degrees are not acceptable although some of the courses may be transferred if deemed appropriate by the student's Doctoral Committee.

General Requirements

1. Graduate students must maintain at least a 3.0 grade point average.
2. A minimum of 90 credit hours of graduate work is required of which:
   a. At least 30 credits must be in courses numbered 600 or above.
   b. At least 18 credits must be in ANSC 700 (Doctoral Dissertation).
3. All graduate assistants must enroll as full-time students taking at least 9 graded graduate credits (courses numbered 450 and above). No audits can be taken as part of the 9 minimum credits. Only 3 of the 9 credits may be taken as an S/U option.
   a. A graduate assistant may not enroll for more than 15 credits each semester.
   b. If a student needs to take deficiency courses as part of the 9 credits, then a memo from the advisor or department head should be submitted to the Graduate School. If approved, the student can register for 3 undergraduate credits and a minimum of 6 graded graduate credits during their first semester at New Mexico State University.
   c. Enrollment during summer sessions is not required.
4. Students admitted to the Doctoral program (passed qualifying exam) must continue to enroll in three credits of graduate work each semester (exclusive of summer sessions) until the dissertation is approved by the Graduate School.
5. In certain instances, deficiency courses may be required.
6. Two semesters of ANSC 515(Graduate Seminar) are required and students are urged to attend seminar every semester that they are in residence.
7. No more than 6 credits of ANSC 698 may apply toward graduation.
8. The "Program of Study and Committee for Doctoral Students" form listing the graduate committee and courses to be taken, should be filed with the Graduate School after completion of 12 credits and after the qualifying exam, and before registering for additional courses.

Qualifying Examination

1. The Animal and Range Sciences Department may allow the M.S. Final examination to serve as a Ph.D. qualifying exam for students receiving an M.S. in Animal Science at NMSU. See "Guidelines for Graduate Studies" for further details.
2. Doctoral students must take a qualifying exam before completion of one semester of graduate work. The exam is scheduled by the student's advisor and administered by a provisional committee of at least 3 regular Animal Science faculty members in the student's area of concentration (reproductive physiology or ruminant nutrition). Its purpose is to evaluate the student's strengths and weaknesses, determine deficiency courses, and discuss a possible program of study (coursework).
3. After successful completion of this exam, a Doctoral Committee is appointed.

Doctoral Committee

1. The student's Doctoral Committee is selected by the student and the student's advisor, with approval of the Department Head and the Graduate Dean. The committee will consist of five or more members, as follows:
   a. The committee chair (advisor) and at least two other members must be from the regular Animal Science faculty in the student's concentration area (reproductive physiology or ruminant nutrition).
   b. One member must be from the Related Area.
   c. One member from the Research Tool Area.
   d. The member from the Related or Research Tool Area may serve as the Representative of the Graduate Dean.
2. Duties of the Doctoral Committee
a. Prepare and file a preliminary program of study with the Graduate Dean
b. Provide counsel for the student during the program
c. Attend the comprehensive oral examination and the final dissertation defense.

**NOTE:** Changes in committee membership must be approved by the Graduate Dean.

## Animal Science - Graduate Minor

A minimum of 9 credit hours in graduate level classes with the ANSC prefix are required to obtain a graduate minor in Animal Science. Approval by the Animal and Range Sciences Department Head is required.

## Animal Science - Master of Science

### Requirements for Master of Science Degree in Animal Science

#### Admission
1. GPA of 3.0 or greater.
2. Three letters of recommendation.
3. Completion of the form, “Application for Graduate Admission in Animal Science” including a brief letter (personal statement) outlining the student’s background, career goals, and research interest.
4. Resume
5. Favorable evaluation for admission will be by consensus of the Animal Science Graduate Committee and will be contingent on availability of an advisor and research funding.
6. A requirement for admission as a masters graduate student in the department is completion of a curriculum substantially equivalent to that required of undergraduate students. Therefore, deficiency courses may be required after admission to the program, as determined initially by the Animal Science Graduate Committee.

#### General Requirements

**A.** Graduate students must maintain at least a 3.0 grade point average.

**B.** A minimum of 30 credit hours of graduate work is required of which:

1. At least 15 credits must be in courses numbered 500 or above
2. At least 15 credits must be in Animal Science courses
3. At least 15 credits (exclusive of ANSC 598) must be taken with other than a single professor

**C.** Designated hours to be completed:

1. At least four formal Animal Science courses numbered 500 or above
2. At least six credits in ANSC 599 (Master’s Thesis)
3. At least two credits in ANSC 515 (Graduate Seminar)
4. At least four credits in Experimental Statistics

**D.** Graduate Assistants

1. All graduate assistants must enroll as full-time students taking at least 9 graded graduate credits (courses numbered 450 and above). No audits can be taken as part of the 9 minimum credits. Only 3 of the 9 credits may be taken as an S/U option.

2. A graduate assistant may not enroll for more than 15 credits each semester.

3. If a student needs to take deficiency courses as part of the 9 credits, then a memo from the advisor or department head should be submitted to the Graduate School. If approved, the student can register for 3 undergraduate credits and a minimum of 6 graded graduate credits during their first semester at New Mexico State University.

4. Enrollment during summer sessions is not required.

#### E. Additional Requirements

1. A maximum of six credits in S/U courses may be taken during a Master’s program
2. A maximum of six credits (four in a single semester) in ANSC 598 (Special Research Programs) may be taken during a Master’s program.
3. If a minor is declared, a minimum of eight credits in this discipline must be completed and approved by that department.
4. In certain instances, deficiency courses may be required.
5. Attendance at graduate seminars is urged.
6. Graduate students are encouraged to adapt their thesis data for submission as a scientific journal article, an Experiment Station Bulletin, or research report.

#### F. The Masters Committee

The Masters Committee is appointed by the student’s advisor with the approval of the Department Head and consists of four members including three from the animal science area and one representative from the Graduate School.

#### G. The Masters Final Examination

The Masters Final Oral Examination is primarily concerned with the thesis research conducted by the student but it may also extend over the entire discipline. Candidates for a Masters Degree are expected to demonstrate a thorough understanding of their research topic including how it was conducted, the results that were found, and what the results mean. They should also demonstrate knowledge of the general discipline of Animal Science.

## Horse Management - Undergraduate Minor

A minor in Horse Management consists of at least 18 credits.

### Required Courses

**All of the following:**

- ANSC 103 Introductory Horse Science 3
- ANSC 425 Horse Science and Management 3

Choose two of the following courses: 6-7

- ANSC 289 Management of Equine Operations
- ANSC 302 Therapeutic Horseback Riding I
- ANSC 308 Horse Evaluation

Choose 3 credits of the following: 3

- ANSC 288 Horse Fitting and Selling
- ANSC 290 Western Equitation II
- ANSC 320 Equine Behavior and Training
- ANSC 321 Advanced Equine Behavior and Training
Human Animal Interaction - Undergraduate Minor

A minor in Human Animal Interaction consists of at least 18 credits.

Required Courses
- ANSC 112: Companion Animals in Society 3
- ANSC 285: Introduction to Companion Animal Science 3
- ANSC 312V: Companion Animals and the Human-Animal Interaction 3
- ANSC 390: Internship 1-3
- ANSC 411: Canine and Feline Behavior and Training 3
- ANSC 412: Canine and Feline Health and Diseases 3

Total Credits 18-19

Livestock Production - Undergraduate Minor

A minor in Livestock Production consists of at least 18 credits. Animal science majors may NOT minor in Livestock Production.

Core ANSC Courses
- All of the following:
  - ANSC 100: Introductory Animal Science 3
  - ANSC 304: Feeds and Feeding 3

Production Electives
- Choose 6 credits of the following: 6
  - ANSC 424: Swine Production
  - ANSC 425: Horse Science and Management
  - ANSC 426: Beef Production: Cow-Calf Management
  - ANSC 427: Dairy Production
  - ANSC 428: Sheep and Wool Production
  - ANSC 429: Beef Production: Feedlot Management

Range Electives
- Choose 3 credits from the following: 3
  - ANSC 424: Swine Production
  - ANSC 425: Horse Science and Management
  - ANSC 426: Beef Production: Cow-Calf Management
  - ANSC 428: Sheep and Wool Production
  - ANSC 429: Beef Production: Feedlot Management

Total Credits 16-18

Ranch Management - Undergraduate Minor

The Ranch Management minor consists of at least 18 credits. Animal science majors may NOT minor in ranch management.

Core ANSC Courses
- All of the following:
  - ANSC 300: Introductory Animal Science 3
  - ANSC 301: Animal and Carcass Evaluation 3
  - ANSC 363: Meat Technology 3

Production Electives
- Choose 6 credits of the following: 6
  - ANSC 424: Swine Production
  - ANSC 425: Horse Science and Management
  - ANSC 426: Beef Production: Cow-Calf Management
  - ANSC 427: Dairy Production
  - ANSC 428: Sheep and Wool Production
  - ANSC 429: Beef Production: Feedlot Management

Total Credits 18

Range Science - Bachelor of Science in Agriculture

The following course work prepares you for study and management of rangelands through an integrated ecological approach with special emphasis on rangeland plants, livestock, wildlife, soils and watersheds. The course work is also well designed for those who want to continue study in graduate school. Any undergraduate student majoring in Range Science must earn a grade of C- or higher in Range Science (RGSC prefix) courses to satisfy degree requirements. Students earning a D or F in a Range Science (RGSC prefix) course will be expected to repeat that course until the student earns a grade of C- or higher. The following courses are required for a major in rangeland resources, as well as the University requirements for General Education (p. 47), Viewing a Wider World (p. 47) and electives to bring the total credits to 120, with 48 credits being upper division.

Requirements

Range Science Core
- RGSC 150: Rangeland Science Profession 1
- RGSC 294: Rangeland Resource Management 3
- RGSC 302V: Forestry and Society 3
- RGSC 316: Rangeland Plants 3
- RGSC 317: Rangeland Communities 3
- RGSC 318: Watershed Management 3
- RGSC 325: Rangeland Restoration Ecology 3
- RGSC 357: Grass Taxonomy and Identification 3
- RGSC 402: Seminar 1
- RGSC 440: Rangeland Resource Ecology 3
- RGSC 440 L: Rangeland Resource Ecology Lab 1
- RGSC 452: Vegetation Measurements for Rangeland Assessment 4
- RGSC 460: Rangeland and Natural Resource Planning and Management 4

Other Required Courses
- A ST 311: Statistical Applications 3
Range Science - Doctor of Philosophy

A GPA of 3.0 or higher is required for admission. GRE exam is required. Prerequisite for admission as a regular graduate student in the department is the completion of a curriculum substantially equivalent to that required of undergraduate students. Therefore, deficiency courses may be required after admission to the program, as determined by the admissions committee and the student’s graduate committee and advisor.

A minimum of 30 credits of graduate work plus 18 credits of dissertation (RGSC 700) are required to graduate. The Qualifying Exam will take place during the first semester of graduate work. Its purpose is to evaluate the student’s strengths and weaknesses, determine deficiency courses, and discuss a possible program of study (coursework). The “Program of Study and Committee for Doctoral Students” form, listing the graduate committee and courses to be taken, should be filed with the Graduate School after completion of 12 credits and after the qualifying exam, and before registering for additional courses. The Comprehensive Exam is intended to test the knowledge of the major and minor fields of study. The student will be admitted to the exam after fulfilling the language/research tool requirement, after completion of adequate coursework (as determined by the department and the Graduate School), and when considered by the student’s graduate committee to be adequately prepared. The exam is part written and part oral. The student is formally considered a candidate for the Ph.D. only after the successful completion of the comprehensive exam, the recommendation of the committee, and the approval of the graduate dean.

The research project must be approved by the student’s graduate committee. The dissertation is expected to demonstrate the student’s ability in independent investigation and to be a contribution to human knowledge. It shall display a mastery of the literature, present an organized, coherent development of ideas with a clear exposition of results, and provide a critical discussion of the student’s conclusions. Every effort should be made to publish the dissertation as scientific journal articles. Final Exam is concerned primarily with the research work of the student as embodied in the dissertation, but it may also extend over the entire field of study. It is entirely oral. The final exam will be advertised to the public one week prior to the exam.

Range Science - Graduate Minor

A minimum of 9 credit hours in graduate level classes with the RGSC prefix are required to obtain a graduate minor in Range Science. Approval by the Animal and Range Sciences Department head is required.

Range Science - Master of Science

A GPA of 3.0 or higher is required for admission. GRE exam is not required. Prerequisite for admission as a regular graduate student in the department is the completion of a curriculum substantially equivalent to that required of undergraduate students. Therefore, deficiency courses may be required after admission to the program, as determined by the admissions committee and the student’s graduate committee and advisor.

Graduate Program with the Thesis (Research) Option

A minimum of 30 credits of graduate work is required to graduate. At least one advanced statistics course or equivalent is required, as
determined by the student’s graduate committee. The thesis research project must be approved by the student’s graduate committee. Every effort should be made to publish the thesis as a scientific journal article or Experiment Station publication.

**Graduate Program with the Non-Thesis Option**

A minimum of 32 credits of graduate work is required to graduate. A final written report is required.

The report will be on a topic approved by the student’s graduate committee. Research for the report may involve field work and data gathering, but should also be strongly library- and literature-based.

The report should be of graduate quality and content, and should follow graduate school thesis format or the format of an acceptable scholarly journal. Final approval and acceptance of the report will be by the student’s graduate committee. Every effort should be made to publish the report in an appropriate outlet (journal article, Experiment Station bulletin or report, Extension bulletin, etc.)

**Range Science - Undergraduate Minor**

A minor in Range Science consists of at least 18 credits in courses with a RGSC prefix and achieve a C- or higher in all RGSC classes.

**Choose 18 credits from the following courses**  

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGSC 294</td>
<td>Rangeland Resource Management</td>
</tr>
<tr>
<td>RGSC 302V</td>
<td>Forestry and Society</td>
</tr>
<tr>
<td>RGSC 316</td>
<td>Rangeland Plants</td>
</tr>
<tr>
<td>RGSC 317</td>
<td>Rangeland Communities</td>
</tr>
<tr>
<td>RGSC 318</td>
<td>Watershed Management</td>
</tr>
<tr>
<td>RGSC 325</td>
<td>Rangeland Restoration Ecology</td>
</tr>
<tr>
<td>RGSC 357</td>
<td>Grass Taxonomy and Identification</td>
</tr>
<tr>
<td>RGSC 440</td>
<td>Rangeland Resource Ecology</td>
</tr>
<tr>
<td>RGSC 440 L</td>
<td>Rangeland Resource Ecology Lab</td>
</tr>
<tr>
<td>RGSC 452</td>
<td>Vegetation Measurements for Rangeland</td>
</tr>
<tr>
<td></td>
<td>Assessment (*RGSC 294 &amp; A1 311 are pre-</td>
</tr>
<tr>
<td></td>
<td>requisites for this course*)</td>
</tr>
<tr>
<td>RGSC 458</td>
<td>Livestock Behavior, Welfare and Handling</td>
</tr>
<tr>
<td>RGSC 460</td>
<td>Rangeland and Natural Resource Planning</td>
</tr>
<tr>
<td></td>
<td>and Management</td>
</tr>
</tbody>
</table>

**Entomology, Plant Pathology and Weed Science**

**Undergraduate Program Information**

Specific courses that meet these and the university general education requirements and additional courses in biology, chemistry, mathematics and seminar are included below in departmental requirements. A total of 120 credits are required for graduation. At least 48 credits must be 300-level courses and above. Schedules in specific semesters will be developed with the help of a student’s academic advisor.

**Graduate Program Information**

The complexity of managing insects, plant diseases, and weeds is increasing environmental concerns, costs, and regulations requiring an integrated approach to management strategies. Future professionals in integrated pest management will be ecologically oriented, trained to manipulate biological and cultural technologies while minimizing chemical control options. The Master of Science degree program in agricultural biology is designed to produce graduates with the academic and research background needed to facilitate effective, innovative, and environmentally sound protection of plants and animals from a wide and varied spectrum of pests. Students will be prepared for careers in research, extension, teaching, private consulting, industry, and government or to continue in a broad range of Ph.D. programs. Specific opportunities will include positions as agricultural consultants, technical and sales representatives for industry, state departments of agriculture and USDA specialists, agricultural extension agents, and industry research and environmental technicians. There is currently a strong need for MS graduates trained in these areas, and the demand is expected to increase dramatically.

Students may wish to concentrate their graduate program in entomology, plant pathology, or weed science, or conversely may wish to be broadly trained in all three pest-management disciplines. Most students will be expected to complete a thesis. A non-thesis option is available, depending on prior training and experience and subject to approval by the department head. A nonthesis research option requires completion of a research paper, suitable as judged by the student’s graduate committee, for journal publication. Completion of an undergraduate degree essentially equivalent to that offered by the department is required for admission to the MS graduate program. Qualifications for admission will be reviewed by the departmental Graduate Admissions committee. Prospective graduate students must have at least a 3.0 undergraduate GPA, complete the GRE, and submit an official transcript, a letter of intent and three letters of recommendation.

**Degrees for the Department**

Agricultural Biology - Bachelor of Science in Agriculture (p. 117)

Agricultural Biology - Master of Science (p. 119)

**Minors for the Department**

Entomology - Undergraduate Minor (p. 119)

Pest Management - Undergraduate Minor (p. 119)

Plant Pathology - Undergraduate Minor (p. 119)

Weed Science - Undergraduate Minor (p. 119)

**Professor, Gerald K. Sims, Department Head**

**Professors**  

- Creamer, Bundy, Sanogo, Thomas, Thompson;  
- Hanson, Mesbah, Pierce;  
- Assistant Professors Lehhoff, Romero, Schutte;  
- Affiliated Faculty Ashigh, Banks, Murray, Schroeder, Sweet, Leeper;  
- College Assistant Professor Lewis;  
- College Associate Professor Randall;  
- Emeritus Professor Arnold, Richman

G.K. Sims, Department Head, Ph.D. (Purdue) – soil microbiology;  
R. N. Arnold, M.S. (New Mexico State) – weed science;  
J. Ashigh, Ph.D. (Guelph) – weed science;  
C. S. Bundy, Ph.D. (Georgia) – entomology;  
R. Creamer, Ph.D. (California-Davis) – plant pathology;  
N. P. Goldberg, Ph.D. (Arizona) – plant pathology;  
S. Hanson, Ph.D. (University of Wisconsin) – molecular plant

EPWS 100. Applied Biology
3 Credits
Introduction to applied biology and ecology focusing on insects, plants and pathogens in natural areas, crops and urban settings. EPWS 100L is strongly recommended to take in the same semester. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

EPWS 100 L. Applied Biology Lab
1 Credit
Study of applied biology and ecology focusing on insects, plants and pathogens in natural areas, crops, and urban settings. EPWS 100 strongly recommended to take in the same semester. May be repeated up to 1 credits. Restricted to Las Cruces campus only.

EPWS 200. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

EPWS 300. Special Topics
1-4 Credits
Specific topics and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

EPWS 301. Agricultural Biotechnology
3 Credits (2+2P)
The principles of molecular biology will be introduced and used to explore the past, present, and future applications of biotechnology in agriculture. Specific topics include methodologies for making transgenic plants with increased pest resistance, the use of biotechnology in pest detection, and improving nutritional value. The laboratory will provide students with hands-on experience with equipment used for biotechnology research. Prerequisites: CHEM 112G, BIOL 111G, or BIOL 211G.

EPWS 302. General Entomology
4 Credits
An introduction to the biology and classification of insects. Lecture covers life histories, classification, ecology and behavior of insect orders and families. Laboratory focuses on identification of insect orders and families. Prerequisite(s): BIOL 111G or 211G.

EPWS 303. Economic Entomology
3 Credits (3+2P)
Identification and life cycles of insects of economic significance, their relationship to humans and agriculture including biological interactions and controls. May be repeated up to 3 credits. Prerequisite(s): Either BIOL 111G or BIOL 211G.

EPWS 310. Plant Pathology
4 Credits (3+2P)
Causes and methods of prevention and treatment of diseases in plants. Prerequisite(s): Either BIOL 111G or BIOL 211G.

EPWS 311. Introduction to Weed Science
4 Credits (3+2P)
Principles of weed science, with emphasis on characteristics of invasive plants, methods of integrated weed management, and current issues impacting weed management. Identification of local weeds. Crosslisted with: AGRO 311. Prerequisite(s): CHEM 111G, and BIOL 211G.

EPWS 314. Plant Physiology
3 Credits
Overview of photosynthesis, respiration, water relations of plants, minerals and organic nutrition, growth and development. Same as BIOL 314. Prerequisites: BIOL 211G, CHEM 112G.

EPWS 325V. Insects, Humans, and the Environment
3 Credits
Overview of the interactions of the world’s largest group of organisms with humans. Emphasizing the role of insects in the development of human cultures, including health, food and fiber production, art, music, and environmental issues; with discussions of historic, present day, and future impacts in underdeveloped, developing, and developed civilizations.

EPWS 373. Fungal Biology
3 Credits (2+2P)
Introduction to the taxonomy, morphology, physiology, ecology of fungi. Same as BIOL 373. Prerequisites: EPWS 310 or BIOL 311, or consent of instructor.

EPWS 380V. Science & Society
3 Credits
Analysis and evaluation of how human activities affect the earth’s environment or ecosystems. Several examples, from global issues to local issues will be studied in detail. Current science and the intersection of science and public policy will be discussed in relation to problems like world population, agricultural productivity, deforestation, medical advances, and future prospects for the environment. May be repeated up to 3 credits.

EPWS 390. Internship
1-3 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. Maximum of 3 credits. Graded S/U. Prerequisite: consent of instructor.

EPWS 420. Environmental Behavior of Pesticides
3 Credits
Behavior of pesticide compounds in the environment, their function toward target and non target pest organisms including humans, effect of environmental conditions on pesticide function, ecology of organisms involved in pesticides degradation, overview of environmental regulation. CHEM 211 recommended prior to course. May be repeated up to 3 credits.

EPWS 447. Seminar
1 Credit
Organization and techniques for the oral presentation of research information. Restricted to: Main campus only.

EPWS 449. Special Problems
1-3 Credits
Individual investigation in specific areas of entomology, plant pathology or plant physiology. Maximum of 3 credits per semester and a grand total of 6 credits.
EPWS 451. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.
Prerequisite: consent of instructor.

EPWS 455. Advanced Integrated Pest Management
3 Credits
Examination of factors affecting the biology and ecology, population evaluations, and control of insect, disease, and weed pests with an emphasis on integrating management practices. Credit cannot be given for both EPWS 455 and EPWS 505. Crosslisted with: EPWS 505.
Prerequisite(s): Either EPWS 303 or EPWS 310 or EPWS 311, or consent of instructor.

EPWS 462. Parasitology
3 Credits
Introduction to classification, biology, ecology and management of the major parasites of human, domestic animals and wildlife.

EPWS 462 L. Parasitology Lab
1 Credit
Methods of collecting and identifying the major parasites of humans, domestic animals and wildlife. Concurrent enrollment in EPWS 462 is desirable.

EPWS 471. Plant Mineral Nutrition
3 Credits
Same as HORT 471 and AGRO 471.

EPWS 481. Plant Nematology
3 Credits (2+2P)
Biology, ecology and basic identification of soil-inhabiting nematodes, with emphasis on host-parasite relationships and management principles for plant-parasitic genera.

EPWS 482. Plant Virology
3 Credits
An overview of viral pathogens associated with infectious plant disease. Includes pathogens, replication, genetics, transmission, and movement of plant viruses.

EPWS 492. Diagnosing Plant Disorders
3 Credits (2+3P)
Systematic diagnosis of the physiological, pathological, and entomological causes of plant disorders. Same as AGRO 492 and HORT 492.
Prerequisite(s): EPWS 303, EPWS 310.

EPWS 502. General Entomology
4 Credits
Prerequisite(s): BIOL 111G or BIOL 211G.

EPWS 505. Advanced Integrated Pest Management
3 Credits
Examination of the factors affecting the biology and ecology, population evaluations, and control of insect, disease, and weed pests, with an emphasis on integrating management practices. Crosslisted with: EPWS 455.
Prerequisite(s): EPWS 303 or EPWS 310 or EPWS 311 or consent of instructor.

EPWS 511. Introduction to Weed Science (f)
4 Credits (3+2P)
Covers the principles of weed science with emphasis on characteristics of invasive plants, methods of integrated weed management, and current issues impacting weed management. Includes identification of local weeds. Research paper required for graduate credit. Crosslisted with: AGRO 511.
Prerequisite(s): CHEM 111G and BIOL 211G.

EPWS 514. Plant Physiology
3 Credits
Overview of photosynthesis, respiration, water relations of plants, minerals and organic nutrition, growth and development.
Prerequisite(s): BIOL 211G, CHEM 112G.

EPWS 520. Environmental Behavior of Pesticides (so)
3 Credits
Behavior of these compounds in the environment, their function toward target and non target pest organisms including humans, effect of environmental conditions on pesticide function, ecology of organisms involved in pesticides degradation, overview of environmental regulation. CHEM 211 recommended prior to course. May be repeated up to 3 credits.

EPWS 525. Scientific Writing- How to be a Productive and Effective Writing
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Crosslisted with: AGRO 525, HORT 525 and SOIL 525.

EPWS 549. Special Problems
1-4 Credits
Individual investigation in specific areas of entomology, plant pathology, and weed science. Maximum of 4 credits per semester and a total of 6 credits.

EPWS 551. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

EPWS 573. Fungal Biology
3 Credits (2+2P)
Introduction to the taxonomy, morphology, physiology, and ecology of fungi. Same as BIOL 573.
Prerequisite: EPWS 310 or consent of instructor.

EPWS 575. Urban Entomology
3 Credits
Identification and life cycles of insects in urban environments, their relationship to humans, agriculture, biological interactions and controls of target and non target pest organisms including humans. Limited to Master of Agriculture candidates. Not more than 6 credits toward the degree.

EPWS 590. Graduate Seminar
1 Credit
Review of current scientific literature in entomology, plant pathology, and weed science, and verbal presentation of information. No more than 2 credits toward a degree.

EPWS 598. Graduate Internship
1-6 Credits
Supervised professional on-the-job learning experience. Limited to Master of Agriculture candidates. Not more than 6 credits toward the degree.
Agricultural Biology - Bachelor of Science in Agriculture

The agricultural biology course work prepares you for a variety of careers in the biological sciences and agriculture. You will develop your curriculum with an academic advisor to attain your individual goals. Many will pursue advanced degrees in the sciences or prepare for admittance to professional schools (medical, dental, etc.). A diverse program is offered with five separate options that allow you to tailor your program for careers in the commercial sector, such as agricultural consulting, and pest management or for careers with county, state, or federal agencies, such as research technicians, land managers, and extension agents. A minimum of 120 credit hours is required for graduation. Any undergraduate student majoring in Agricultural Biology must earn a grade of C- or higher in core (EPWS prefix) courses to satisfy degree requirements. Students earning a D or F in a core (EPWS prefix) course will be expected to repeat that course until the student earns a grade of C- or higher. The following courses are required for a major in Agricultural Biology.

Requirements

Departmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 305</td>
<td>Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 311</td>
<td>General Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 313</td>
<td>Structure and Function of Plants</td>
<td>3</td>
</tr>
<tr>
<td>or BIOL 322</td>
<td>Zoology</td>
<td></td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td>EPWS 100</td>
<td>Applied Biology</td>
<td>3</td>
</tr>
<tr>
<td>EPWS 100 L</td>
<td>Applied Biology Lab</td>
<td>1</td>
</tr>
<tr>
<td>EPWS 301</td>
<td>Agricultural Biotechnology</td>
<td>3</td>
</tr>
<tr>
<td>EPWS 302</td>
<td>General Entomology</td>
<td>4</td>
</tr>
<tr>
<td>EPWS 310</td>
<td>Plant Pathology</td>
<td>4</td>
</tr>
<tr>
<td>EPWS 311</td>
<td>Introduction to Weed Science</td>
<td>4</td>
</tr>
<tr>
<td>EPWS 447</td>
<td>Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
<td>3</td>
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<tr>
<td>Select one from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMM 253G</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>COMM 256G</td>
<td>Principles of Human Communication</td>
<td></td>
</tr>
<tr>
<td>AXED 201G</td>
<td>Effective Leadership and Communication in Agricultural Organizations</td>
<td></td>
</tr>
</tbody>
</table>

General Education Electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
</table>

Total Credits 114-129

1 Select two General Education Courses: one must be from a college outside of the College of Agricultural, Consumer and Environmental Sciences.

2 In addition to the departmental requirements listed above, you must also complete all of the courses in at least one of the options listed below. Courses with higher numbered prefixes may replace courses listed as departmental requirements in some cases.

Agricultural Biology Concentrations/Options

Concentrations: Applied Biology

The Applied Biology option prepares you for professional advancement including admittance to medical, dental, veterinary and graduate schools. Students interested in the health professions must register with the Health Professional Advisory Committee no later than the sophomore year. Students should check the specific entrance requirements for the professional or graduate school of their choice prior to selecting electives within this option.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCHE 341</td>
<td>Survey of Biochemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 313</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 314</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 315</td>
<td>Organic Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>MATH 190G</td>
<td>Trigonometry and Precalculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 211GL</td>
<td>General Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Select 6-8 credits from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANSC 370</td>
<td>Anatomy and Physiology of Farm Animals</td>
<td></td>
</tr>
<tr>
<td>BIOL 312</td>
<td>Plant Taxonomy</td>
<td></td>
</tr>
<tr>
<td>BIOL 330</td>
<td>Comparative Anatomy and Embryology</td>
<td></td>
</tr>
<tr>
<td>BIOL 354</td>
<td>Physiology of Humans</td>
<td></td>
</tr>
<tr>
<td>BIOL 377</td>
<td>Cell Biology</td>
<td></td>
</tr>
</tbody>
</table>
**EPWS 314** Plant Physiology  
**EPWS 373** Fungal Biology  
**EPWS 481** Plant Nematology  

**Suggested Electives**  
**MATH 192G** Calculus and Analytic Geometry II 4  
**PHYS 212G** General Physics II 3  

Total Credits 37-39  

**Option: Applied Microbiology**  
The Applied Microbiology option prepares you for positions in algal biofuels, environmental monitoring and improvement, industrial applications of microbiology, food sanitation, research or graduate study.  

**Required Courses**  
**BCHE 341** Survey of Biochemistry 4  
**BIOL 311 L** General Microbiology Laboratory 2  
**BIOL 451** Physiology of Microorganisms 3  
**CHEM 313** Organic Chemistry I 3  
**CHEM 314** Organic Chemistry II 3  
**CHEM 315** Organic Chemistry Laboratory 2  
**EPWS 373** Fungal Biology 3  
**EPWS 420** Environmental Behavior of Pesticides 3  
**EPWS 486** Plant Virology 3  
**EPWS 486** Plant Virology 3  
**MATH 142G** Calculus for the Biological and Management Sciences 3  
**PHYS 211G** General Physics I 3  
**PHYS 211GL** General Physics I Laboratory 1  

Select 6-7 credits from the following: 6-7  
**A ST 456** Statistical Methods and Data Analysis  
**AGRO 471** Plant Mineral Nutrition  
**BIOL 465** Invertebrate Zoology 4  
**CHEM 211** Organic Chemistry 4  
**EPWS 303** Economic Entomology 3  
**EPWS 325V** Insects, Humans, and the Environment 3  
**EPWS 455** Advanced Integrated Pest Management 3  
**EPWS 462** Parasitology 3  
**EPWS 575** Urban Entomology 3  
**EPWS 481** Plant Nematology 3  
**EPWS 492** Diagnosing Plant Disorders 3  

Select at least three from the following: 7-11  
**EPWS 314** Plant Physiology  
**EPWS 451** Special Topics  
**BIOL 301** Principles of Ecology  
**AGRO 365** Principles of Crop Production  
**AGRO 471** Plant Mineral Nutrition  
**SOIL 252** Soils  

Total Credits 39-43  

**Concentration: Environmental Biology**  
The Environmental Biology option prepares you for professional positions in environmental impact, regulation, compliance and improvement.  

**Required Courses**  
**CHEM 211** Organic Chemistry 4  
**E S 301** Principles of Ecology 3  
**E S 330** Environmental Management Seminar I 1  
**E S 430** Environmental Management Seminar II 1  
**EPWS 380V** Science & Society 3  
**EPWS 314** Plant Physiology 3  
**EPWS 455** Advanced Integrated Pest Management 3  
**EPWS 492** Diagnosing Plant Disorders 3  
**MATH 142G** Calculus for the Biological and Management Sciences 3  
**PHYS 211G** General Physics I 3  
**PHYS 211GL** General Physics I Laboratory 1  
**SOIL 252** Soils 3  
**TOX 361** Basic Toxicology 3  

Select at least two from the following: 5-8  
**A ST 456** Statistical Methods and Data Analysis  
**AGRO 365** Principles of Crop Production  
**AGRO 471** Plant Mineral Nutrition  
**BCHE 341** Survey of Biochemistry  
**E S 370** Environmental Soil Science  
**EPWS 420** Environmental Behavior of Pesticides 3  
**EPWS 451** Special Topics  
**EPWS 481** Plant Nematology  
**GEOG 381** Cartography and Geographic Information Systems  
**SOIL 257** Introduction to Weather Science  
**SOIL 312** Soil Management and Fertility  
**TOX 361** Basic Toxicology 3  

Total Credits 45-48  

**Concentration: Entomology**  
The Entomology concentration prepares you for graduate degrees in entomology. Emphasis is placed on a broad background in field and laboratory aspects of insect biology and management.  

**Required Courses**  
**MATH 142G** Calculus for the Biological and Management Sciences 3  
**EPWS 373** Fungal Biology 3  
**EPWS 481** Plant Nematology 3  

Total Credits 45-46  

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Concentration: Pest Biology and Management
This option prepares you for careers such as insect, weed and disease management; in both field and urban environments, including IPM and Sustainable/Organic Techniques research technician; federal and state agencies; border security; agricultural consulting; and extension positions.

Required Courses
CHEM 211 Organic Chemistry 4
EPWS 314 Plant Physiology 3
EPWS 455 Advanced Integrated Pest Management 3
EPWS 481 Plant Nematology 3
or EPWS 462 Parasitology 3
EPWS 492 Diagnosing Plant Disorders 3
MATH 142G Calculus for the Biological and Management Sciences 3
PHYS 110G The Great Ideas of Physics 4
SOIL 252 Soils 3
SOIL 312 Soil Management and Fertility 3
TOX 361 Basic Toxicology 3
Select one from the following:
BIOL 312 Plant Taxonomy 3
RGSC 357 Grass Taxonomy and Identification 3
RGSC 316 Rangeland Plants 3
Select 3 credits from the following:
EPWS 451 Special Topics 1-4
EPWS 462 Parasitology 3
EPWS 575 Urban Entomology 3
Total Credits 38

Agricultural Biology - Master of Science
There is currently a strong need for M.S. graduates trained in these areas, and the demand is expected to increase dramatically.

Students are prepared for careers in research, extension, teaching, private consulting, industry, and government or to continue in a broad range of Ph.D. programs. Specific career opportunities include positions as agricultural consultants, technical and sales representatives for industry, state departments of agriculture and USDA specialists, agricultural extension agents, industry research and environmental technicians.

The Master of Science degree program in Agricultural Biology is designed to produce graduates with the academic and research background needed to facilitate effective, innovative, and environmentally sound protection of plants and animals from a wide and varied spectrum of pests.

Entomology - Undergraduate Minor
Choose from the following Courses (18 credits) 1
EPWS 100 Applied Biology 3
EPWS 100 L Applied Biology Lab 1
EPWS 302 General Entomology 4
EPWS 303 Economic Entomology (required for the minor) 3
EPWS 451 Special Topics 1-4
EPWS 462 Parasitology 3
EPWS 575 Urban Entomology 3
Total Credits 18-21

1 EPWS 303: required for the minor

Pest Management - Undergraduate Minor
Choose from the following Courses (18 Credits)
EPWS 100 Applied Biology 3
EPWS 100 L Applied Biology Lab 1
EPWS 303 Economic Entomology 3
EPWS 310 Plant Pathology 4
EPWS 311 Introduction to Weed Science 4
EPWS 451 Special Topics 1-4
Upper-division EPWS course(s) 3-6
Total Credits 19-25

1 EPWS 303, EPWS 310 and EPWS 311: required for the minor

Plant Pathology - Undergraduate Minor
Courses required for minor:
EPWS 310 Plant Pathology (required for the minor) 4
EPWS 481 Plant Nematology (required for the minor) 3
EPWS 486 Plant Virology (required for the minor) 3
Choose from the following Courses (8 credits) 8
BIOL 311 General Microbiology
BIOL 311 L General Microbiology Laboratory
EPWS 100 Applied Biology
EPWS 100 L Applied Biology Lab
EPWS 314 Plant Physiology
EPWS 373 Fungal Biology
EPWS 492 Diagnosing Plant Disorders
Total Credits 18

Weed Science - Undergraduate Minor
Requirements
Choose from the following Courses (18 credits)
BIOL 312 Plant Taxonomy 3
BIOL 408 Ecology of Plants 3
EPWS 100 Applied Biology 3
EPWS 100 L Applied Biology Lab 1
EPWS 311 Introduction to Weed Science 4
EPWS 314 Plant Physiology 3

1 EPWS 311: required for the minor
**Family and Consumer Sciences**

**Undergraduate Program Information**

Courses and curricula in the department are designed to educate you as an individual and as a citizen in a changing society. They also develop a scientific attitude and the ability to conduct research directed toward solutions of problems affecting the quality of life for individuals, families and communities.

You must complete general education requirements, and a sequence of specialized course work is then identified for each major.

The following prefixes are used for courses:

- CTFM—Clothing, Textiles, and Fashion Merchandising;
- FCSC—Family and Consumer Sciences;
- FCS—Family and Child Science;
- FCSE—Family and Consumer Sciences Education;
- FSTE—Food Science and Technology;
- HNDS—Human Nutrition and Dietetic Sciences.

**Graduate Program Information**

The candidate for the master’s degree should have an undergraduate degree in a field related to the intended area of specialization. In addition to the Graduate School requirements, the admissions criteria for the Department of Family and Consumer Sciences Graduate Program include letters of reference, standardized test scores, and other materials.

Suggested departmental deadlines for review of admission materials are six weeks prior to the first day of the semester of desired start. A complete description of admission requirements should be obtained from the department.

**Degrees for the Department**

**Culinary Science - Undergraduate Minor (p. 130)**

**Family and Child Science - Undergraduate Minor (p. 131)**

**Food Science - Undergraduate Minor (p. 132)**

**Nutrition - Undergraduate Minor (p. 135)**

**Professor, Esther Devall, Department Head**

*Professors* Bock, Devall, Eastman, Munson-McGee; *Associate Professors* Chavez, Montanez, Smitley, Vaillancourt; Bartley *Assistant Professors* Golem, Marin; *Emeritus Professors* Cummings, Del Campo

E. Devall, Department Head, Ph.D. (Georgia) – child and family development; S. Bartley, Ph.D. (Tennessee) – family studies; G. Blanch, Ph.D. (Claremont) – education; P. Bloomquist, Ph.D. (New Mexico State) – education management and development; M. Bock, Ph.D. (Kansas State) – foods and nutrition; M. Chavez, Ph.D. (New Mexico State) – educational management; W. Eastman, Ph.D. (Texas Woman’s) – nutrition and food service systems management; E. Delgado, Ph.D. (Technical University of Berlin, Germany) – food science and technology; W. Fedio, Ph.D. (University of Alberta-Canada) – food microbiology; N. Flores, Ph.D. (Kansas State) – food science; D. Golem, Ph.D. (Rutgers) – nutritional and exercise sciences; W. Hamilton, Ed.D. (Montana State) – adult education and administration; J. Hertzman, Ph.D. (University of Nevada) – educational leadership; B. Jorgensen, Ph.D. (Virginia Tech) – family studies; S. Koukel, Ph.D. (Texas Tech) – family and consumer sciences education; K. Mandabach, Ed.D. (Houston) – higher education cultural and historical studies; M. Marin, Ph.D. (New Mexico State) – counseling and educational psychology; M. Montanez, Ph.D. (Michigan State) – psychology; S.H. Munson-McGee, Ph.D. (University of Delaware) – food processing and engineering; L. Shields, Ph.D. (New Mexico State) – educational administration; R. Smitley, Ph.D. (Texas Woman’s) – clothing, textiles, and fashion merchandising; B. Stringam, Ph.D. (University of Northern Arizona) – education; K. Vaillancourt, Ph.D. (Virginia Tech) – family studies

**CTFM 178. Fundamentals of Fashion**

3 Credits

Survey of the fashion business from fiber to end product.

**CTFM 202. Fashion Practicum**

1-3 Credits (1-3)

Applied field experience in the related areas of apparel design, fashion merchandising, and textile science. May be repeated up to 3 credits. Restricted to: CTFM majors. Restricted to Las Cruces campus only.

**CTFM 270. Fashion Illustration**

3 Credits (1+4P)

Human figure sketches and fashion illustration as a form of communication. Emphasis on color, proportion, cut, and fabric detail. **Prerequisites**: CTFM 255, ART 110G.

**CTFM 273. Concepts in Apparel Construction**

3 Credits (1+4P)

Application of generalizations and principles of garment construction to varied fabrics and designs. Analysis and evaluation of apparel merchandise with emphasis on the quality of garment construction. Restricted to: Main campus only. Restricted to CTFM, FCSE majors.

**CTFM 289. Fashion Studio I**

3 Credits

Applied principles in the criteria of pattern making: flat pattern and draping techniques. Projects will require three dimensional approaches in apparel design. Restricted to: CTFM majors. Restricted to Las Cruces campus only.
CTFM 300. Special Topics  
1-4 Credits  
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree. Restricted to Las Cruces campus only.  
Prerequisite(s): CTFM 178; CTFM 270.

CTFM 366. Historic Fashion  
3 Credits  
The study of clothing styles from 3500 BC through the 20th century. Restricted to: CTFM majors.  
Prerequisite(s): CTFM 255 and CTFM 270.

CTFM 371. Textile Science  
3 Credits (1+4P)  
Study of fabrics used for modern clothing, furnishings, and miscellaneous end uses. Textiles testing procedures explored.  
Prerequisites: CHEM 110G or consent of instructor.

CTFM 372. Fashion Merchandising  
3 Credits  
The apparel industry from designing through manufacturing and distribution to retailers.  
Prerequisites: CTFM 178, and CTFM 255.

CTFM 373. Advanced Apparel Techniques  
3 Credits  
This course builds upon concepts introduced in Concepts in Apparel Construction. An in-depth study of fabric selection, advanced garment construction and tailoring. New technologies applied to sewing construction will be explored. The use of computerized sewing machines will be incorporated. Restricted to CTFM majors.  
Prerequisite(s): CTFM 178 and CTFM 255.

CTFM 374. The Production of Textile and Fashion Accessories  
3 Credits  
The production of textiles and fashion accessories for retail. Merchandising techniques for wholesale and retail companies. Consent of Instructor required. Restricted to: CTFM majors.  
Prerequisite(s): CTFM 178 and CTFM 270.

CTFM 384. Clothing for Special Needs  
3 Credits  
Selection, adaptation, and design of clothing that is functional and attractive for special needs populations such as for active sportswear, the handicapped, the elderly, and various specialty populations.  
Prerequisite: consent of instructor.

CTFM 402. Field Experience Marketing Training  
1-3 Credits (1-3)  
Practical experience in clothing manufacturing or retailing. Supervised by resident faculty and supervisor at the work site. Report required. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: CTFM majors.  
Prerequisites: CTFM 178 and CTFM 255 or consent of instructor.

CTFM 460. Cultural Perspectives in Dress  
3 Credits  
Explores the social, psychological and cultural aspects of dress and appearance which includes the relationship of dress to physical and social environments, aesthetic and personal expression and cultural ideas and values.  
Prerequisite(s): CTFM 255 and CTFM 366.

CTFM 474. Fashion Promotion  
3 Credits  
This class focuses on the comprehensive nature of promotion in the merchandising environment of fashion related goods. Consent of Instructor required. Restricted to: CTFM majors.  
Prerequisite(s): CTFM 255 and CTFM 372.

CTFM 475. Fashion Buying  
3 Credits  
Fundamental principles and procedures for successful merchandising of fashion goods, responsibilities of buyers, fashion trends, consumer demands, and merchandising arithmetic.  
Prerequisites: ACCT 251, CTFM 372, and CTFM 474.

CTFM 476. Apparel Design by Draping and Pattern Drafting  
3 Credits (1+4P)  
Theory and application of draping and drafting garment patterns (required lab). Consent of Instructor required. Restricted to: CTFM majors.  
Prerequisite(s): CTFM 255, CTFM 270 CTFM 273, and CTFM 373.

CTFM 477. Special Problems  
1-4 Credits  
Individual research study in a selected subject area of family and consumer sciences. Maximum of 4 credits per semester and a total of 6 credits toward a degree.  
Prerequisite(s): consent of instructor.

CTFM 478. Graduate Study in Clothing for Special Needs  
3 Credits (1+4P)  
Graduate study in the selection, adaptation, and design of clothing that is functional and attractive for special needs populations such as active sportswear, handicapped, elderly, and various specialty populations.  
Prerequisites: CTFM 472 and CTFM 476.

CTFM 571. Textile Science  
3 Credits (1+4P)  
Fabrics used for modern clothing, furnishings, and miscellaneous end uses. Explores textiles testing procedures. Students enrolling in the 500-level class will be required to complete additional assignments beyond what is required for CTFM 371.  
Prerequisite: CHEM 110G or consent of instructor.

CTFM 572. Fashion Merchandising  
3 Credits  
Covers the apparel industry from designing through manufacturing and distribution to retailers. Students enrolling in the 500-level class will be required to complete additional assignments beyond what is required for CTFM 372.  
Prerequisite: CTFM 178 and CTFM 255 or consent of instructor.

CTFM 584. Graduate Study in Clothing for Special Needs  
3 Credits (1+4P)  
Graduate study in the selection, adaptation, and design of clothing that is functional and attractive for special needs populations such as active sportswear, handicapped, elderly, and various specialty populations.  
Prerequisites: CTFM 472 and CTFM 476.

CTFM 598. Special Research Programs  
1-4 Credits  
Individual investigations, either analytical or experimental. May be repeated for a maximum of 4 credits per semester and no more than 6 credits toward a degree.

FCS 181. Interpersonal Skills in Intimate Relationships  
3 Credits  
Developing social skills within friendships, dating relationships, marriage, parenting, and families. May be repeated up to 3 credits. Restricted to Las Cruces and Dona Ana campuses.
FCS 210. Infancy and Early Childhood in the Family
3 Credits
Research and theory relevant to prenatal development and the physical, mental, and socio-emotional development of the child from birth to age five. Attitudes, knowledge, and skills needed for working with young children and their families. Restricted to Las Cruces campus only.

FCS 211. Middle Childhood Development in the Family
3 Credits
Research and theory relevant to the physical, mental, social, and emotional development of the child from age five to age twelve. Attitudes, knowledge, and skills needed for working with school-age children in the family system. Observation in a variety of settings may be required. Restricted to Las Cruces campus only.

FCS 212. Adolescent Development and the Family
3 Credits
Research and theory relevant to the physical, mental, social, and emotional development of the children ages 12 to 18. Attitudes, knowledge, and skills needed for working with adolescents in the family system. Observation in a variety of settings may be required. Restricted to Las Cruces campus only.

FCS 213. Adult Development and Aging
3 Credits
Research and theory related to the physical, mental, social, and emotional development of older adults. Attitudes, knowledge, and skills related to working with older adults in the family system, including normative, and nonnormative transitions. Restricted to Las Cruces campus only.

FCS 300. Special Topics
1-4 Credits
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

FCS 301. Personal and Family Finance
3 Credits
Principles, processes and procedures involved in effective utilization and management of financial resources to meet the needs of individuals and/or families. Open to nonmajors.

3 Credits
Consumer issues related to social, political, and economic components of the larger social system. Focuses on consumer rights and responsibilities within the marketplace.

FCS 380. Family Dynamics
3 Credits
The dynamics of family relationships and changes influencing contemporary families. Interaction between the family and other social systems will be examined. Open to nonmajors.

FCS 383. Parenting and Child Guidance
3 Credits
Theories, principles, and skills essential for parents and professionals in guiding children within the family system. Problem prevention techniques are stressed.

FCS 424. Field Experience: Issues and Ethics
4 Credits
Supervised work experience in community agencies providing services to family systems. Discussion of professional issues and ethical dilemmas. A total of 8 credits must be taken. Consent of instructor required. Restricted to: Main campus only. Restricted to FCS majors.

Prerequisite(s): FCS 380 or equivalent, junior standing, and an overall GPA of at least 2.5 and consent of instructor.

FCS 449V. Family Ethnicities and Subcultures
3 Credits
Comparative study of American family subsystems with respect to selected social, economic, and cultural backgrounds. Interaction of these subsystems in American society. Differentiated assignments for graduate students.

FCS 492. Special Problems
1-4 Credits
Individual research in a selected subject area of family and consumer sciences. Maximum of 4 credits per semester and a total of 6 credits.

FCS 510. Infancy and Early Childhood in the Family
3 Credits
Research and theory relevant to prenatal development and the physical, mental, and socio-emotional development of the child from birth to age 5. Attitudes, knowledge, and skills needed for working with young children and their families. May be repeated up to 3 credits.

FCS 511. MIDDLE CHLDHD DEV IN FMLY
3 Credits
Research and theory relevant to the physical, mental, and socio-emotional development of children from ages five to twelve. Attitudes, knowledge, and skills needed for working with school-age children and their families. May be repeated up to 3 credits.

FCS 512. Adolescent Development and the Family
3 Credits
Advanced study in research and theory relevant to the physical, mental, and emotional development of the child, ages 12-18. Attitudes, knowledge, and skills related to working with adolescents in the family system. May be repeated up to 3 credits.

FCS 524. Supervised Practicum
1-9 Credits
Supervised experience in organizations providing services to families and children. Course subtitled in the Schedule of Classes. May be repeated for a maximum of 9 credits. Graded S/U. Prerequisite: consent of instructor.

FCS 525. Supervised Clinical Practice
1-9 Credits (2-18P)
Supervised clinical experience in Marriage and Family Therapy. Includes reviews of audio, video, and/or live sessions and case presentations. Maximum of 9 credits toward a degree. May be repeated up to 20 credits.

FCS 548. Adult Development and Aging
3 Credits
Advanced study in research and theory related to the physical, mental, social, and emotional development of older adults. Attitudes, knowledge, and skills related to working with older adults in the family system, including normative and non-normative role transitions.

FCS 549. Family Ethnicities and Subcultures
3 Credits
Comparative study of American family subsystems with respect to selected social, economic and cultural backgrounds. Interaction of these subsystems in American society. Students responsible for all requirements for FCS 449V plus additional work.

FCS 562. The Business and Practice of Marriage and Family Therapy
1 Credit
This seminar course will provide students with an overview of the business and practice of Marriage and Family Therapy to the end that they will understand how to develop and maintain a private practice in the field of MFT. Restricted to: FCS (MFT) majors. S/U Grading (S/U, Audit).
FCS 572. Family Dysfunction and Diagnosis
3 Credits
A study of the development of abnormal behavior patterns and characteristics to include the major mental and personality disorders and how these can influence and impact family systems. Emphasis is on the symptomology and/or life circumstances and events described in the various diagnostic categories.
Prerequisite(s): Students must be enrolled in a clinical program (i.e MFT, CEP, MSW).

FCS 582. Theories of Marriage and Family Therapy
2 Credits
A balanced study of major theories, research, applications and principles of marriage and family therapy. This course will examine major therapy models and the theories they are derived from as well as the effectiveness of specific therapy models for specific mental health disorders through research. May be repeated up to 4 credits.

FCS 583. Parenting and Child Guidance
3 Credits
Theories, principles, and skills essential for parents and professionals in guiding children within the family system. Problem prevention techniques are stressed.

FCS 584. Family Law and Ethics
3 Credits
Study of selected aspects of federal and state laws and ethical issues as they relate to the family system.

FCS 585. The Family System
3 Credits
Contemporary family interaction: concepts, composition, resource and environment.

FCS 586. Sexuality and Family Dynamics
3 Credits
Psychosocial and physiological aspects of human sexuality from a life span and family systems perspective.

FCS 587. Contemporary Marriage and Family Issues
3 Credits
Investigation of one of the following topics each semester: dual career marriages, nontraditional relationships, aged in marriage.

FCS 589. Family Crises and Rehabilitation
3 Credits
Examination of the major crises experienced by families. Emphasis on family system functioning rather than individual functioning. Preventative measures, positive coping strategies, and therapeutic intervention approaches examined.

FCS 590. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree.

FCS 592. Strategies in Family Therapy
2 Credits
Effective intervention strategies in family therapy practice. Live and taped role plays of interventions for various family problems required. Constructive approaches for working with family systems and third-party payers. May be repeated up to 4 credits.

FCS 598. Special Research Programs
1-4 Credits
Individual investigations either analytical or experimental. Maximum of 4 credits per semester and no more than 6 credits toward a degree.

FCS 599. Master's Thesis
15 Credits
Thesis

FCSC 400. Research Methods in Family and Consumer Sciences
3 Credits
Introduction to research design and methodology in Family and Consumer Sciences. Overview of common research designs and data collection strategies. Prepares students to critique published research and perform basic skills including hypotheses development and conducting a literature search.

FCSC 500. Research Methods
3 Credits
This course covers the critical evaluation of research literature, development of research proposals and principles of program evaluation. Students will be introduced to the application of qualitative or quantitative methods. Students will be expected to develop research questions and test hypotheses using statistical analysis and a variety of methodologies.

FCSC 598. Special Research Programs
1-4 Credits
Individual investigations, either analytical or experimental. Maximum of 4 credits per semester and no more than 6 credits toward a degree.

FCSC 599. Master's Thesis
15 Credits
May be repeated for unlimited credit, maximum of 6 credits toward a degree.

FCSE 235. Housing and Interior Design
3 Credits
Investigation of types of housing and factors impacting housing decisions for families. Selection, planning, and arrangement of interior components of homes to meet the needs of the family. Restricted to Las Cruces campus only.
Prerequisite(s): No prerequisites.

FCSE 245. Overview of Family and Consumer Sciences Teaching
3 Credits
Overview of planning and teaching skills. Supervised experiences in observing and directing the learning of secondary family and consumer sciences students. Philosophy and history of the profession.

FCSE 345. Management Concepts in Family and Consumer Sciences Teaching
3 Credits
Incorporation and application of management concepts in family and consumer sciences subject matter. Practical experience teaching management and ways to use management skills to plan, implement, and evaluate the teaching-learning transaction.

FCSE 348. Teaching in Informal Family and Consumer Sciences Settings
3 Credits
Learning principles and theories with application in informal family and consumer sciences education situations. Includes supervised experience in use of teaching strategies.
Prerequisite: overall GPA of at least 2.5 or consent of instructor.
FCSE 445. Career and Technical Education Programs  
3 Credits  
History and development of career and technical programs. Ancillary  
functions of family and consumer sciences teachers, including student  
evaluation and leadership development for students. Experiences  
in extension programs and teaching. Ethical issues and concerns  
of educators are introduced. Lifelong leadership development and  
evaluation tools for educators are explored. May be repeated up to 3  
credits.

FCSE 446. Teaching Methods I for Family and Consumer Sciences  
3 Credits  
Objectives, content, and organization of family and consumer sciences  
curriculum in high schools; materials and methods of teaching.  
Restricted to majors.  
Prerequisite(s): FCSE 245 and FCSE 345 and an overall GPA of at least 2.5,  
or consent of instructor.

FCSE 447. Teaching Methods II for Family and Consumer Sciences  
3 Credits  
Planning, preparation, and strategies for teaching family and consumer  
sciences in the secondary schools. Preparation for employment.  
Restricted to majors.  
Prerequisite(s): FCSE 245, FCSE 345, FCSE 445, FCSE 446 and an overall  
GPA of at least 2.5, or consent of instructor.

FCSE 448. Supervised Teaching in Family and Consumer Sciences  
12 Credits  
Seventy (70) days of full-time supervised teaching in selected high  
schools. Consent of Instructor required. Restricted to: FCSE majors.  
Prerequisite(s): FCSE 446, an overall GPA of at least 2.5, and consent of  
instructor.

FCSE 492. Special Problems  
1-4 Credits  
Individual research study in a selected subject area of family and  
consumer sciences. Maximum of 4 credits per semester and 6 credits  
toward degree.

FCSE 545. Graduate Study in Vocational Programs for Youth and Adults  
3 Credits  
History and development of career and technical programs. Ancillary  
functions of family and consumer sciences teachers, including student  
evaluation and leadership development for students. Experiences  
in extension programs and teaching. Ethical issues and concerns  
of educators are introduced. Lifelong leadership development and  
evaluation tools for educators are explored. May be repeated up to 3  
credits.

FCSE 546. Graduate Study in Teaching Methods I  
3 Credits  
Objectives, content, and organization of family and consumer sciences in  
high schools; materials and methods of teaching. Additional assignments  
beyond FCSE 446 required for students registering in FCSE 546.

FCSE 547. Graduate Study in Teaching Methods II  
3 Credits  
Planning, preparation, and strategies for teaching family and consumer  
sciences in the secondary schools. Additional assignments beyond  
FCSE 447 required for students registering in FCSE 547.

FCSE 548. Graduate Study in Supervised Teaching in Family and  
Consumer Sciences  
12 Credits  
Seventy of full-time, supervised teaching in selected schools. Additional  
assignments beyond FCSE 448 required for students registering in  
FCSE 548. Consent of Instructor required.  
Prerequisite(s): FCSE 446 or FCSE 546, and consent of instructor.

FCSE 590. Special Topics  
1-4 Credits  
Specific subjects and credits to be announced in the Schedule of  
Classes. May be repeated for a maximum of 9 credits toward a degree,  
4 credits per semester.

FSTE 164G. Introduction to Food Science and Technology  
4 Credits (3+2P)  
An introductory course in the scientific study of the nature and  
composition of foods and their behavior during all aspects of their  
conversion from raw materials to consumer food products.

FSTE 175. ACES in the Hole Foods I  
4 Credits  
Food production activities related to operation of ACES in the Hole  
Foods, a student-run food company that will give FSTE majors hands-on  
experience in all aspects of developing, producing and marketing food  
products Restricted to Las Cruces campus only.  
Prerequisite(s): Students enrolled in this class must possess A Food  
Handler Card.

FSTE 200. Special Topics  
1-4 Credits  
Specific topics and credits to be announced in the Schedule of Classes.  
Maximum of 4 credits per semester and a grand total of 9 credits.

FSTE 210G. Survey of Food and Agricultural Issues  
3 Credits  
Same as AG E 210G.

FSTE 263G. Food Science I  
4 Credits (3+2P)  
The scientific study of the principles involved in the preparation and  
evaluation of foods. May be repeated up to 4 credits.

FSTE 275. ACES in the Hole Foods II  
4 Credits  
Food production activities related to operation of ACES in the Hole  
Foods, a student-run food company that will give FSTE majors hands-on  
experience in all aspects of developing, producing and marketing food  
products. May be repeated up to 4 credits.  
Prerequisite(s): FSTE 175 and Have a Food Handler Card.

FSTE 320. Food Microbiology  
4 Credits (3+2P)  
Detrimental and beneficial microbiological aspects of food products.  
Methods of quantification and identification of microorganisms  
associated with food spoilage and preservation. May be repeated up to 4  
credits.  
Prerequisite(s): BIOL 111G and BIOL 111L, or BIOL 211G and BIOL 211L,  
or BIOL 190, or consent of instructor.

FSTE 325. Food Analysis  
3 Credits (2+2P)  
Basic chemical and physical techniques used in establishing nutritional  
properties and overall acceptance of food products. May be repeated up  
to 3 credits.  
Prerequisite(s): CHEM 111 or consent of instructor.
FSTE 328. Introduction to Food Engineering
3 Credits (2+2P)
Basic engineering principles including mass and energy balances, fluid flow, heat transfer and chemical kinetics and their application to food processing unit operations. Video and laboratory participation are used to enhance course content and relevance. May be repeated up to 3 credits.
Prerequisite(s): MATH 142G or consent of instructor.

FSTE 331. Food Preservation
3 Credits (2+2P)
Processes used in home and commercial food preservation, including canning, freezing, drying, and irradiation. May be repeated up to 3 credits.
Prerequisite(s): HNFS 263.

FSTE 375. ACES in the Hole Foods III
4 Credits (2+8P)
Food production activities related to operation of ACES in the Hole Foods, a student-run food company that will give FSTE majors hands-on experience in all aspects of developing, producing and marketing food products. May be repeated up to 8 credits. Restricted to: FSTE majors.
Prerequisite(s): FSTE 275 and Have a Food Handler Card.

FSTE 421. Food Chemistry
3 Credits
Comprehensive study of the chemical and physiochemical properties of food constituents. Chemical changes involved in the production, processing, and storage of food products and basic techniques used to evaluate chemical and physiochemical properties of foods.
Prerequisites: CHEM 111G, CHEM 112G, and CHEM 211, or consent of instructor.

FSTE 423. Food Processing Technologies
4 Credits (3+2P)
Common food processing unit operations such as raw material preparation, separation, concentration, fermentation, pasteurization, sterilization, extrusion, dehydration, baking, frying, chilling, freezing, controlled atmosphere storage, water, waste and energy management, packaging, materials handling and storage and process control. Application of principles to processing food in a laboratory setting.
Prerequisite(s): FSTE 328.

FSTE 425. Sensory Evaluation of Foods
3 Credits (2+2P)
Principles and procedures involved in the sensory evaluation of foods. Physiological, psychological and environmental factors affecting the evaluation of sensory properties. Analysis and interpretation of sensory data.
Prerequisite(s): FSTE 263G and A ST 311 or STAT 251.

FSTE 429. Product Development
3 Credits (1+4P)
Application of chemical, physical, nutritional and psychological principles and experimental methods to the development and evaluation of a food product for a specified food product development competition.
Prerequisite(s): FSTE 320 and FSTE 425.

FSTE 430. Designing and Brewing Great Beers of the World
3 Credits (1+4P)
The science and technology of brewing unit operations and the ingredients used in beer brewing. That knowledge is then applied to designing and brewing classic world beer styles. Styles investigated change every semester but typically include India Pale Ale, Pale Ale, Stout, Porter, Hefeweisen, Scottish Ale, and Black IPA. Comprehensive evaluation of the product relative to style guidelines completes the design-brew-evaluate cycle. Students must be at least 21 years of age on the first day of class. May be repeated up to 3 credits.

FSTE 450. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits towards a degree. Consent of instructor required.

FSTE 475. ACES in the Hole Foods IV
1-4 Credits (2-8P)
Food production activities related to operation of ACES in the Hole Foods, a student-run food company that will give FSTE majors hands-on experience in all aspects of developing, producing and marketing food products. May be repeated up to 8 credits. Restricted to: FSTE majors.
Prerequisite(s): FSTE 375 Have a Food Handler Card.

FSTE 492. Special Problems
1-4 Credits
Individual research study in a selected subject of Family and Consumer Sciences. Maximum of 4 credits per semester and a grand total of 8 credits towards a degree. Consent of instructor required.

FSTE 500. Data Analysis for Food Scientists
3 Credits (3)
An introduction to data analysis of food scientists. Modern statistical techniques used to analyze typical data collected by food scientists and researchers will be covered. Consent of Instructor required.

FSTE 520. Graduate Study in Food Microbiology
3 Credits (2+3P)
Detrimental and beneficial microbiological aspects of food products. Methods of quantification and identification of microorganisms associated with food spoilage and preservation. Additional work required at the graduate level.
Prerequisites: BIOL 111G/111L, or BIOL 211G/211L, or BIOL 190, or consent of instructor.

FSTE 521. Graduate Study in Food Chemistry
3 Credits
Comprehensive study of the chemical and physiochemical properties of food constituents. Chemical changes involved in the production, processing and storage of food products and basic techniques used to evaluate chemical and physiochemical properties of foods. Additional work required at the graduate level.
Prerequisites: CHEM 111G, CHEM 112G, and CHEM 211, or consent of instructor.

FSTE 523. Food Processing Technologies
4 Credits (3+2P)
Common food processing unit operations such as raw material preparation, separation, concentration, fermentation, pasteurization, sterilization, extrusion, dehydration, baking, frying, chilling, freezing, controlled atmosphere storage, water, waste and energy management, packaging, materials handling and storage and process control. Application of principles to processing food in a laboratory setting.
Additional work beyond that for FSTE 423 required at the graduate level.
Prerequisite(s): FSTE 528.

FSTE 524. Sensory Evaluation of Foods
3 Credits (2+3P)
Principles and procedures involved in the sensory evaluation of foods. Physiological, psychological and environmental factors affecting the evaluation of sensory properties. Analysis and interpretation of sensory data.
Prerequisite(s): FSTE 263G and A ST 311 or STAT 251.
FSTE 525. Graduate Study in Food Analysis
3 Credits (2+3P)
Covers basic chemical and physical techniques used in establishing nutritional properties and overall acceptance of food products. Additional work required at the graduate level.
Prerequisite(s): CHEM 111 or consent of instructor.

FSTE 532. Designing and Brewing Great Beers of the World
3 Credits (2+2P)
The science and technology of brewing unit operations and the ingredients used in beer brewing. That knowledge is then applied to designing and brewing classic world beer styles. Styles investigated change every semester but typically include India Pale Ale, Pale Ale, Stout, Porter, Hefeweisen, Scottish Ale, and Black IPA. Comprehensive evaluation of the product relative to style guidelines completes the design-brew-evaluate cycle. Students must be at least 21 years of age on the first day of class.

FSTE 560. Rumen Microbiology (so)
3 Credits
Same as ANSC 560.

FSTE 575. ACES in the Hole Foods
1-4 Credits (2-8P)
Food production activities related to operation of ACES in the Hole Foods, a student-run food company that will give FSTE majors hands-on experience in all aspects of developing, producing and marketing food products. May be repeated up to 8 credits.
Prerequisite(s): Students must possess a food handler card.

FSTE 598. Special Research Programs
1-4 Credits
Individual investigations either analytical or experimental. Maximum of 4 credits per semester and no more than 6 credits towards a degree. Consent of instructor required.

HNDS 201. Seminar 1- The Field of Dietetics
1 Credit
This course will introduce students to the field experience, careers, and professions in nutrition. This course is required for students pursuing a Didactic Program in Dietetics verification statement. May be repeated up to 1 credits. Consent of Instructor required. Restricted to: HNDS majors. Restricted to Las Cruces and Dona Ana campuses.

HNDS 251. Human Nutrition
3 Credits
Principles of normal nutrition. Relation of nutrition to health. Course contains greater amounts of chemistry and biology than HNDS 163. Open to nonmajors.

HNDS 300. Special Topics
1-4 Credits
Specific topics and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

HNDS 350. Nutrition Throughout the Lifecycle
3 Credits
Relationship of the stages of the human life cycle to changes in nutrient need.
Prerequisites: BIOL 254 and (HNDS 163 or HNDS 251), or consent of instructor.

HNDS 360. Food for Health
4 Credits
This course is designed to provide students the opportunity to learn about the intersection of nutrition and health in terms of food and diet. Students will be introduced to basic concepts within nutrition education, nutrition communication, nutrition and health and food culture.
Prerequisite(s): FSTE 263; HNDS 251.

HNDS 363. Quantity Food Production and Service
6 Credits (1+10P)
Covers quantity food production including cooking concepts, sanitation and safety, teamwork, and management responsibilities. Students will apply this knowledge developing product for sale in a student run restaurant. Proof of current ServSafe or NM Food Handler certification required. May be repeated up to 6 credits. Crosslisted with: HRTM 363.
Prerequisite(s): HRTM 263.

HNDS 401. Field Experience- Clinical Dietetics
1-8 Credits (1-8)
Experience in various areas of clinical nutrition facilities with emphasis on nutrition care of patients. Practical experience with supervision by resident faculty as well as supervisor at work site. Performance at work site graded in accordance with university standards. May be repeated for a maximum of 8 credits. Consent of instructor required. Restricted to: Main campus only.
Prerequisite(s): HNDS 201, overall GPA of 2.5 or higher and junior or senior standing and consent of instructor.

HNDS 403. Community Nutrition
3 Credits
Overview of the practice of community nutrition. Includes program planning, needs assessment, program implementation and program evaluation. Role of public and private agencies in nutrition programs that impact on nutrition of individuals and groups in the community.
Prerequisite: HNDS 350 or consent of instructor.

HNDS 404. Maternal, Infant and Child Nutrition
3 Credits
Nutritional needs and status during pregnancy, infancy, childhood, and adolescence. Applications also made to preschools and day care centers.
Prerequisite: HNFS 251 or consent of instructor.

HNDS 405. Seminar II- Entering the Field of Dietetics
1 Credit
Students will develop professional materials that will be used in their future careers including a personal statement, curriculum vitae, resume, and interview dialogues. Students will become familiar with career options in the field of dietetics and learn to navigate the processes of becoming a registered dietitian or dietetic technician, registered. Consent of Instructor required. Crosslisted with: HNDS 505. Restricted to: HNDS majors.
Prerequisite(s): Students must be enrolled in their last fall semester prior to planned graduation from the DPD program; HNDS 201, HNDS, 251, HNDS 350.
Corequisite(s): HNDS 403, HNDS 446, AND HNDS 448.
HNDS 407. Field Experience Community Nutrition
1-8 Credits
Experience working with nutritional problems of individual families of all socioeconomic and age levels and with agencies concerned with community nutrition. Practical experience with supervision by resident faculty as well as supervisor at the work site. Performance at work site graded in accordance with university standards. May be repeated for a maximum of 8 credits. Restricted to majors.
Prerequisites: HNFS 201, overall GPA of at least 2.5 and junior or senior standing or consent of instructor.

HNDS 409. Dietetic Science Capstone
3 Credits
This course will provide a cumulative review and assessment of the foundational knowledge, concepts, and skills presented throughout the didactic program in nutrition and dietetics to ensure readiness to proceed within the field of dietetics. Students will apply professional skills to prepare them for their future careers. Students will also be guided through the dietetic internship application process. Consent of Instructor required. Crosslisted with: HNDS 509. Restricted to: Dietetics Option majors.
Prerequisite(s): Students must be enrolled in their last spring semester prior to planned graduation from the DPD program.

HNDS 410. Sports Nutrition
3 Credits
Role of nutrition in physical performance of competitive and recreational sports participants.
Prerequisites: BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.

HNDS 420. Nutrition Counseling and Communication
3 Credits
This course is designed to meet the needs of individuals entering the healthcare/dietetics field who have little counseling experience, but have a strong foundational knowledge in the field of dietetics. It includes counseling techniques and strategies, behavior change, interviewing, cultural competence, mass media, and nutrition education. Consent of Instructor required.
Prerequisite(s): HNDS 251, HNDS 350.

HNDS 430. Food Service Organization and Management
3 Credits
Personnel, financial and general management in institutional and commercial food service operations.
Prerequisite: junior/senior standing or consent of instructor.

HNDS 440. Nutrition Education and Research
3 Credits
Course will enable students to apply general education and research knowledge to the field of nutrition. Nutrition information will be applied to education topics including learning objective development, backwards design of curriculum, student centered learning and learning assessment. Crosslisted with: HNDS 540.
Prerequisite(s)/Corequisite(s): HNDS 251, 350, and 360.

HNDS 446. Diet Therapy I
3 Credits
Special diets and physiological basis for their use. Laws and regulations concerning the practice of dietetics.
Prerequisites: BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.
HNDS 507. Laboratory Techniques in Nutrition
4 Credits (2+6P)
Methodology and experimental procedures in measuring nutrient requirements and values of diets. Same as ANSC 507.
Prerequisites: ANSC 422 and CHEM 321, or consent of instructor.

HNDS 509. Dietetic Science Capstone
3 Credits
This course will provide a cumulative review and assessment of the foundational knowledge, concepts, and skills presented throughout the didactic program in nutrition and dietetics to ensure readiness to proceed within the field of dietetics. Students will apply professional skills to prepare them for their future careers. Students will also be guided through the dietetic internship application process. Consent of Instructor required. Crosslisted with: HNDS 409.
Prerequisite(s): Students must be enrolled in their last semester of the DPD program.

HNDS 510. Graduate Study in Sports Nutrition
3 Credits
Role of nutrition and nutrients in physical performance of competitive and recreational sports participants. Additional work required at the graduate level.
Prerequisites: BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.

HNDS 512. Research Methods in Animal Science
4 Credits
Same as ANSC 512.

HNDS 517. Graduate Seminar
1 Credit
Current topics. Same as ANSC 515.
Prerequisite: consent of instructor.

HNDS 522. Animal Nutrition (f)
3 Credits
Same as ANSC 522.
Prerequisite: CHEM 211.

HNDS 530. Graduate Studies in Food Service Organization and Management
3 Credits
Personnel, financial, and general management in institutional and commercial food service operations. Additional work required at the graduate level.

HNDS 546. Diet Therapy I
3 Credits
Special diets and physiological basis for their use. Laws and regulations concerning the practice of dietetics. Additional assignments beyond HNFS 446 required for students registering in HNDS 546.
Prerequisites: BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.

HNDS 548. Graduate Studies in Advanced Nutrition
3 Credits
Covers biochemistry and physiology applied to nutrition. Students enrolled in the 500-level class will be required to complete additional assignments beyond what is required for HNDS 448. Restricted to: Main campus only.
Prerequisite(s): BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.

HNDS 549. Diet Therapy II
3 Credits
Continuation of HNDS 546.
Prerequisites: HNDS 546 or consent of instructor.

HNDS 551. Graduate Study in Community Nutrition
3 Credits
Overview on the practice of community nutrition to include program planning, needs assessment, program implementation and program evaluation. Role of public and private agencies in nutrition programs that impact on nutrition of individuals and groups in the community. Additional work required at the graduate level.
Prerequisite: HNDS 350 or consent of instructor.

HNDS 560. Dietetic Intern Seminar
1 Credit
Portfolio development for dietetic interns during supervised practice rotations. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Acceptance into the NMSU dietetic internship.

HNDS 562. Dietetic Internship: Supervised Practice in Community Nutrition
1-8 Credits (2-6P)
Provides dietetic interns with a minimum of 500 clock hours of supervised practice in community nutrition to include an emphasis in Cooperative Extension Service. Dietetic interns work under the the guidance of faculty and community nutrition professionals. May be repeated up to 8 credits. Consent of Instructor required. Restricted to: HNFS majors.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 563. Community Nutrition for Dietetic Interns
3 Credits
Advanced topics in community nutrition to include conducting community nutrition needs assessments, program planning and grant writing. Consent of instructor required. Restricted to HNDS majors.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 564. Dietetic Internship: Supervised Practice in Food Service Management
1-5 Credits (2-10P)
Provides dietetic interns with a minimum of 300 clock hours of supervised practice in foodservice management. Dietetic interns work under the guidance of faculty and foodservice management professionals. Students must complete a total of 4 credit hours of HNDS 564. May be repeated up to 5 credits. Consent of Instructor required.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 565. Foodservice Management for Dietetic Interns
3 Credits
Advanced topics in foodservice systems management to include conducting business planning and marketing. Consent of Instructor required. Restricted to: HNFS majors.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 566. Dietetic Internship: Supervised Practice in Clinical Dietetics
1-8 Credits (2-16P)
Provides dietetic interns with a minimum of 500 clock hours of supervised practice in clinical dietetics. Dietetic interns work under the guidance of faculty and dietetics professionals. May be repeated up to 8 credits. Consent of Instructor required.
Prerequisite(s): Acceptance into Dietetic Internship.
HNDS 567. Nutrition Care Process for Dietetic Interns  
3 Credits  
Advanced topics in nutrition care process and model to include medical nutrition therapy and evidence-based research and outcomes assessment in clinical dietetics. Consent of instructor required. Restricted to HNDS majors.  
Prerequisite(s): Acceptance into Dietetic Internship.  

HNDS 568. Review Course for National RD Exam  
3 Credits  
Completion of dietetic internship portfolio and preparation for the national registration examination for dietitians. Consent of Instructor required.  
Prerequisite(s): Acceptance into Dietetic Internship.  

HNDS 590. Special Topics  
1-4 Credits  
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree.  

HNDS 598. Special Research Programs  
1-4 Credits  
Individual investigations either analytical or experimental. Maximum of 4 credits per semester and no more than 6 credits toward a degree.  

HNDS 626. Nutrient Metabolism II: Carbohydrates, Lipids, and Energetics (se)  
4 Credits  
Same as ANSC 626.  

Name:  
Office Location:  
Phone: (575) 646-3936  
Website: http://aces.nmsu.edu/academics/FCS/  

Child Advocacy Studies (CAST) - Undergraduate Minor  
A minor in Child Advocacy Studies (CAST) is available. The minor requires a minimum of 18 hours of which 9 hours are specifically concentrated in the area of child advocacy at the 300 or higher level. Specific coursework requirements apply and consultation with an advisor for course requirements and scheduling is urged.  

Clothing, Textiles and Fashion Merchandising - Bachelor of Science in Family and Consumer Sciences  
The Clothing, Textiles and Fashion Merchandising major prepares students to achieve career goals in the diverse field of fashion merchandising and apparel design. Students are prepared with courses in fashion merchandising, marketing, retail management, textiles and apparel design. With knowledge and skills attained from the academic preparation, graduates can compete in today’s fashion industry. Skills attained in garment construction, draping and flat pattern allow for additional technical and costing abilities to meet the creative environment of the fashion industry. A GPA of 2.5 or better is required to enroll in CTFM 402 Field Experience Marketing Training to complete the degree requirements.  

General Education Requirements  
A list of specific general education requirements is available in the department. Please check with your advisor.  

Departmental Requirements  
CTFM 178  
Fundamentals of Fashion  
3  

CTFM 270  
Fashion Illustration  
3  

CTFM 273  
Concepts in Apparel Construction  
3  

CTFM 366  
Historic Fashion  
3  

CTFM 371  
Textile Science  
3  

CTFM 372  
Fashion Merchandising  
3  

CTFM 373  
Advanced Apparel Techniques  
3  

CTFM 374  
The Production of Textile and Fashion Accessories  
3  

CTFM 384  
Clothing for Special Needs  
3  

CTFM 402  
Field Experience Marketing Training  
1-3  

CTFM 460  
Cultural Perspectives in Dress  
3  

CTFM 474  
Fashion Promotion  
3  

CTFM 475  
Fashion Buying  
3  

CTFM 476  
Apparel Design by Draping and Pattern Drafting  
3  

Select six 300 or 400 level credits from FCS, FCSE or FRMG prefixes  
6  

Nondepartmental Requirements  
A ST 311  
Statistical Applications  
3  

or  
STAT 251G  
Statistics for Business and the Behavioral Sciences  
3  

ACCT 222  
Management Accounting  
3  

or  
ACCT 221  
Financial Accounting  
3  

ART 110G  
Visual Concepts  
3  

CHEM 110G  
Principles and Applications of Chemistry  
4  

or  
One general education course from the approved list  
3  

ECON 252G  
Principles of Microeconomics  
3  

ENGL 111G  
Rhetoric and Composition  
4  

MATH 120  
Intermediate Algebra  
3  

MATH 210G  
Mathematics Appreciation  
3  

MGT 309  
Human Behavior in Organizations  
3  

MGT 315V  
Human Relations in Organizations  
3  

PSY 201G  
Introduction to Psychology  
3  

SOC 101G  
Introductory Sociology  
3  

General Education HIST Course  
3  

Viewing a Wider World  
6  

Select one from the following:  
3  

MKTG 303  
Principles of Marketing  

MKTG 313  
Retail Management  

MKTG 324  
Product/Service Development  

Select one from the following:  
3  

AXED 201G  
Effective Leadership and Communication in Agricultural Organizations  

COMM 253G  
Public Speaking  

COMM 265G  
Principles of Human Communication  

Select one from the following:  
3
Clothing, Textiles and Fashion Merchandising - Undergraduate Minor

A minor in Clothing, Textiles and Fashion Merchandising is available. The minor requires a minimum of 18 hours of which a minimum of 9 hours must be at the 300 or higher level. Specific coursework requirements may apply. See an advisor for course requirements and scheduling.

Culinary Science - Undergraduate Minor

A minor in Culinary Science is available. The minor requires a minimum of 18 credits of which a minimum of 9 hours must be at the 300 or higher level. Specific coursework requirements apply and depend on the student’s specific major. See an advisor for course requirements and scheduling.

Family and Child Science - Bachelor of Science in Family and Consumer Sciences

This major stresses the interrelationship of individuals across the life span and the impact of social and economic factors on the family system. Graduates are prepared for professional work with social and community agencies and other programs serving families. This degree program has been deemed a CFLE-approved academic program by the National Council on Family Relations’ Certified Family Life Educator program so that you can apply through the abbreviated application process to become a CFLE upon graduation. You must work closely with an advisor. You must achieve a grade of C- or higher in your required core and minor courses, and must retake required courses with a grade lower than C-. You must have a GPA of 2.5 or higher before enrolling in

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCS 424</td>
<td>Field Experience: Issues and Ethics</td>
<td>4</td>
</tr>
<tr>
<td>FCSC 400</td>
<td>Research Methods in Family and Consumer Sciences</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 348</td>
<td>Teaching in Informal Family and Consumer Sciences Settings</td>
<td>3</td>
</tr>
</tbody>
</table>

General Education Requirements

A list of specific general education requirements is available in the department. Please check with your advisor.

Departmental Requirements

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<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>CAST 301V</td>
<td>Introduction to Child Advocacy</td>
<td>3</td>
</tr>
<tr>
<td>CAST 302</td>
<td>Professional and Systems Responses to Child Maltreatment</td>
<td>3</td>
</tr>
<tr>
<td>CAST 303</td>
<td>Prevention, Trauma Informed Treatment and Advocacy</td>
<td>3</td>
</tr>
<tr>
<td>FCS 181</td>
<td>Interpersonal Skills in Intimate Relationships</td>
<td>3</td>
</tr>
<tr>
<td>FCS 210</td>
<td>Infancy and Early Childhood in the Family</td>
<td>3</td>
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<tr>
<td>FCS 211</td>
<td>Middle Childhood Development in the Family</td>
<td>3</td>
</tr>
<tr>
<td>FCS 212</td>
<td>Adolescent Development and the Family</td>
<td>3</td>
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<tr>
<td>FCS 213</td>
<td>Adult Development and Aging</td>
<td>3</td>
</tr>
<tr>
<td>FCS 301</td>
<td>Personal and Family Finance</td>
<td>3</td>
</tr>
<tr>
<td>FCS 302</td>
<td>Consumer Practices and Problems for Families</td>
<td>3</td>
</tr>
<tr>
<td>FCS 380</td>
<td>Family Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>FCS 383</td>
<td>Parenting and Child Guidance</td>
<td>3</td>
</tr>
<tr>
<td>FCS 424</td>
<td>Field Experience: Issues and Ethics</td>
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</tr>
<tr>
<td>FCS 449V</td>
<td>Family Ethnicities and Subcultures</td>
<td>3</td>
</tr>
<tr>
<td>FCSC 400</td>
<td>Research Methods in Family and Consumer Sciences</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 345</td>
<td>Management Concepts in Family and Consumer Sciences Teaching</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 348</td>
<td>Teaching in Informal Family and Consumer Sciences Settings</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 251</td>
<td>Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>or PHLS 150G</td>
<td>Personal Health and Wellness</td>
<td></td>
</tr>
</tbody>
</table>

Minor Courses

Select 9-18 credits with the approval of an FCS advisor from a minor related to the FCS field such as CAST, C EP, ECED, GERO, PHLS, PSY, SOC, S WK and W S.

Electives

Select electives with approval of an FCS advisor sufficient to bring total to at least 120 credits. 1

| Total Credits | 111-120 |

1 At least 48 credits must be courses labeled 300 or above.
Family and Child Science - Undergraduate Minor

A minor in Family and Child Science is available. The minor requires a minimum of 18 hours of which a minimum of 9 hours must be at the 300 or higher level. Specific coursework requirements may apply. See an advisor for course requirements and scheduling.

Family and Consumer Sciences - Master of Science

The Master of Science degree in Family and Consumer Sciences can be obtained with an emphasis in one of the following areas:

- hotel, restaurant and tourism management;
- clothing, textiles and fashion merchandising;
- family and child science (marriage and family therapy emphasis or teaching and research emphasis);
- human nutrition and dietetic sciences (dietetic internship emphasis or human nutrition emphasis);
- food science and technology;
- family and consumer sciences education;
- or general family and consumer sciences.

A minor may be taken in a variety of supporting fields that fit the particular interests of the candidate. A minimum of 30 credits (including 4-6 credits of thesis) is required under the thesis plan and is the recommended program for most students. A non-thesis plan is available that requires a minimum of 32 credits of course work with a written comprehensive examination. Both plans require a final oral examination.

Students will take 3 credits of statistics and 3 credits of research methodology at the graduate level. Students may be required to take a graduate-level technical writing course based on demonstrated writing ability in initial graduate courses. Students who do not have degrees related to their intended areas of specialization may be required to do some leveling work. Prior to the completion of 12 credits, a program advisory committee will be established to determine, with the student, the courses that will be taken for the degree work.

Family and Consumer Sciences Education - Bachelor of Science in Family and Consumer Sciences

This major prepares you to teach in middle or high school or in other settings such as the Cooperative Extension Service or community agencies. The major is an accredited education program which meets the teacher licensure requirements for the State of New Mexico. In the spring semester of the senior year, you will apply all the principles of teaching that you have learned in a semester of student teaching in a selected school. Requirements for admission to the student teaching component of the Family and Consumer Sciences Education are

1. an overall grade-point average of 2.5 or higher, and a grade-point average of 2.5 or higher in family and consumer sciences courses;
2. a C or better in all departmental courses; and
3. recommendation of the advisor.

You must have a GPA of 2.5 or higher before enrolling in the following FCSE courses:

<table>
<thead>
<tr>
<th>Course</th>
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</tr>
</thead>
<tbody>
<tr>
<td>FCSE 446</td>
<td>Teaching Methods I for Family and Consumer Sciences</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 447</td>
<td>Teaching Methods II for Family and Consumer Sciences</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 448</td>
<td>Supervised Teaching in Family and Consumer Sciences</td>
<td>12</td>
</tr>
</tbody>
</table>

Requirements

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Departmental Requirements

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<td>CTFM 178</td>
<td>Fundamentals of Fashion</td>
<td>3</td>
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<td>Concepts in Apparel Construction</td>
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<td>Family Dynamics</td>
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<td>FCS 383</td>
<td>Parenting and Child Guidance</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 235</td>
<td>Housing and Interior Design</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 245</td>
<td>Overview of Family and Consumer Sciences Teaching</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 345</td>
<td>Management Concepts in Family and Consumer Sciences Teaching</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 445</td>
<td>Career and Technical Education Programs</td>
<td>3</td>
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<tr>
<td>FCSE 447</td>
<td>Teaching Methods II for Family and Consumer Sciences</td>
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</tr>
<tr>
<td>FSTE 164G</td>
<td>Introduction to Food Science and Technology</td>
<td>4</td>
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<tr>
<td>FSTE 263G</td>
<td>Food Science I</td>
<td>4</td>
</tr>
<tr>
<td>FSTE food science 300+ elective</td>
<td>see advisor for selections</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 251</td>
<td>Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HNDS nutrition 300+ elective</td>
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Nondepartmental Requirements

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<tr>
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<tbody>
<tr>
<td>HRTM 221</td>
<td>Introduction to Hospitality Management</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 231</td>
<td>Safety, Sanitation and Health in the Hospitality Industry</td>
<td>2</td>
</tr>
<tr>
<td>HRTM 363</td>
<td>Quantity Food Production and Service</td>
<td>6</td>
</tr>
<tr>
<td>Select one from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AG E 250</td>
<td>Technology and Communication for Business Management</td>
<td>3</td>
</tr>
<tr>
<td>C S 110</td>
<td>Computer Literacy</td>
<td></td>
</tr>
<tr>
<td>BCIS 110</td>
<td>Introduction to Computerized Information Systems</td>
<td></td>
</tr>
</tbody>
</table>

Viewing a Wider World
Select two from the following:

- PHLS 301V Human Sexuality
- BLAW 385V Consumers and the Law
- MKTG 311V Consumer Behavior

One approved VWW Course

**Specific Teaching Requirements**

- FCSE 448 Supervised Teaching in Family and Consumer Sciences 12
- SPED 350 Introduction to Special Education in a Diverse Society 3
- RDG 414 Content Area Literacy 3

**Total Credits**: 103

---

**Food Science - Undergraduate Minor**

A minor in Food Science is available. The minor requires a minimum of 18 hours of which a minimum of 9 hours must be at the 300 or higher level. Specific coursework requirements may apply. See an advisor for course requirements and scheduling.

**Food Science and Technology - Bachelor of Science in Food Science and Technology**

Students in this major study diverse scientific disciplines including chemistry, microbiology, nutrition and engineering. These principles from these disciplines are then applied to the industrial and practical aspects of product development, food processing, quality control/quality assurance, food preservation and sensory evaluation of foods. Background courses required in English, communication, biology, chemistry, core food science and technology. Necessary courses will cover production, preparation, analysis, safety, nutritional and aesthetic principles. This will provide students with a solid background to understand the nature, deterioration and processing of foods. These critical thinking, analytical, and application skills are necessary to translate those principles into the selection, processing, preservation, packaging, distribution and use of a safe, adequate, and high-quality food supply. Concentration areas in science, engineering and technology, culinary science and meat science allow students to focus on an area of interest.

You must achieve a grade of C- or higher in all classes with CHEM, BCHE, BIOL, FSTE and HNDS prefixes.

**Requirements**

**Basic Science and Background Requirements**

- BCHE 341 Survey of Biochemistry 4
- BIOL 211G Cellular and Organismal Biology 3
- BIOL 211GL Cellular and Organismal Biology Laboratory 1
- BIOL 311 General Microbiology 3
- BIOL 311L General Microbiology Laboratory 2
- CHEM 111G General Chemistry I 4
- CHEM 112G General Chemistry II 4
- CHEM 211 Organic Chemistry 4
- ENGL 111G Rhetoric and Composition 4

- MATH 142G Calculus for the Biological and Management Sciences 3

Select at least 15 credits from Humanities and Fine Arts and Social/Behavioral Sciences General Education Requirements, with at least 6 credits from each category:

- Select 6-9 credits from Humanities and Fine Arts
- Select 6-9 credits from Social/Behavioral Sciences

- ENGL 218G Technical and Scientific Communication 3

or ENGL 318G Advanced Technical and Professional Communication 3

- A ST 311 Statistical Applications 3

or STAT 251G Statistics for Business and the Behavioral Sciences 3

Select one from the following:

- AG E 250 Technology and Communication for Business Management 3
- BCIS 110 Introduction to Computerized Information Systems
- CS 110 Computer Literacy 3

Select one from the following:

- AXED 201G Effective Leadership and Communication in Agricultural Organizations 3
- COMM 253G Public Speaking
- COMM 265G Principles of Human Communication

**Food Science and Technology Core Requirements**

- ANSC 262 Introduction to Meat Science 3
- FSTE 164G Introduction to Food Science and Technology 4
- FSTE 210G Survey of Food and Agricultural Issues 3
- FSTE 263G Food Science I 4
- FSTE 320 Food Microbiology 4
- FSTE 325 Food Analysis 3
- FSTE 328 Introduction to Food Engineering 3
- FSTE 331 Food Preservation 3
- FSTE 421 Food Chemistry 3
- FSTE 423 Food Processing Technologies 3
- FSTE 425 Sensory Evaluation of Foods 3
- FSTE 429 Product Development 3
- HNDS 251 Human Nutrition 3

**Options**

Select one from the following options: 19-26

- Culinary Science
- Meat Science
- Science, Technology and Engineering

**Total Credits**: 121-128

1. FSTE majors must take FSTE 429 Product Development for 3 credits.

**Option: Culinary Science**

**Required Courses**

- ANTH 360V Food and Culture Around the World 3
- HRTM 231 Safety, Sanitation and Health in the Hospitality Industry 2
- HRTM 251 Food Production and Service Fundamentals 3
HRTM 307 Professional Development 1
HRTM 363 Quantity Food Production and Service 6
HRTM 408 Hospitality Internship 1
HRTM 413 Restaurant Operations Management 4
HRTM 414 International Food and Wine 3
Viewing a Wider World 3
Total Credits 26

**Option: Meat Science**

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 200</td>
<td>Introduction to Meat Animal Production</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 301</td>
<td>Animal and Carcass Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 351V</td>
<td>Agricultural Animals of the World</td>
<td>3</td>
</tr>
<tr>
<td>ANSC 363</td>
<td>Meat Technology</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 211GL</td>
<td>General Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Viewin a Wider World</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 19

**Option: Science, Technology and Engineering**

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSTE 175</td>
<td>ACES in the Hole Foods I</td>
<td>4</td>
</tr>
<tr>
<td>FSTE 275</td>
<td>ACES in the Hole Foods II</td>
<td>4</td>
</tr>
<tr>
<td>FSTE 375</td>
<td>ACES in the Hole Foods III</td>
<td>4</td>
</tr>
<tr>
<td>FSTE 475</td>
<td>ACES in the Hole Foods IV</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 211GL</td>
<td>General Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Select two Viewing a Wider World courses</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credits 26

Unlike the Dietetics option, this option does not prepare students to pursue the credential of a Registered Dietitian.

**General Education Requirements**

Areas I-III are incorporated into the Nutrition Education course list below. Students are able to select the five required courses from Areas IV-V and two required courses from the Viewing a Wider World (p. 47) section in the General Requirements (p. 47) section of the catalog. Please refer to the HNDS Undergraduate Student Handbook for a list of recommended courses to choose from in order to fulfill these requirements.

**Departmental Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCS 181</td>
<td>Interpersonal Skills in Intimate Relationships</td>
<td>3</td>
</tr>
<tr>
<td>FCSC 400</td>
<td>Research Methods in Family and Consumer Sciences</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 245</td>
<td>Overview of Family and Consumer Sciences Teaching</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 345</td>
<td>Management Concepts in Family and Consumer Sciences Teaching</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 446</td>
<td>Teaching Methods I for Family and Consumer Sciences</td>
<td>3</td>
</tr>
<tr>
<td>FCSE 447</td>
<td>Teaching Methods II for Family and Consumer Sciences</td>
<td>3</td>
</tr>
<tr>
<td>FST 263G</td>
<td>Food Science I</td>
<td>4</td>
</tr>
<tr>
<td>FST 320</td>
<td>Food Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>HNDS 201</td>
<td>Seminar I- The Field of Dietetics</td>
<td>1</td>
</tr>
<tr>
<td>HNDS 251</td>
<td>Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 350</td>
<td>Nutrition Throughout the Lifecycle</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 363</td>
<td>Quantity Food Production and Service</td>
<td>6</td>
</tr>
<tr>
<td>HNDS 403</td>
<td>Community Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 407</td>
<td>Field Experience Community Nutrition</td>
<td>1-8</td>
</tr>
<tr>
<td>HNDS 420</td>
<td>Nutrition Counseling and Communication</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 263</td>
<td>Food Production and Service Fundamentals</td>
<td>3</td>
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</table>

**Nondepartmental Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td>Select one from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL 203G</td>
<td>Business and Professional Communication</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 218G</td>
<td>Technical and Scientific Communication</td>
<td></td>
</tr>
<tr>
<td>ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
<td></td>
</tr>
<tr>
<td>Select one from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AXED 201G</td>
<td>Effective Leadership and Communication in Agricultural Organizations</td>
<td>3</td>
</tr>
<tr>
<td>COMM 253G</td>
<td>Public Speaking</td>
<td></td>
</tr>
<tr>
<td>COMM 265G</td>
<td>Principles of Human Communication</td>
<td></td>
</tr>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 142G</td>
<td>Calculus for the Biological and Management Sciences</td>
<td></td>
</tr>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 111GL</td>
<td>Natural History of Life Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PSY 201G</td>
<td>Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 225</td>
<td>Human Anatomy and Physiology I</td>
<td>4</td>
</tr>
</tbody>
</table>

Students are encouraged to use the elective hours to complete a minor in a related area such as chemistry, microbiology, and business. Consult an advisor for requirements.

**Human Nutrition and Dietetic Sciences - Bachelor of Science in Family and Consumer Sciences**

**Option: Nutrition Education**

This option prepares students to become nutrition educators that work within the community and public health settings. This option focuses on health and wellness, the association between nutrition and health, and teaching healthy living. Graduates from the Nutrition Education option will have learned the skills to communicate evidence-based nutrition information, provide nutrition education, and blend nutrition with other health science subjects. The job opportunities for those graduating from this program include working as a nutrition educator or nutrition assistant in county agencies, Extension Services, community nutrition programs, schools and with health organizations.
Viewing a Wider World

Refer to the “List of Recommended GE courses” for HNDS students in the HNDS Undergraduate Student Handbook for a list of field-related course options that can be selected from the GE Core Curriculum and Viewing a Wider World course requirements.

Option: Pre-Dietetics/Dietetics

The Dietetics option prepares students to become registered dietitians (RD) and dietetic technicians, registered (DTR). This option encompasses nutritional science, clinical dietetics, community nutrition, food science and food service management.

All students enrolled in this option begin as Pre-Dietetics students. All Pre-Dietetics students are required to apply for admission into the Dietetics option in the fall semester of their junior year as indicated on the Pre-Dietetics/Dietetics road map. Please refer to the HNDS Undergraduate Student Handbook for information on the admissions criteria, application instructions, and the application process. Pre-Dietetic students are termed Dietetic students upon formal notification of admission into the Dietetics program.

The Dietetics option is a Didactic Program in Dietetics (DPD) that is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND). This option enables graduates to continue pursuing the credentials of a registered dietitian (RD). Becoming an RD is currently a three-step process:

1. Successfully complete an ACEND-accredited DPD program (e.g. the NMSU Dietetics Option), earn a degree and a verification statement.
   a. The verification statement ensures eligibility to apply to the next step.

2. Successfully complete an ACEND-accredited Dietetic Internship (DI) program, earn another verification statement.
   a. This 2nd verification statement ensures eligibility to begin the next step.

3. Pass the Commission on Dietetic Registration (CDR) registration exam.

General Education Requirements

Areas I-III are incorporated into the Pre-Dietetics/Dietetics course list below. Students are able to select the five required courses from Areas IV-V and two required courses from the Viewing a Wider World section as stated in the General Requirements (http://catalogs.nmsu.edu/nmsu/general-information/general-education-courses) section of the catalog. Please refer to the HNDS Undergraduate Student Handbook for a list of recommended courses to choose from in order to fulfill these requirements.

Departmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCSE 348</td>
<td>Teaching in Informal Family and Consumer Sciences Settings</td>
<td>3</td>
</tr>
<tr>
<td>FSTE 253G</td>
<td>Food Science I</td>
<td>4</td>
</tr>
<tr>
<td>FSTE 320</td>
<td>Food Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>FSTE 425</td>
<td>Sensory Evaluation of Foods</td>
<td>3</td>
</tr>
</tbody>
</table>

or

other upper division FSTE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HNDS 201</td>
<td>Seminar 1- The Field of Dietetics</td>
<td>1</td>
</tr>
<tr>
<td>HNDS 251</td>
<td>Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 350</td>
<td>Nutrition Throughout the Lifecycle</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 360</td>
<td>Food for Health</td>
<td>4</td>
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<tr>
<td>HNDS 401</td>
<td>Field Experience- Clinical Dietetics</td>
<td>1-8</td>
</tr>
<tr>
<td>HNDS 403</td>
<td>Community Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 405</td>
<td>Seminar II- Entering the Field of Dietetics</td>
<td>1</td>
</tr>
<tr>
<td>HNDS 407</td>
<td>Field Experience Community Nutrition</td>
<td>1-8</td>
</tr>
<tr>
<td>HNDS 409</td>
<td>Dietetic Science Capstone</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 420</td>
<td>Nutrition Counseling and Communication</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 430</td>
<td>Food Service Organization and Management</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 440</td>
<td>Nutrition Education and Research</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 446</td>
<td>Diet Therapy I</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 448</td>
<td>Advanced Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 449</td>
<td>Diet Therapy II</td>
<td>3</td>
</tr>
<tr>
<td>HNDS 455</td>
<td>Billing and Coding for Dietetics</td>
<td>3</td>
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Nondepartmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
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<tr>
<td>ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
<td></td>
</tr>
<tr>
<td>COMM 253G</td>
<td>Public Speaking</td>
<td></td>
</tr>
<tr>
<td>COMM 265G</td>
<td>Principles of Human Communication</td>
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</tr>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 142G</td>
<td>Calculus for the Biological and Management Sciences</td>
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</tr>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 111GL</td>
<td>Natural History of Life Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
<td>3</td>
</tr>
<tr>
<td>or STAT 251G</td>
<td>Statistics for Business and the Behavioral Sciences</td>
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<tr>
<td>ACCT 221</td>
<td>Financial Accounting</td>
<td>3</td>
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<tr>
<td>BCH 341</td>
<td>Survey of Biochemistry</td>
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Select one from the following: 3

<table>
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<tr>
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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL 225</td>
<td>Human Anatomy and Physiology I</td>
<td></td>
</tr>
</tbody>
</table>
Food Production and Service
General Chemistry II
108-122

Sciences, Department of Plant and Environmental Sciences, as well as
program in the Department of Biology, Department of Animal and Range
the department also may advise Ph.D. candidates through the graduate
major in Fish, Wildlife and Conservation Ecology. Faculty members in
offers graduate work leading to the Master of Science degree with a
The Department of Fish, Wildlife and Conservation Ecology (FWCE)
Graduate Program Information
other disciplines. The minor includes a minimum of 18 credit hours.
The minor in Wildlife Science for students majoring in
courses taken in the major field and in all courses taken at NMSU. The
To graduate, an overall grade point average of 2.0 is required in
courses taken in the major field and in all courses taken at NMSU. The
department offers a minor in Wildlife Science for students majoring in
other Ph.D. granting departments. For additional information please see
the graduate catalog entries for the respective departments.
Minimum qualifications for admission to the graduate program include the following:
• 3.0 grade-point average in the last two years of undergraduate work
• Students who are most competitive for admission are those with
a combined average GRE score greater than 70th percentile on the
verbal and quantitative parts of the GRE.
• Course work in zoology, botany and animal ecology and a basic
appreciation of sustainable use of natural resources, with supporting
courses in mathematics, chemistry, physics and written and oral
communication.

Applicants should submit a written composition of approximately 350
words that indicates the applicant’s reasons for pursuing advanced
study, explains personal and educational goals, and any additional
experiences (e.g., military or career) or skills that might provide a
foundation for graduate study. Applicants should submit three letters
of recommendation (it is preferred that at least two letters come from
university instructors) along with official GRE scores (the department
code is 0115). Applicants should also contact a faculty member in
the department that they would like to work with as an advisor, and
that faculty member needs to agree to serve as the student’s advisor.
Application forms, application fee and transcripts, GRE scores, letters
of recommendation and letter of application should be submitted online
to the Graduate School. Successful applicants will be selected from
those who meet the criteria of grade-point average, GRE scores, and
educational background described above and who appear to have
professional promise as indicated by personal history and written
references.

For the Master of Science degree, a minimum of 30 semester credits
of graduate work in the major and related subjects is required, together
with a thesis for most students. Of these credits, at least 15 must be in
courses numbered 500 or above, and at least 15 must be for courses with
the FWCE prefix. Those programs involving a thesis or research project
include 4 to 6 credits of research (FWCE 598 Master’s Thesis). Students electing a minor in FWCE are
required to take at least 9 credits in the minor field. A nonthesis option is
available to some students, depending on prior training and experience,
and subject to approval by the advisor and department head.

All students in the program must complete the following requirements:
• A ST 505 Statistical Inference I or equivalent
• One semester of Graduate Seminar (FWCE 515 Graduate Seminar -
may be repeated for credit)
• A minimum of 3 additional credits from the Quantitative Methods
category in addition to A ST 505 Statistical Inference I (eligible
courses listed below)
• One course each from the Ecological Concepts, Organismal Biology
and Ecological Techniques categories (eligible courses listed below)
• 4 to 9 credits from the Independent Study category (eligible courses
listed below)

In addition, a student may petition to have up to 3 credits of special
topics courses (FWCE 548 Graduate Problems) to apply to one of the
three areas. Courses other than those listed may be acceptable, given
permission by the student’s supervisory committee.

### View a Wider World

Refer to the "List of Recommended GE courses" for HNDS students in the
HNDS Undergraduate Student Handbook for a list of field-related course
options that can be selected from the GE Core Curriculum and Viewing a
Wider World course requirements.


### Nutrition - Undergraduate Minor

A minor in Nutrition is available. The minor requires a minimum of 18
hours of which a minimum of 9 hours must be at the 300 or higher level.
Specific coursework requirements may apply. See an advisor for course
requirements and scheduling.

### Fish, Wildlife and Conservation Ecology

**Undergraduate Program Information**

The Department of Fish, Wildlife and Conservation Ecology prepares
you for careers in a variety of natural resource fields related to
the management of wild animal populations and the natural systems they
share. Within the major you are offered two options.

- The Wildlife Ecology and Management Option is for students who
  plan to focus on terrestrial organisms, and
- The Aquatic Ecology and Management Option is for students who
  want to focus on fish and aquatic organisms.

To graduate, an overall grade point average of 2.0 is required in
courses taken in the major field and in all courses taken at NMSU. The
department offers a minor in Wildlife Science for students majoring in
other disciplines. The minor includes a minimum of 18 credit hours.

### Graduate Program Information

The Department of Fish, Wildlife and Conservation Ecology (FWCE)
offers graduate work leading to the Master of Science degree with a
major in Fish, Wildlife and Conservation Ecology. Faculty members in
the department also may advise Ph.D. candidates through the graduate
program in the Department of Biology, Department of Animal and Range
Sciences, Department of Plant and Environmental Sciences, as well as
Degrees for the Department

Conservation Ecology - Bachelor of Science in Conservation Ecology (p. 139)

Fisheries and Wildlife Science - Bachelor of Science in Fish, Wildlife and Conservation Ecology (p. 141)

Fish, Wildlife and Conservation Ecology - Master of Science (p. 143)

Minors for the Department

Conservation Ecology - Undergraduate Minor (p. 140)

Wildlife Science - Undergraduate Minor (p. 144)

Professor, Kathryn E. Stoner, Department Head

Professors Boeing, Caldwell, Cowley, Desmond, Roemer; Associate Professor Cain; Assistant Professor Gebreselassie; College Associate Professors Boykin, Frey, Sallenave


FWCE 109. Contemporary Issues in Wildlife and Natural Resources Management

3 Credits
Ecological, socioeconomic, and political issues surrounding the management of our natural resources with an emphasis on fish and wildlife resources. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

FWCE 110. Introduction to Natural Resources Management

4 Credits (3+2P)
This class covers historical and current issues affecting the management of renewable natural resources with an emphasis on water, soil, rangeland, forest, fish, and wildlife resources. An emphasis is placed on the scientific method and critical thinking. In the laboratory students collect and analyze field data on topics covered above and write up each unit as a laboratory report. May be repeated up to 4 credits.

FWCE 255. Principles of Fish and Wildlife Management

3 Credits
Basic principles of fish and wildlife management including history, ecology, economics, and policy. Emphasis on wildlife and fisheries. Uses an ecosystem approach integrating living and nonliving resources.
Prerequisite(s): FWCE 110.

FWCE 301. Wildlife Ecology

3 Credits
General ecological theory with emphasis on concepts including biogeography, species interactions, population dynamics and disease ecology as they relate to the management and conservation of vertebrates.
Prerequisite(s): B IOL 111 G or BIOL 190.

FWCE 330. Natural History of the Vertebrates

4 Credits (3+3P)
Evolution, ecology, and diversity of vertebrates. Topics include comparative anatomy and physiology, biogeography, community ecology, behavior, and conservation. Laboratory emphasizes identification of local taxa. Field trips may be required.
Prerequisite(s)/Corequisite(s): BIOL 322 Zoology. Prerequisite(s): BIOL 111 G and BIOL 111 L.

FWCE 355. Wildlife Techniques and Analysis

4 Credits (3+2P)
FWCE 355 will provide a broad overview of basic skills and techniques that are commonly used by biologists in performing management, research, and reporting functions in natural resource fields with an emphasis on wildlife techniques, data processing and analysis.
Prerequisite(s): FWCE 301, A ST 311.

FWCE 357. Fisheries Management and Analysis

4 Credits (3+2P)
Lectures and laboratory exercises provide a broad overview of basic skills and techniques used for assessing and managing fish populations.
Prerequisite(s): FWCE 301 and A ST 311.

FWCE 391. Internship

1-3 Credits (1-3)
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 3 credits toward a degree. Consent of Instructor required. S/U Grading (S/U, Audit).
Prerequisite(s): Consent of instructor.

FWCE 393. Professional Experience and Communication

3 Credits
Professional work experience under the supervision of employer and/or a faculty member. Written report and presentation is required.
Prerequisite(s)/Corequisite(s): FWCE 255.

FWCE 402. Seminar in Natural Resource Management

1 Credit
Prerequisite: senior standing or above.

FWCE 409. Introduction to Population Ecology

3 Credits
Quantitative analysis of vital statistics and mechanisms affecting dynamics of wild populations. Patterns of growth, age structure, survival, and natality. Population theories and life tables. May be repeated up to 3 credits.
Prerequisite(s): MATH 142G and FWCE 255.

FWCE 430. Avian Field Ecology

4 Credits (3+3P)
Principles of avian ecology and management with an emphasis on taxonomy, physiology, behavior and field studies. Includes weekly field trips focusing on identification and behavior of Southwest birds. Pre/Corequisite(s): FWCE 330.
FWCE 431. Mammalogy
4 Credits (3+2P)
Classification, identification, anatomy, physiology, life history, and ecology of mammals. Field trips required. May be repeated up to 4 credits.
Prerequisite(s): FWCE 255 and FWCE 330.

FWCE 432. Environmental Biology of Fishes
4 Credits (3+3P)
What makes a fish, a fish. Mechanisms of circulation, gas exchange, osmotic and ionic regulation, swimming, migration, reproduction, and chemoreception. Taught with FWCE 532.
Prerequisite(s): CHEM 111G and senior standing.

FWCE 433. Fisheries Management
3 Credits
This course is designed to introduce students to the basic principles of fisheries management. Students will learn the techniques and tools used to collect, analyze, and interpret fisheries data needed to undertake fisheries management decisions. Taught with FWCE 533. Consent of Instructor required.
Prerequisite(s): FWCE 482 and A ST 311.

FWCE 434. Aquatic Contaminants and Toxicology
4 Credits (3+3P)
Prerequisite(s): CHEM 111G and senior standing.

FWCE 436. Large Mammal Ecology, Conservation and Management
3 Credits
This course will cover aspects of large mammal ecology, management and conservation. Will include aspects of foraging ecology, resource and habitat selection, competition and resource partitioning, predation and population dynamics. Taught with FWCE 530. Consent of Instructor required.

FWCE 437. Wildlife Damage Management
3 Credits
Introduction to basic need and appropriate methods for resolving human-wildlife conflicts and management of animal damage. Socioeconomic, ecological, and political factors. Field trips required. Taught with FWCE 537.
Prerequisite(s): BIOL 111G, FWCE 255, FWCE 301, FWCE 409.

FWCE 439. Game Bird Ecology and Management
3 Credits
In this class we will look at the overall history of game bird management and conservation, how management and conservation of game birds was and still is the foundation for wildlife conservation in North America, define the challenges both past and present to managing and conserving game bird populations, and explore the conceptual and quantitative models used to manage migratory and non-migratory game birds. Taught with FWCE 539. Consent of Instructor required. Restricted to: FISH, WLSC majors.
Prerequisite(s): FWCE 301, FWCE 409, A ST 311 or equivalent.

FWCE 440. Wildlife Habitat Relationships
3 Credits
The study of wildlife-habitat relationships primarily seeks to describe how the distribution and abundance of resources used for food, cover and security, and constraints on the use of these resources influence the distribution of animals. This course will cover aspects of animal behavior related to how animals select habitat, theoretical models of habitat selection, the influence of inter- and intra-specific interactions on habitat selection, habitat quality, study designs for wildlife-habitat studies, modeling habitat selection and data analyses. Taught with FWCE 540. Consent of Instructor required. Restricted to: FWCE majors.

FWCE 447. Wildlife Law and Policy
3 Credits
Introduction to state and federal laws and policies for wildlife and the historical context for their development. Taught with FWCE 547.
Prerequisite(s): Junior or Senior level standing.

FWCE 448. Problems
1-3 Credits (1-3)
Individual investigations in fishery or wildlife science. Maximum 3 credits per semester and a grand total of 6 credits. Consent of instructor required.
Prerequisite(s): 18 credits in FWCE.

FWCE 450. Special Topics
1-4 Credits (1-4)
Specific subjects and credits as announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits. Consent of instructor required.

FWCE 457. Ecological Biometry
3 Credits
Use of ecological data to test scientific hypotheses. Stochastic and statistical models for environmental data, data visualization, likelihood-based and information-based model selection. Emphasis on open-source software tools.
Prerequisite(s): MATH 142G or 191G, A ST 311, FWCE 301.

FWCE 459. Aquatic Ecology
4 Credits
Ecological functions of plant and animal communities in aquatic ecosystems with emphasis on chemical and physical properties, productivity, species interactions, population dynamics, and concepts for diagnosing problems and restoring aquatic ecosystems. Taught with FWCE 559.
Prerequisite(s): FWCE 301 or BIOL 301, CHEM 112, MATH 142G.

FWCE 464. Management of Aquatic and Terrestrial Ecosystems
4 Credits (3+2P)
Principles and methods for managing aquatic and terrestrial ecosystems and their fish and wildlife resources. Emphasis on quantitative techniques, data collection and analysis for management of systems at a landscape spatial scale. May be repeated up to 4 credits.
Prerequisite(s): (BIOL 301 or FWCE 301) FWCE 330, A ST 311G.

FWCE 467. Herpetology
4 Credits
Systematics, taxonomy, ecology, behavior, and conservation of amphibians and reptiles. Field trips required. Taught with FWCE 567.
Prerequisite(s): FWCE 330.
FWCE 471. GIS for Natural Resource Scientists
4 Credits
Practical GIS class for students with little or no GIS experience. Class focuses on learning to use industry-standard software and applications in natural resource management. Taught with FWCE 571.

FWCE 472. Wildlife Museum Internship
1-4 Credits (1-4)
Substantial directed work experience in various functions of the wildlife natural history museum developed by the student in consultation with the faculty curator. Internships may involve aspects of collection development and management, public education programs, or other related museum activities. Internship must be approved by the faculty curator. May be repeated up to 9 credits. Consent of Instructor required.
Prerequisite(s): BIOL 111G and BIOL 111GL.

FWCE 473. NAT HIST MUSEUM FUNCTION MTHDS
3 Credits
Fundamentals of the function and methods of natural history museums in research, education, service, and biodiversity conservation. Emphasis on experiential learning. Includes lectures, paper discussions, laboratory activities, specimen preparation, required full-day Friday field trips, and an individual term project.
Prerequisite(s): FWCE 330 or BIOL 322 or BIOL 312 or RGSC 316.

FWCE 482. Ichthyology
4 Credits (3+2P)
Classification, morphology, identification, life history, and ecology of fishes. May be repeated up to 4 credits.
Prerequisite(s): FWCE 330 or consent of instructor.

FWCE 509. Population Ecology (s)
3 Credits (2+2P)
Quantitative analysis of vital statistics and mechanisms promoting stability in wild populations. Theory and application of life tables and population models.

FWCE 515. Graduate Seminar
1 Credit
Current topics. May be repeated up to 4 credits.

FWCE 530. Large Mammal Ecology, Conservation and Management
3 Credits
This course will cover aspects of large mammal ecology, management and conservation. Will include aspects of foraging ecology, resource and habitat selection, competition and resource partitioning, predation and population dynamics. Taught with FWCE 436.

FWCE 532. Environmental Biology of Fishes
4 Credits (3+3P)
What makes a fish a fish. Mechanisms of circulation, gas exchange, osmotic and ionic regulation, swimming, migration, reproduction, and chemoreception. Students are responsible for all requirements for FWCE 432 plus additional work.

FWCE 533. Fisheries Management
3 Credits
This course is designed to introduce students to the basic principles of fisheries management. Students will learn the techniques and tools used to collect, analyze, and interpret fisheries data needed to undertake fisheries management decisions. Taught with FWCE 433. Consent of Instructor required.
Prerequisite(s): FWCE 482, A ST 311.

FWCE 534. Aquatic Contaminants and Toxicology
4 Credits (3+3P)
Basic principles and methodologies of aquatic toxicity testing. Routes of exposure and modes of action. Environmental legislation and ecological risk assessment. Students are responsible for all requirements for FWCE 434 plus additional work.

FWCE 535. Special Topics
1-4 Credits (1-4)
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

FWCE 536. Advanced Avian Ecology
3 Credits
Focuses on current topics and literature in avian ecology including systematics, mating systems, behavior, physiology, movement patterns and conservation. Includes required overnight field trips.
Prerequisite(s): Graduate standing or consent of instructor.

FWCE 537. Wildlife Damage Management
3 Credits
Introduction to basic need and appropriate methods for resolving human-wildlife conflicts and management of animal damage. Socioeconomic, ecological, and political factors. Field trips required. Taught with FWCE 437. Students are responsible for all requirements for FWCE 437 plus additional work.
Prerequisite(s): FWCE 409.

FWCE 539. Game Bird Ecology and Management
3 Credits
In this class we will look at the overall history of game bird management and conservation, how management and conservation of game birds was and still is the foundation for wildlife conservation in North America, define the challenges both past and present to managing and conserving game bird populations, and explore the conceptual and quantitative models used to manage migratory and non-migratory game birds. Taught with FWCE 439. Restricted to: FISH,WLSC majors.
Prerequisite(s): FWCE 301, FWCE 409, A ST 311 or equivalent.

FWCE 540. Wildlife Habitat Relationships
3 Credits
The study of wildlife-habitat relationships primarily seeks to describe how the distribution and abundance of resources used for food, cover and security, and constraints on the use of these resources influence the distribution of animals. This course will cover aspects of animal behavior related to how animals select habitat, theoretical models of habitat selection, the influence of inter- and intra-specific interactions on habitat selection, habitat quality, study designs for wildlife-habitat studies, modeling habitat selection and data analyses. Taught with FWCE 440. Restricted to: WLSC majors.

FWCE 547. Wildlife Law and Policy
3 Credits
Introduction to state and federal laws and policies for wildlife and the historical context for their development. Taught with FWCE 447.

FWCE 548. Graduate Problems
1-3 Credits (1-3)
Individual studies in fishery and wildlife sciences. Maximum of 3 credits per semester. No more than 6 credits of this course and FWCE 598, combined, toward a degree. May be repeated up to 6 credits.

FWCE 558. Nonthesis Project
1-6 Credits (1-6)
Independent study to satisfy nonthesis project requirement. Maximum of 6 credits toward degree. Available only to nonthesis students.
FWCE 559. Aquatic Ecology
4 Credits
Ecological functions of plant and animal communities in aquatic ecosystems with emphasis on chemical and physical properties, productivity, species interactions, population dynamics, and concepts for diagnosing problems and restoring aquatic ecosystems. Taught with FWCE 459.
Prerequisite(s): FWCE 301 or BIOL 301, CHEM 112, MATH 142G.

FWCE 567. Herpetology
4 Credits
Systematics, taxonomy, ecology, behavior and conservation of amphibians and reptiles. Field trips required. Taught with FWCE 467.

FWCE 571. GIS for Natural Resource Scientists
4 Credits
Practical GIS class for students with little or no GIS experience. Class focuses on learning to use industry-standard software and applications in natural resource management. Taught with FWCE 471.

FWCE 582. Ichthyology
4 Credits
Classification, morphology, identification, life history, and ecology of fishes. Taught with FWCE 482.

FWCE 598. Special Research Programs
1-3 Credits (1-3)
Individual investigations, either analytical or experimental. Maximum of 3 credits per semester. No more than 6 credits of this course and FWCE 548, combined, toward a degree. Not available to students in the nonthesis program.

FWCE 599. Master's Thesis
1-9 Credits (1-9)

Name:
Office Location:
Phone: (575) 646-1544
Website: http://aces.nmsu.edu/academics/fws/

Conservation Ecology - Bachelor of Science in Conservation Ecology

Co-directors of the Program:
Regents Professor, Michelle K. Nishiguchi, Department Head, Biology
Professor, Kathryn E. Stoner, Department Head, Fish, Wildlife and Conservation Ecology

Professors Boecklen, Boeing, Caldwell, Cowley, Desmond, Hanley, Houde, Milligan, Nishiguchi, Roemer, G. Smith, Wright; Associate Professors Bailey, Cain, Mabry, Assistant Professor Ferrenberg.

New Mexico State University offers an interdisciplinary, undergraduate program in Conservation Ecology. The goal of this program is to train biologists for the current and future challenges that we face in the conservation and wise use of our Earth’s natural resources. An overriding principle of the program is to provide a solid foundation in basic science coupled with a practical approach towards sustainability and stewardship. The curriculum encompasses several disciplines and includes a wide variety of courses from Biology, Fish, Wildlife and Conservation Ecology, Geography and Range Science.

The educational experience will provide students with an overview of global biodiversity and an understanding of the ecological and evolutionary processes that have created and sustained it. Courses in population and community ecology coupled with population viability analysis and risk assessment will give students the necessary background to understand the theory and development of these fields as well as the tools to tackle real-world problems. Courses in basic genetics, evolution, and conservation genetics will expose students to the importance of conserving genetic variation in order to maintain adaptive potential within populations, thereby sustaining the evolutionary process. Students will also receive background on wildlife law and environmental policy, information vital for assisting governing bodies in making decisions regarding the protection and wise use of our natural resources. Skills obtained in the application of geographic information systems, molecular genetics, and professional communication can also be acquired through various electives. In sum, we seek to provide undergraduate students with an education that will allow them the opportunity to contribute to the conservation of all life on Earth.

The requirements are listed below. In addition each required course must be passed with a grade of C- or better.

New Mexico and University Requirements

Area I: Communications

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 218G</td>
<td>Technical and Scientific Communication</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
<td></td>
</tr>
</tbody>
</table>

Select one from the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXED 201G</td>
<td>Effective Leadership and Communication in Agricultural Organizations</td>
</tr>
<tr>
<td>COMM 253G</td>
<td>Public Speaking</td>
</tr>
<tr>
<td>COMM 265G</td>
<td>Principles of Human Communication</td>
</tr>
</tbody>
</table>

Area II: Mathematics

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
<td>3</td>
</tr>
</tbody>
</table>

Area III: Science, with Laboratory

Select one from the following groups: 8

Group 1:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
</tr>
<tr>
<td>&amp; 111GL</td>
<td>Natural History of Life Laboratory</td>
</tr>
</tbody>
</table>

Group 2:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
</tr>
<tr>
<td>&amp; 211GL</td>
<td>General Physics I Laboratory</td>
</tr>
<tr>
<td>PHYS 212G</td>
<td>General Physics II</td>
</tr>
<tr>
<td>&amp; 212GL</td>
<td>General Physics II Laboratory</td>
</tr>
</tbody>
</table>

Group 3:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 221G</td>
<td>General Physics for Life Sciences I</td>
</tr>
<tr>
<td>&amp; 221GL</td>
<td>Laboratory to General Physics for Life Science I</td>
</tr>
<tr>
<td>PHYS 222G</td>
<td>General Physics for Life Sciences II</td>
</tr>
<tr>
<td>&amp; 222GL</td>
<td>Laboratory to General Physics for Life Sciences II</td>
</tr>
</tbody>
</table>

Select a total of 15 combined credits from Areas IV and V, with at least 9 credits in one of the two areas.
Conservation Ecology - Undergraduate Minor

A minor in Conservation Ecology is available for students who choose to major in other areas, but wish to include Conservation Ecology in their academic training. The minor must include a minimum of 20 credits in the discipline with 9 of these coming from upper-division courses.

### Requirements

#### Core Curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I &amp; MATH 192G and Calculus and Analytic Geometry II</td>
<td>8</td>
</tr>
</tbody>
</table>

#### Requirements in Diversity of Life

Select 6-8 credits from BIOL or FWCE:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 408</td>
<td>Ecology of Plants</td>
</tr>
<tr>
<td>BIOL 465</td>
<td>Invertebrate Zoology</td>
</tr>
<tr>
<td>BIOL 480</td>
<td>Animal Behavior</td>
</tr>
<tr>
<td>BIOL 447</td>
<td>Ornithology or FWCE 430 Avian Field Ecology</td>
</tr>
<tr>
<td>FWCE 431</td>
<td>Mammalogy</td>
</tr>
<tr>
<td>FWCE 467</td>
<td>Herpetology</td>
</tr>
<tr>
<td>FWCE 482</td>
<td>Ichthyology</td>
</tr>
</tbody>
</table>

#### Other Related Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCHE 341</td>
<td>Survey of Biochemistry</td>
</tr>
<tr>
<td>BIOL 436</td>
<td>Disease Vector Biology</td>
</tr>
<tr>
<td>BIOL 442</td>
<td>Genomics Technology</td>
</tr>
<tr>
<td>BIOL 446</td>
<td>Bioinformatics and NCBI Database</td>
</tr>
<tr>
<td>BIOL 469</td>
<td>Biology of Emerging Infectious Diseases</td>
</tr>
<tr>
<td>BIOL 489</td>
<td>Genetic Aspects of Population Biology</td>
</tr>
<tr>
<td>FWCE 457</td>
<td>Ecological Biometry</td>
</tr>
<tr>
<td>FWCE 471</td>
<td>GIS for Natural Resource Scientists</td>
</tr>
<tr>
<td>GEOG 381</td>
<td>Cartography and Geographic Information Systems</td>
</tr>
<tr>
<td>GEOG 481</td>
<td>Fundamentals of Geographic Information Science and Technology (GIS &amp; T)</td>
</tr>
<tr>
<td>GEOL 111G</td>
<td>Introductory to Geology</td>
</tr>
<tr>
<td>GEOL 295</td>
<td>Environmental Geology</td>
</tr>
<tr>
<td>GEOL 424</td>
<td>Soil Chemistry</td>
</tr>
<tr>
<td>GOVT 378</td>
<td>U.S.-Mexico Border Politics</td>
</tr>
<tr>
<td>RGSC 318</td>
<td>Watershed Management</td>
</tr>
<tr>
<td>RGSC 325</td>
<td>Rangeland Restoration Ecology</td>
</tr>
<tr>
<td>RGSC 452</td>
<td>Vegetation Measurements for Rangeland Assessment</td>
</tr>
</tbody>
</table>

Total Credits: 134-138

---

1 Areas IV and V are linked. You have to take a total of 15 credits between these two areas, for example, either 9 credits in Area IV and 6 credits in Area V or vice versa. See Required Courses (p. 47) section.

2 3 credits can be taken inside the College of ACES, but 3 credits must also be taken outside the College of ACES or 9 credits can be taken within a single department (e.g. Biology) that is outside the College of ACES.
Fisheries and Wildlife Science - Bachelor of Science in Fish, Wildlife and Conservation Ecology

The Department of Fish, Wildlife and Conservation Ecology prepares you for careers in a variety of natural resource fields related to the management of wild animal populations and the natural systems they share. Within the major you are offered two options.

- The Wildlife Ecology and Management Option is for students who plan to focus on terrestrial organisms, and
- The Aquatic Ecology and Management Option is for students who want to focus on fish and aquatic organisms.

To graduate, an overall grade point average of 2.0 is required in courses taken in the major field and in all courses taken at NMSU. The department offers a minor in Wildlife Science for students majoring in other disciplines. The minor includes a minimum of 18 credit hours.

New Mexico and University Requirements

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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 142G</td>
<td>Calculus for the Biological and Management Sciences</td>
<td>3</td>
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</table>

or MATH 191G  | Calculus and Analytic Geometry I           |         |

Area III: Science, with Laboratory

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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 111GL</td>
<td>Natural History of Life Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 110G</td>
<td>The Great Ideas of Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211G &amp; 211GL</td>
<td>General Physics I &amp; General Physics I Laboratory</td>
<td>4</td>
</tr>
</tbody>
</table>

Area IV & V: Social/Behavioral Sciences and Humanities and Fine Arts

Select a total of 15 combined credits from Areas IV and V, with at least 9 credits in one of the two areas: 1

Area IV: Social/Behavioral Sciences: Select 6-9 credits including the following: 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 251G or ECON 252G</td>
<td>Principles of Macroeconomics or Principles of Microeconomics</td>
<td>6</td>
</tr>
</tbody>
</table>

Area V: Humanities and Fine Arts: Select 6-9 credits

Viewing a Wider World

Select 6-9 credits from Viewing a Wider World courses 2 6-9

Extra-Departmental Core Courses 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 305</td>
<td>Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 322</td>
<td>Zoology</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td>4</td>
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Select one from the following:

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<thead>
<tr>
<th>Course</th>
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</tr>
</thead>
<tbody>
<tr>
<td>GEOL 111G</td>
<td>Introductory to Geology</td>
<td>4</td>
</tr>
<tr>
<td>SOIL 252 &amp; 252 L</td>
<td>Soils and Soils Laboratory</td>
<td>6</td>
</tr>
</tbody>
</table>

Departmental Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FWCE 110</td>
<td>Introduction to Natural Resources Management</td>
<td>4</td>
</tr>
<tr>
<td>FWCE 255</td>
<td>Principles of Fish and Wildlife Management</td>
<td>3</td>
</tr>
<tr>
<td>FWCE 301</td>
<td>Wildlife Ecology</td>
<td>3</td>
</tr>
<tr>
<td>FWCE 330</td>
<td>Natural History of the Vertebrates</td>
<td>4</td>
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<tr>
<td>FWCE 391</td>
<td>Internship</td>
<td>3</td>
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<tr>
<td>FWCE 393</td>
<td>Professional Experience and Communication</td>
<td>3</td>
</tr>
<tr>
<td>FWCE 402</td>
<td>Seminar in Natural Resource Management</td>
<td>1</td>
</tr>
<tr>
<td>FWCE 409</td>
<td>Introduction to Population Ecology</td>
<td>3</td>
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<tr>
<td>FWCE 447</td>
<td>Wildlife Law and Policy</td>
<td>3</td>
</tr>
<tr>
<td>FWCE 457</td>
<td>Ecological Biometry</td>
<td>3</td>
</tr>
<tr>
<td>FWCE 488 or BIOL 488</td>
<td>Principles of Conservation Genetics or Principles of Microeconomics</td>
<td>4</td>
</tr>
<tr>
<td>FWCE 464</td>
<td>Management of Aquatic and Terrestrial Ecosystems</td>
<td>4</td>
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</tbody>
</table>

Departmental Botany Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL 312</td>
<td>Plant Taxonomy</td>
<td>3</td>
</tr>
<tr>
<td>or RGSC 316</td>
<td>Rangeland Plants</td>
<td></td>
</tr>
<tr>
<td>BIOL 313</td>
<td>Structure and Function of Plants</td>
<td>3</td>
</tr>
</tbody>
</table>
BIOL 314  Plant Physiology  3
Select one from the following:  3
RGSC 325  Rangeland Restoration Ecology
RGSC 357  Grass Taxonomy and Identification
RGSC 440  Rangeland Resource Ecology

**Departmental Physiology Requirements**
Select 3-4 credits from the following:  3-4
FWCE 432  Environmental Biology of Fishes
ANSC 370  Anatomy and Physiology of Farm Animals
BIOL 381  Animal Physiology

**Program Option**
Aquatic Ecology and Management or Wildlife Ecology and Management Option  17-20

**Additional Electives**
Select additional credits so the total adds up to at least 128 credits including 55 credits 300- and 400-level classes.

Total Credits  133-140

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1. Areas IV and V are linked. You have to take a total of 15 credits between these two areas, for example, either 9 credits in Area IV and 6 credits in Area V or vice versa. See Required Courses (p. 47) section.
2. 3 credits can be taken inside the College of ACES, but 3 credits must also be taken outside the College of ACES or 9 credits can be taken within a single department (e.g. Biology) that is outside the College of ACES. See Viewing a Wider World (p. 47) section.
3. Students intending to pursue graduate studies should also take CHEM 211 Organic Chemistry.
4. Off campus students can take FWCE 109 Contemporary Issues in Wildlife and Natural Resources Management Distance Education.
5. Students Must Declare One of the Two Options. A maximum of 3 credits of FWCE 448 Problems can count towards the Option. More credits can be taken towards the degree.

**Option: Aquatic Ecology and Management**

**Techniques**
FWCE 357  Fisheries Management and Analysis  4

**Management**
Select 3-4 credits from the following:  3-4
FWCE 434  Aquatic Contaminants and Toxicology
FWCE 459  Aquatic Ecology
RGSC 318  Watershed Management

**Organismal Biology**
Select 3-4 credits from the following:  3-4
BIOL 465  Invertebrate Zoology
EPWS 462  Parasitology
FWCE 467  Herpetology
FWCE 482  Ichthyology

**Wildlife Ecology and Management Electives**
Select 3-4 credits from the following:  3-4
ACES 111  Freshman Orientation
FWCE 448  Problems
FWCE 450  Special Topics

FWCE 471  GIS for Natural Resource Scientists
FWCE 472  Wildlife Museum Internship

**Total Credits**  17-20

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6. At least one course chosen must be a vertebrate taxonomy course with FWCE prefix, i.e., one of FWCE 467 Herpetology or FWCE 482 Ichthyology.

**Option: Wildlife Ecology and Management**

**Techniques**
FWCE 355  Wildlife Techniques and Analysis  4

**Management**
Select one from the following:  3
FWCE 436  Large Mammal Ecology, Conservation and Management
FWCE 437  Wildlife Damage Management
FWCE 440  Wildlife Habitat Relationships
RGSC 325  Rangeland Restoration Ecology

**Organismal Biology**
Select 3-4 credits from the following:  3-4
Biol 484  Animal Communication
EPWS 303  Economic Entomology
EPWS 462  Parasitology
FWCE 430  Avian Field Ecology or BIOL 447 Ornithology
FWCE 431  Mammalogy
FWCE 467  Herpetology

**Aquatic Ecology and Management Elective**
Select 3-4 credits of electives  3-4

**Total Credits**  16-18

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7. At least one course chosen must be a vertebrate taxonomy course with FWCE prefix, i.e., one of FWCE 467 Herpetology or FWCE 482 Ichthyology.

**Additional Electives**
Take additional credits so the total adds up to at least 128 credits including 55 credits 300- and 400-level classes.

Students are encouraged to pursue a minor course of study with a department of their choosing.

Compatible minors include, but are not limited to:

- animal science,
- biology,
- chemistry,
- environmental science,
- forensic sciences,
- geography,
- journalism,
- management,
- and range science.

**Notes:**
1. No more than 6 credits of Physical Education classes will count towards your degree.
2. Maximum of two grades of ‘D’ in FWCE classes will count towards a student’s degree.

Fish, Wildlife and Conservation Ecology - Master of Science in Fish, Wildlife and Conservation Ecology

The Department of Fish, Wildlife and Conservation Ecology (FWCE) offers graduate work leading to the Master of Science degree with a major in Fish, Wildlife and Conservation Ecology. Faculty members in the department also may advise Ph.D. candidates through the graduate program in the Department of Biology, Department of Animal and Range Sciences, Department of Plant and Environmental Sciences, as well as other Ph.D. granting departments. For additional information please see the graduate catalog entries for the respective departments.

Minimum qualifications for admission to the graduate program include:

- 3.0 grade-point average in the last two years of undergraduate work
- Students who are most competitive for admission are those with a combined average GRE score greater than 70th percentile on the verbal and quantitative parts of the GRE.
- Course work in zoology, botany and animal ecology and a basic appreciation of sustainable use of natural resources, with supporting courses in mathematics, chemistry, physics and written and oral communication.

Applicants should submit a written composition of approximately 350 words that indicates the applicant’s reasons for pursuing advanced study, explains personal and educational goals, and any additional experiences (e.g., military or career) or skills that might provide a foundation for graduate study. Applicants should submit three letters of recommendation (it is preferred that at least two letters come from university instructors) along with official GRE scores (the department code is 0115). Applicants should also contact a faculty member in the department that they would like to work with as an advisor, and that faculty member needs to agree to serve as the student’s advisor. Application forms, application fee and transcripts, GRE scores, letters of recommendation and letter of application should be submitted online to the Graduate School. Successful applicants will be selected from those who meet the criteria of grade-point average, GRE scores, and educational background described above and who appear to have professional promise as indicated by personal history and written references.

For the Master of Science degree, a minimum of 30 semester credits of graduate work in the major and related subjects is required, together with a thesis for most students. Of these credits, at least 15 must be in courses numbered 500 or above, and at least 15 must be for courses with the FWCE prefix. Those programs involving a thesis or research project include 4 to 6 credits of research (FWCE 598 Special Research Programs or FWCE 599 Master’s Thesis). Students electing a minor in FWCE are required to take at least 9 credits in the minor field. A nonthesis option is available to some students, depending on prior training and experience, and subject to approval by the advisor and department head.

All students in the program must complete the following requirements:

- A ST 505 Statistical Inference I or equivalent
- One semester of Graduate Seminar (FWCE 515 Graduate Seminar - may be repeated for credit)
- A minimum of 3 additional credits from the Quantitative Methods category in addition to A ST 505 Statistical Inference I (eligible courses listed below)
- One course each from the Ecological Concepts, Organismal Biology and Ecological Techniques categories (eligible courses listed below)
- 4 to 9 credits from the Independent Study category (eligible courses listed below)

In addition, a student may petition to have up to 3 credits of special topics courses (FWCE 548 Graduate Problems) to apply to one of the three areas. Courses other than those listed may be acceptable, given permission by the student’s supervisory committee.

Degree Requirements

A ST 505  Statistical Inference I (or equivalent)  4
FWCE 515  Graduate Seminar (may be repeated for credit)  1

Quantitative Methods: Eligible Courses

Select minimum of 3 credits from the following:  3

- A ST 503  SAS Basics
- A ST 506  Statistical Inference II
- A ST 507  Advanced Regression
- A ST 515  Statistical Analysis with R
- A ST 523  Biological Sampling (s)
- A ST 550  Special Topics
- FWCE 509  Population Ecology (s)
- FWCE 457  Ecological Biometry
- GEOG 585  Advanced Spatial Analysis

Ecological Concepts: Eligible Courses

Select one from the following:  3-4

- BIOL 467  Evolution
- BIOL 484  Animal Communication
- BIOL 489  Genetic Aspects of Population Biology
- BIOL 568  Communities and Ecosystems
- BIOL 570  Ecological Biogeography
- BIOL 587  Behavioral and Evolutionary Ecology
- FWCE 459  Aquatic Ecology
- FWCE 540  Wildlife Habitat Relationships
- GEOG 557  Fundamentals of Biogeography

Organismal Biology: Eligible courses

Select one from the following:  3-4

- FWCE 532  Environmental Biology of Fishes
- FWCE 536  Advanced Avian Ecology
- FWCE 557  Herpetology
- FWCE 582  Ichthyology

Ecological Techniques: Eligible courses

Select one from the following:  3-4

- FWCE 464  Management of Aquatic and Terrestrial Ecosystems
- FWCE 530  Large Mammal Ecology, Conservation and Management
- FWCE 534  Aquatic Contaminants and Toxicology
FWCE 537  Wildlife Damage Management
FWCE 571  GIS for Natural Resource Scientists
GEOG 521  GIS & T Applications and Modeling
RGSC 452  Vegetation Measurements for Rangeland Assessment
RGSC 518  Watershed Methods and Management

**Independent Study: Eligible courses**
Select one from the following:  4-9
FWCE 548  Graduate Problems
FWCE 598  Special Research Programs
FWCE 599  Master’s Thesis

Total Credits  21-29

1 Other courses, particularly in Applied Statistics, may be eligible with consent of the advisory committee.
2 Students may petition to have up to 3 credits of special topics courses (FWCE 548 Graduate Problems) to apply to one of the three areas.

Graduate work in the department is intended to prepare students for careers in research, teaching, extension and management. Facilities available to graduate students include two ranches of approximately 90,000 acres, a large suite of shared laboratories, and a large fish-culture facility. We actively cooperate with state and federal natural resource management agencies, and graduate students have access to national forests and extensive public lands, as well as the Jornada Basin Long-Term Ecological Research site and associated databases (see http://jornada-www.nmsu.edu for details). Additional research opportunities for graduate students are available in the New Mexico Cooperative Fish and Wildlife Research Unit, located in the department since 1988.

Additional information on the graduate program and faculty is available at http://aces.nmsu.edu/academics/fws.

**Wildlife Science - Undergraduate Minor**

The Department offers a minor in Wildlife Science for students majoring in other disciplines. The minor includes a minimum of 20 credits, with 17 credits required courses and 3 in wildlife electives.

**Required Courses**

FWCE 109 & FWCE 402  Contemporary Issues in Wildlife and Natural Resources Management and Seminar in Natural Resource Management (Seminar in Natural Resources Management)  4

or

FWCE 110  Introduction to Natural Resources Management  3
FWCE 255  Principles of Fish and Wildlife Management  3
FWCE 301  Wildlife Ecology  3
FWCE 330  Natural History of the Vertebrates  4
FWCE 464  Management of Aquatic and Terrestrial Ecosystems  4

Total Credits  18

**General Agriculture**

**General Agriculture - Bachelor of Science in Agriculture**

The general agriculture major is designed for students searching for a well-rounded education that builds on the diversity of the other degree programs in the College of Agricultural, Consumer and Environmental Sciences (ACES). The flexibility of the general agriculture degree allows students to tailor a program to fit their individual interests and career goals. Students completing the program earn a Bachelor of Science in General Agriculture. Students choose general agriculture for a variety of reasons. Some may enter the program with a specific career goal in mind. Others may choose general agriculture to obtain a broader education that will give them more flexibility. The curriculum in General Agriculture is administered by the Department of Entomology, Plant Pathology and Weed Science.

**New Mexico and University Requirements**

**Area I. Communications**

ENGL 111G  Rhetoric and Composition  4
Select one from the following:  3
AXED 201G  Effective Leadership and Communication in Agricultural Organizations
COMM 253G  Public Speaking
COMM 265G  Principles of Human Communication
Select one from the following:  3
ENGL 203G  Business and Professional Communication
ENGL 211G  Writing in the Humanities and Social Sciences
ENGL 218G  Technical and Scientific Communication
ENGL 311G  Advanced Composition
ENGL 318G  Advanced Technical and Professional Communication

**Area II. Mathematics**

Select 3 credits from the following:  3
MATH 121G  College Algebra
MATH 142G  Calculus for the Biological and Management Sciences
MATH 190G  Trigonometry and Precalculus
MATH 191G  Calculus and Analytic Geometry I
MATH 210G  Mathematics Appreciation

**Area III. Science, with Laboratory**

Select 8 credits from the “General Education Courses” section of this catalog.  8

**Area IV. Social/Behavioral Sciences**

Select 6-9 credits from the “General Education Courses” section of this catalog.  6-9

**Area V. Humanities and Fine Arts**

Select 6-9 credits from the “General Education Courses” section of this catalog.  6-9

**Viewing a Wider World**

Select six 300 or 400 level credits from Viewing a Wider World courses  6

**Additional College Requirements**

[1] Other courses, particularly in Applied Statistics, may be eligible with consent of the advisory committee.
[2] Students may petition to have up to 3 credits of special topics courses (FWCE 548 Graduate Problems) to apply to one of the three areas.
Select three areas of concentration from the following ACES departments: ³

| Agricultural Economics and Agricultural Business |
| Agricultural and Extension Education |
| Animal and Range Science |
| Entomology, Plant Pathology and Weed Science |
| Family and Consumer Sciences |
| Fish, Wildlife and Conservation Ecology |
| Plant and Environmental Sciences |
| Hotel, Restaurant and Tourism Management |

Electives: to bring total to 120 credits

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<tr>
<th>Total Credits</th>
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<td>120-126</td>
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</table>

¹ One course must be from a college outside of the College of Agricultural, Consumer and Environmental Sciences.
² Some ACES classes will meet general education requirements.
³ At least 18 credits must be taken from the primary department and at least 12 credits must be taken from two secondary departments. A minimum of 52 credits (20 of which need to be 300+) of the 120 required for the degree, must be completed in courses offered by the College of Agricultural, Consumer, and Environmental Sciences.

### Veterinary Medicine (Preprofessional Training Only, Non-Degree)

The Doctor of Veterinary Medicine (D.V.M.) degree is a professional degree that is not offered by any college or university in New Mexico; however, you may complete the preparatory program required for admittance to the professional colleges of veterinary medicine at New Mexico State University.

The D.V.M. degree normally requires four years of training in a professional college subsequent to completion of a preveterinary program that requires at least three years of college-level instruction. In most instances a baccalaureate degree is a distinct advantage to the applicant.

Curriculum requirements are determined by the particular school or college of veterinary medicine. The Department of Animal and Range Sciences maintains current requirements for Colorado State University, Washington State, Oregon State and Texas A&M. You should check with an advisor for specific course requirements. As a student from New Mexico, you may be eligible for financial assistance under the program of the Western Interstate Commission for Higher Education (WICHE). See the section on WICHE in the General Information chapter under Resources for Students for more information.

### Plant and Environmental Sciences

#### Undergraduate Program Information

The undergraduate program in Plant and Environmental Science prepares you for a variety of careers in agriculture and related fields. Accordingly, a flexible curriculum has been designed that will allow specific programs to be developed in consultation with your academic advisor. Programs may also be developed if you wish to prepare for advanced studies in graduate school. In addition to the courses listed for each major, 35 credits must be taken in the College of Agricultural, Consumer and Environmental Sciences, and the university general education requirements must be met.

The minors require a minimum of 18 credits of which at least 9 hours must be at the 300 or higher level. Specific coursework requirements apply. See advisor for course requirements and scheduling.

#### Graduate Program Information

More than ever, we are linked in an interconnected world: both in agriculture and sustainability of environmental systems. The department has programs in:

- plant sciences,
- environmental science,
- soil science,
- water management,
- natural resources management and
- turf management.

Students trained in these areas are in demand for U.S. and international positions. This demand is at all levels of training—BS, MS, and Ph.D. Therefore, the course work and original research in Plant and Environmental Sciences leading to the Master of Science and Doctor of Philosophy are designed for and have proven to be successful in preparing students for commercial companies, educational institutions, governmental agencies and private production enterprises.

The student may emphasize study in several discipline areas described in the following pages:

- The agronomy section emphasizes sustainable crop production, plant-pest/disease/weed interactions, soil-water-plant relations, crop physiology, and breeding and genetics of cotton, alfalfa, maize and peanuts.
- The genetics section places special emphasis on genetic basis of agronomic or horticultural traits, applied bioinformatics, gene regulation and genomics.
- The environmental and soil science sections emphasize environmental quality and ecosystem services, bioremediation, recycling of organic wastes and wastewater, water use efficiency, soil-plant relations, soil-geomorphology and desert ecology, and the fertility, chemistry, physics, and microbiology of soils, including forest soils.
- The horticulture section emphasizes the creative use of plants by humans, and studies on the technical advancements in the husbandry of most economic commodity groups of fruits, vegetables, or ornamentals as well as managed turf. Emphasis may be in breeding and genetics of chile or onions, plant growth and development, nutrition, dormancy and cold hardiness, plant stress (water and/or salinity) response, fruit and vegetable physiology, forestry, and turfgrass.

Most students will be expected to complete a thesis. The research detailed in a thesis should be of a scope and quality to merit publication in a refereed journal. Depending on prior training and experience, a non-thesis option is available subject to approval by a departmental committee. The non-thesis option requires completion of a research project and paper of limited scope. In both the thesis and non-thesis options, suitability of the research project and resulting thesis or paper will be judged by the student's graduate committee. A minor is
recommended and may be taken in chemistry, biology, molecular biology, environmental management, applied statistics, toxicology or other areas.

Prerequisite to major graduate work is completion of a curriculum essentially equivalent to that required by the department for the BS degree at New Mexico State University.

**Degrees for the Department**

Agronomy - Bachelor of Science in Agriculture (p. 156)

Horticulture - Bachelor of Science in Agriculture (p. 159)

Soil Science - Bachelor of Science in Agriculture (p. 163)

Turfgrass Science and Management - Bachelor of Science in Agriculture (p. 165)

Environmental Science - Bachelor of Science in Environmental Science (p. 157)

Genetics and Biotechnology - Bachelor of Science in Genetics (p. 158)

Horticulture - Master of Science (p. 162)

Plant and Environmental Science - Master of Science (p. 163)

Plant and Environmental Science - Doctor of Philosophy (p. 163)

**Minors for the Department**

Agronomy - Undergraduate Minor (p. 157)

Horticulture - Undergraduate Minor (p. 162)

Soil Science - Undergraduate Minor (p. 165)

Turfgrass Science and Management - Undergraduate Minor (p. 167)

**Professor, Rolston St. Hilaire, Department Head**

**Professors** Bosland, Cramer, Guldan, Hanan, Leinauer, O'Connell, O'Neill, Piccioni, Pratt, Puppala, Ray, Sengupta-Gopal, Shukla, Uley, Zhang; **Associate Professors** Angadi, Flynn, Goss, Heerema, Marsalis, Yao; **Assistant Professors** Brungard, Burney, Ghimire, Grover, Guzman, Holguin, Lombard, Pietrasiak Webb; **College Professors** Lauriault; **College Associate Professor** Stringam, Dubois; **College Assistant Professors**

R. St. Hilaire, Department Head, Ph.D. (Iowa State University)—plant stress physiology and landscape horticulture; S. Angadi, Ph.D. (University of Manitoba, Canada)—crop physiology; D.L. Auld, Ph.D. (Montana State University)—plant genetics; W. Boeing, Ph.D. (Louisiana State University)—aquatic ecology; P.W. Bosland, Assistant Department Head, Ph.D. (University of Wisconsin, Madison)—chile breeding and genetics; C. Brungard, Ph.D. (Utah State University, Logan)—pedology; O. Burney, Ph.D. (Purdue University, West Lafayette)—silviculture and forest biology; K.C. Carroll, Ph.D. (University of Arizona)—hydrology and water resources; J. Cramer, Ph.D. (North Carolina State University)—onion breeding and horticulture; L. Darapuneni, Ph.D. (Texas A&M, College Station)—Agronomy and semi-arid crop rotations; D. Dubois, Ph.D. (University of Nevada)—atmospheric science; M.C. Dunway, Ph.D. (New Mexico State University)—agronomy; R. Flynn, Ph.D. (Auburn University)—soil and water quality; R. Ghimire, Ph.D. (University of Wyoming, Laramie)—soil & crop management; R.M. Goss, Ph.D. (University of Nebraska, Lincoln)—turf science; K. Grover, Ph.D. (Pennsylvania State University)—agronomy; S.J. Guldan, Ph.D. (University of Minnesota)—sustainable agriculture; I. Guzman, Ph.D. (New Mexico State University)—horticulture; N. Hanan, Ph.D. (Queen Mary College, UK)—dryland ecology; S.F. Hanson, Ph.D. (University of Wisconsin-Madison)—genetics and microbiology; R.J. Heerema, Ph.D. (University of California, Davis)—pecans; F.O. Holguin, Ph.D. (New Mexico State University)—biochemical analysis; J. Idowu, Ph.D. (Cranfield University, United Kingdom)—agronomy and land management; B. Leinauer, Ph.D. (Hohenheim University, Germany)—turfgrass; K. Lombard, Ph.D. (New Mexico State University)—horticulture; M. Marsalis, Ph.D. (Texas Tech University)—forages; G. Niu, Ph.D. (Chiba University, Japan)—horticulture; M.A. O'Connell, Ph.D. (Cornell University)—plant biochemical analysis and molecular genetics; M. O'Neill, Ph.D. (University of Arizona)—agronomy; G.A. Picchioni, Ph.D. (Texas A&M University)—plant-mineral relations; N. Pietrasiak, Ph.D. (University of California, Riverside)—soil and water sciences; R. Pratt, Ph.D. (Purdue University)—plant breeding and genetics; N. Puppala, Ph.D. (New Mexico State University)—plant-breeding and genetics; I.M. Ray, Ph.D. (University of Wisconsin-Madison)—alfalfa breeding and genetics; D. Rucker, Ph.D. (University of Arizona)—hydrogeophysics; C. Sengupta-Gopal, Ph.D. (Ohio State University)—biochemical genetics; M.K. Shukla, Ph.D. (University of Agricultural Sciences Vienna, Austria)—environmental soil physics; B. Stringam, Ph.D. (Utah State University)—biological and agricultural engineering; C. Steele, Ph.D. (King's College, University of London, United Kingdom)—range soils; A.L. Uley, Ph.D. (University of California, Riverside)—environmental soil chemistry; S. J. Walker, Ph.D. (New Mexico State University)—horticulture; N. Webb, Ph.D. (University of Queensland, Australia); S. Yao, Ph.D. (Cornell University)—pomology/horticulture; J. Zhang, Ph.D. (University of Arkansas, Fayetteville)—cotton breeding, genetics, and genomics

**AGO 100G. Introductory Plant Science**

4 Credits (3+2P)

Introduction to the physical, biological, and chemical principles underlying plant growth and development in managed ecosystems. In the laboratory portion of the class, students perform experiments demonstrating the principles covered in lecture. The course uses economic plants and agriculturally relevant ecosystems to demonstrate basic principles. Appropriate for nonscience majors. Same as HORT 100G.

**AGO 200. Special Topics**

1-4 Credits (1-4)

Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of instructor required.

**AGO 250. Plant Propagation**

3 Credits (2+2P)

Practical methods of propagating horticultural plants by seed, cuttings, layering, grafting, division and tissue culture. Examination of relevant physiological processes involved with successful plant propagation techniques. Crosslisted with HORT 250.

**AGO 257. Introduction to Meteorology**

4 Credits (3+3P)

Introduction to Earth's atmosphere and the dynamic world of weather as it happens. Working with current meteorological data delivered via the Internet and coordinated with learning investigations keyed to the current weather; and via study of select archives. Consent of instructor required. Crosslisted with: GEOG 257 and SOIL 257.

**AGO 300. Special Topics**

1-4 Credits (1-4)

Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of instructor required. Restricted to Las Cruces campus only.
AGRO 303V. Genetics and Society
3 Credits
Relates the science of genetics with social ramifications. Ways in which genetics and evolution interact with social, political, and economic issues. Includes genetic engineering, gene therapy, DNA finger-printing, ancient DNA, plant and animal improvement, and future prospects. Students required to formulate value judgments on contemporary biological issues that will impact society. Crosslisted with: GENE 303V.

AGRO 305. Principles of Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals. Crosslisted with: ANSC 305, BIOL 305, HORT 305 and GENE 305.

AGRO 311. Introduction to Weed Science
4 Credits
Principles of weed science with emphasis on characteristics of invasive plants, methods of integrated weed management, and current issues impacting weed management. Identification of local weeds. Same EPWS 311.

AGRO 315. Crop Physiology
3 Credits
Whole plant physiological processes as related to growth, development, yield, quality and post harvest physiology of crop plants within the environment of the crop community. Crosslisted with: HORT 315

AGRO 365. Principles of Crop Production
4 Credits (3+3P)
Basic principles of crop production including environmental and physiological factors limiting production, plant nutrition and soil science, soil-water management, cropping systems and management, pest management, and economic factors influencing crop production. Crosslisted with: HORT 365

AGRO 377. Introduction to Turfgrass Management
4 Credits (3+3P)
Establishment and maintenance of turfgrass with emphasis on seeding methods, soil and water management, mowing, disease, insects and turfgrass varieties. Consent of instructor required. Crosslisted with: HORT 377

AGRO 391. Internship
1-6 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 6 credits toward a degree. Consent of Instructor required. S/U Grading (S/U, Audit).

AGRO 447. Seminar
1 Credit
Organization, preparation, and presentation of current topics in agronomy, horticulture, and soil science. Same as HORT 447 and SOIL 447.

AGRO 449. Special Problems
1-3 Credits (1-3)
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and a grand total of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

AGRO 450. Special Topics
1-4 Credits (1-4)
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

AGRO 462. Plant Breeding
3 Credits
Principles and practices involved with the genetic improvement of plants. Same as HORT 462.

AGRO 471. Plant Mineral Nutrition
3 Credits
Basic and applied aspects of plant requirements for soil-derived minerals and the processes whereby minerals are acquired, absorbed, translocated, and utilized throughout the plant. Same as HORT 471 and EPWS 471.

AGRO 483. Sustainable Production of Agronomic Crops
4 Credits (3+2P)
Characteristics and objectives of sustainable agricultural systems with application to the production, utilization, and improvement of cereal grain, fiber, forage and oilseed crops.

AGRO 485. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: HORT 486, E S 485, SOIL 485 and CHME 485.

AGRO 492. Diagnosing Plant Disorders
3 Credits (2+3P)
Systematic diagnosis of the physiological, pathological, and entomological causes of plant disorders. Same as EPWS 492 and HORT 492.

AGRO 500. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

AGRO 505. Research Orientation
4 Credits (3+2P)
Training in writing research proposals, presentation of research results, and interpretation of research results. Crosslisted with: HORT 505 and SOIL 505
AGRO 506. Plant Genetics
3 Credits
Advanced treatment of the principles of classical genetics and heredity with emphasis on the nature and action of the gene including molecular analysis. CHEM 345 recommended. Same as HORT 506.
Prerequisite: AGRO 305 or consent of instructor.

AGRO 511. Introduction to Weed Science (f)
4 Credits
Covers the principles of weed science with emphasis on characteristics of invasive plants, methods of integrated weed management, and current issues impacting weed management. Includes identification of local weeds. Research paper required for graduate credit. Same as EPWS 511.
Prerequisites: CHEM 111G and BIOL 190 or BIOL 211G, or consent of instructor.

AGRO 514. Soil-Plant Relationships
3 Credits
Physical, chemical, and biological soil environment as it affects plant and crop growth. Same as HORT 514 and SOIL 514.
Prerequisites: BIOL 314, SOIL 252.

AGRO 515. Crop Physiology
3 Credits
Whole plant physiological processes as related to growth, development, yield, quality and post harvest physiology of crop plants within the environment of the crop community. Crosslisted with: HORT 515
Prerequisite(s): EPWS/BIOL 314 or consent of instructor.

AGRO 516. Molecular Analysis of Complex Traits
3 Credits
Provide a comprehensive overview of molecular genetic analysis of complex phenotypes, including case histories/experiments in plants, animals and humans. Emphasize technological developments in DNA marker technologies and their application to molecular quantitative genetics. Explore the efficient application of these technologies in the future to complex genetic systems, breeding, and other areas of life sciences. Same as HORT 516.
Prerequisite: AGRO 305 or consent of instructor.

AGRO 525. Scientific Writing- How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Crosslisted with: HORT 525, EPWS 525, SOIL 525, AGRO 625, HORT 625 and SOIL 625.

AGRO 533. Environmental Physiology of Plants
3 Credits
Integral responses of plants and crop productivity to naturally occurring and modified environmental factors such as radiation, temperatures, water vapor, carbon dioxide, and air flow. Same as BIOL/HORT 533.
Prerequisite: BIOL 314 or consent of instructor.

AGRO 590. Graduate Seminar
1 Credit
Current research discussions presented by masters level graduate students. Not more than one credit toward the degree. Same as HORT/ SOIL 590. Crosslisted with: HORT 590 and SOIL 590.

AGRO 595. Internship
1-6 Credits
Supervised professional on-the-job learning experience. Limited to Master of Agriculture candidates. Not more than 6 credits toward the degree.

AGRO 596. Masters Proposal
1 Credit
Current research proposal written by masters level graduate students. Consent of Instructor required. Crosslisted with: E S 596, GENE 596, HORT 596 and SOIL 596. Restricted to: Masters HORT; Masters PLEN majors.
Prerequisite(s): Master level graduate students.

AGRO 597. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student's lectures. Consent of instructor required. Restricted to: Main campus only. Restricted to Agronomy and Horticulture Graduate Students. Crosslisted with: HORT 597 and SOIL 597

AGRO 598. Special Research Programs
1-6 Credits
Individual investigations, either analytical or experimental. Maximum of 6 credits per semester. No more than 9 credits towards degree. Same as SOIL 598.

AGRO 599. Master's Thesis
15 Credits
Thesis.

AGRO 600. Doctoral Research
1-15 Credits
Research.

AGRO 609. Breeding for Plant Disease Resistance
3 Credits
A practically-oriented course of lectures and discussion on concepts and principles of breeding for disease and pest resistance. Labs familiarize students with preparation, quantification, and application of inoculum to hosts. Same as HORT 609.

AGRO 610. Advanced Crop Breeding
4 Credits (3+3P)
Applications of breeding principles to crop improvement. Emphasis on breeding methodologies using modern techniques, including biotechnology. Same as HORT 610.
Prerequisite: AGRO 462 or consent of instructor.

AGRO 620. Instrumentation in Agronomy
3 Credits
Use of instruments used in research in all areas of agronomy including gas chromatography, high performance liquid chromatography, neutron soil moisture probe, and other instruments. Same as HORT/SOIL 620.

AGRO 625. Scientific Writing- How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Students in the 600-level course will be required to perform additional research than those students in the 500-level cross-listing Crosslisted with: AGRO 525, HORT 525, EPWS 525 and SOIL 525.

AGRO 670. Biometrical Genetics and Plant Breeding
3 Credits
A statistical approach to gene action and population parameters as applied to plant improvement. Same as HORT 670.
Prerequisite: AGRO 462 or consent of instructor.
AGRO 694. Doctoral Seminar
1 Credit
Current research discussions presented by doctoral level graduate students. Not more than 2 credits toward the degree. Same as SOIL 694.
Prerequisite: doctoral level graduate students.

AGRO 696. Doctoral Proposal
1 Credit
Current research proposal written by doctoral level graduate students. Not more than 1 credits toward the degree. May be repeated up to 1 credits.
Prerequisite(s): Doctoral level graduate students.

AGRO 697. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: HORT 697 and SOIL 697

AGRO 698. Topics in Agronomy
1-6 Credits
Topics of current interest, designated by title and credit. Maximum of 6 credits per semester. No more than 9 credits toward a degree.

AGRO 700. Doctoral Dissertation
15 Credits
Dissertation.

E S 110G. Introductory Environmental Science
4 Credits (3+2P)
Introduction to environmental science as related to the protection, remediation, and sustainability of land, air, water, and food resources. Emphasis on the use of the scientific method and critical thinking skills in understanding environmental issues.

E S 256. Environmental Engineering and Science
3 Credits
Principles in environmental engineering and science: physical chemical systems and biological processes as applied to pollution control. Restricted to: Main campus, Alamogordo campus, Grants campus, Carlsbad campus. Crosslisted with: C E 256
Prerequisite(s): CHEM 111G and MATH 191G.

E S 256 L. Environmental Science Laboratory
1 Credit
Laboratory experiments associated with the material presented in E S 256. Same as C E 256L.
Corequisite: E S 256.

E S 300. Special Topics
1-4 Credits
Special subjects and credits to be announced in the Schedule of Classes. Consent of instructor required. Maximum of 4 credits per semester. Restricted to majors.

E S 301. Principles of Ecology
3 Credits
A survey of ecology including general theory, the adaptations of organisms, population dynamics, species interactions, and the structure and function of natural communities and ecosystems. Crosslisted with: BIOL 301
Prerequisite(s): BIOL 111G, A ST 311, and grade of C or better in MATH 191G or Math Placement Exam score adequate to enroll in mathematics courses beyond MATH 191G.

E S 312. Emergency Response to Hazardous Material Incidents
2 Credits
EPA approved Environmental Response Training Program Course 165.15. In compliance with OSHA 29 CFR 1910.120. Normally taken during last year of study. Same as E T 312 and WERC 312.
Prerequisite: consent of instructor.

E S 330. Environmental Management Seminar I
1 Credit

E S 361. Basic Toxicology
3 Credits
Biol 110G or BIOL 190 recommended. Same as TOX 361.
Prerequisite: CHEM 110G, CHEM 112G, or CHEM 114.

E S 370. Environmental Soil Science
3 Credits
Continuation of SOIL 252 that emphasizes soil properties and processes that directly relate to environmental pollution problems. Same as SOIL 370.
Prerequisite: SOIL 252.

E S 391. Internship
3 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. Maximum of 3 credits toward a degree. Consent of Instructor required. S/U Grading (S/U, Audit).

E S 422. Environmental Chemistry
3 Credits
Chemistry of organic and metal ion pollutants in the environment and principles important to their remediation including bioremediation. Restricted to: Main campus only. Crosslisted with: CHEM 422
Prerequisite(s): CHEM 111G and either CHEM 211 or CHEM 313.

E S 423. Environmental Toxicology
3 Credits
Toxicological tests required by the EPA to determine human and environmental safety of pesticides and industrial pollutants; discussion of environmental fate of major pesticide classes and industrial pollutants. Crosslisted with: TOX 423
Prerequisite(s): TOX 361 or TOX 461.

E S 430. Environmental Management Seminar II
1 Credit
Survey of practical and new developments in environmental management field, hazardous and radioactive, waste management, and related health issues, provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: C E 430, CH E 430, E E 430, E T 430, I E 430 and WERC 430

E S 434. Aquatic Contaminants and Toxicology
4 Credits
Basic principles and methodologies of aquatic toxicity testing. Routes of exposure and modes of action. Environmental legislation and ecological risk assessment. Crosslisted with: WLSC 434
Prerequisite(s): Senior standing or consent of instructor.

E S 449. Special Problems
1-3 Credits
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and 6 credits toward a degree. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: E S majors.
E S 451. Special Topics
1-4 Credits (1-4)
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

E S 452. Geohydrology
4 Credits (3+2P)
Origin, occurrence, and movement of fluids in porous media and assessment of aquifer characteristics. Development and conservation of groundwater resources, design of well fields. Crosslisted with: C E 452 and GEOL 452.
Prerequisite(s): Junior or Senior.

E S 459. Aquatic Ecology
4 Credits
Ecological functions of plant and animal communities in aquatic ecosystems with emphasis on chemical and physical properties, productivity, species interactions, population dynamics, and concepts for diagnosing problems and restoring aquatic ecosystems. Crosslisted with: WLSC 459
Prerequisite(s): (E S, WLSC or BIOL 301), CHEM 112G, (MATH 142G or MATH 191G).

E S 460. Introduction to Air Pollution
3 Credits
An introduction to the physics and chemistry of tropospheric air pollution including sources of air pollution, local and long-range transport, instrumentation, regulatory requirements, control technology.
Prerequisite(s): PHYS 215G, CHEM 112G, MATH 191G.

E S 462. Sampling and Analysis of Environmental Contaminants
3 Credits (1+6P)
Theory, application, methodology, and instrumentation used in the sampling and analysis of environmental contaminants. Same as ENVE 462.
Prerequisite(s): E S 256.

E S 470. Environmental Impacts of Land Use and Contaminant Remediation
3 Credits
The course will cover the integrated assessment of soil erosion, contaminant transport in soil and water, and contaminant remediation from site scale to watershed scales. Understanding of the controlling factors for each type land use impact will be gained through the use of risk assessment, case studies, and computer modeling. Case studies will illustrate the processes under various environmental applications. This course will also cover the application of solute transport principles and methods for the remediation of contaminated soil and groundwater. It will also discuss the contaminated site characterization, monitoring, and remediation design. Discussions of innovative methodologies will be supported with case studies. Crosslisted with: WSAM 470.
Prerequisite(s): E S 256, E S 462, E S 370.

E S 485. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: AGRO 485, HORT 486, SOIL 485 and CHME 485.
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

E S 596. Masters Proposal
1 Credit
Current research proposal written by masters level graduate students. Consent of Instructor required. Crosslisted with: AGRO 596, GENE 596, HORT 596 and SOIL 596. Restricted to: Masters HORT; Masters PLEN majors.
Prerequisite(s): Master level graduate students.

E S 599. Master's Thesis
1-15 Credits

E S 605. Arid Land Water Resources
3 Credits (2+2P)
The course will cover various issues of relevance to water resources and water supply management within the Southwest US and other semiarid and arid regions. Discussions may include development and sustainability, climate change and drought, socioeconomic and cultural, and transboundary issues. Crosslisted with: WSAM 605.

E S 696. Doctors Proposal
1 Credit
Current research proposal written by PhD level graduate students. Consent of Instructor required. Crosslisted with: AGRO 696, HORT 696 and SOIL 696. Restricted to: Doctors PLEN majors.
Prerequisite(s): PhD level graduate students.

E S 700. Doctoral Dissertation
1-15 Credits

GENE 110. Experimental Systems in Genetics
3 Credits
Survey of molecular, biochemical, organismal, and computer science based approaches to investigate how genes determine important traits. Historical development and topics of current interest will be discussed.

GENE 303V. Genetics and Society
3 Credits
Relates the science of genetics with social ramifications. Ways in which genetics and evolution interact with social, political, and economic issues. Includes genetic engineering, gene therapy, DNA finger-printing, ancient DNA, plant and animal improvement, and future prospects. Students required to formulate value judgments on contemporary biological issues that will impact society. Crosslisted with: AGRO 303V.

GENE 305. Principles of Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals. Crosslisted with: AGRO 305, ANSC 305, BIOL 305 and HORT 305
Prerequisite(s): BIOL 111G, CHEM 115.

GENE 305 L. Genetic Techniques
1 Credit
Experimental procedures used in genetic research including: sexual transmission genetics, eukaryotic DNA isolation, DNA marker development and genotyping, polymerase chain reaction, and cytogenetics. Pre/
Corequisite(s): GENE 315, or AGRO/ANSC/BIOL/HORT 305.
GENE 315. Molecular Genetics
3 Credits
Covers fundamental principles of DNA structure and replication, transcription, translation, gene regulation, recombinant DNA technology, and a survey of genomics and bioinformatics.
Prerequisite(s)/Corequisite(s): CHEM 112 and BIOL 211. Recommend CHEM 313.

GENE 320. Hereditary and Population Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals including: Mendelian inheritance, mitosis, meiosis, genetic linkage, random mating, genetic drift, natural selection, inbreeding, migration, mutation, interrelationships between individuals, populations and communities and the environment.
Prerequisite(s): CHEM 111G & BIOL 211G.

GENE 440. Genetics Seminar
1 Credit
Organization, preparation, and presentation of genetic studies in model microorganism, plant, or animal systems that have been used to solve problems in molecular, cellular, and developmental biology. Consent of instructor required.
Prerequisite(s): Seniors only; GENE 315 & GENE 320.

GENE 449. Special Problems
1-3 Credits (1-3)
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and a grand total of 3 credits toward a degree. Consent of instructor required.

GENE 450. Special Topics
1-3 Credits (1-3)
Specific subjects to be announced in the schedule of classes. Maximum of 3 credits per semester and a total of 3 credits toward a degree. Consent of instructor required.

GENE 452. Applied Bioinformatics
3 Credits
Survey and application of publicly available bioinformatic tools that treat genomic DNA, cDNA, and protein sequences, RNA abundance, as well as tools that allow inference based on phylogenetic relationships.
Prerequisite(s): AGRO/ANSC/BIOL/HORT 305 or GENE 315 and GENE 320, and BCHE 341, or BCHE 395.

GENE 486. Genes and Genomes
3 Credits
Extensive coverage of nuclear and organelle genome structure in plants and animals, genome restructuring including duplication, aneuploidy, chromosome translocations and inversions, comparative genomics, and molecular systematics.
Prerequisite(s): AGRO/ANSC/BIOL/HORT 305 or GENE 315, and GENE 320.

GENE 488. Gene Regulation
3 Credits
Extensive coverage of signal transduction processes and approaches used to monitor large scale changes in gene regulation and protein synthesis that occur during development and in response to environmental changes.
Prerequisite(s): AGRO/ANSC/BIOL/HORT 305 or GENE 315.

HORT 100G. Introductory Plant Science
4 Credits (3+2P)
Introduction to the physical, biological, and chemical principles underlying plant growth and development in managed ecosystems. In the laboratory portion of the class, students perform experiments demonstrating the principles covered in lecture. The course uses economic plants and agriculturally relevant ecosystems to demonstrate basic principles. Appropriate for nonscience majors. Same as AGRO 100G.

HORT 110. Athletic Field and Golf Course Management
1 Credit
Survey of proper management of athletic fields, golf courses and other turfgrass stands. Career opportunities in athletic field and golf course management will be discussed. Course includes field trips to local and regional sports turf facilities.

HORT 200. Special Topics
1-4 Credits
Specific subjects and credits as announced. Maximum of 4 credits per semester and a grand total of 9 credits. May be repeated up to 9 credits. Consent of Instructor required.

HORT 205. Introduction to Horticulture
3 Credits
Principles and practices of horticulture. Basic chemical, physical, and biological principles that govern plant growth in different environments. Economics of plant science as related to the field of horticulture. Online course entirely. Intended for non-majors.

HORT 210. Ornamental Plants I
4 Credits (3+2P)
Covers identification, botanical characteristics, culture, and landscape uses of woody plants. Emphasis on deciduous trees, native shrubs, and evergreens.

HORT 211. Ornamental Plants II
4 Credits (3+2P)
Identification, botanical characteristics, culture, and landscape uses of woody plants. Emphasis on flowering trees, cacti, and members of the pea and rose families.

HORT 240. Floral Quality Evaluation and Design
2 Credits (1+2P)
Critical hands-on evaluation of the quality of cut and potted floral and tropical foliage crops, their specific merits and faults, and fundamentals of floral design.

HORT 241. Floriculture Field Practicum
1 Credit
Participation as team member in the National Intercollegiate Floral Quality Evaluation and Design Competition. Intensive week-long travel for competition, networking with industry, academia, and floriculture tours. May be repeated for a maximum of 3 credits.
Prerequisite(s): HORT 240 or consent of instructor.

HORT 250. Plant Propagation
3 Credits (2+2P)
Practical methods of propagating horticultural plants by seed, cuttings, layering, grafting, division and tissue culture. Examination of relevant physiological processes involved with successful plant propagation techniques. Same as AGRO 250.
HORT 300. Special Topics  
1-4 Credits  
Specific subjects as announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits. May be repeated up to 9 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

HORT 302V. Forestry and Society  
3 Credits  
Global study of the development and use of forest resources for production of wood, fuel, fiber, and food products. Climatic, edaphic, cultural, and economic influences on forests of the world evaluated. Same as RGSC 302V.

HORT 305. Principles of Genetics  
3 Credits  
Covers fundamental principles of reproduction, variation, and heredity in plants and animals. Crosslisted with: AGRO 305, ANSC 305, BIOL 305 and GENE 305  
Prerequisite(s): BIOL 111G, BIOL 211G and either CHEM 111G or CHEM 115.

HORT 307. Landscape Design  
3 Credits (1+4P)  
Design elements, the design process, and contemporary planting design used in the design of residential and small commercial landscapes. Basic drafting, drawing, and landscape plan presentation techniques. Prerequisites: HORT 210 or HORT 211 or concurrent enrollment or consent of instructor.

HORT 310. Medicinal Herbs  
3 Credits  
Introduction to ethnobotany, including plant cultivation, extraction methods, and analysis of active chemistries.

HORT 315. Crop Physiology  
3 Credits  
Whole plant physiological processes as related to growth, development, yield, quality and post harvest physiology of crop plants within the environment of the crop community. Crosslisted with: AGRO 315  
Prerequisite(s): EPWS/BIOL 314 or consent of instructor.

HORT 365. Principles of Crop Production  
4 Credits (3+3P)  
Basic principles of crop production including environmental and physiological factors limiting production, plant nutrition and soil science, soil-water management, cropping systems and management, pest management, and economic factors influencing crop production. Crosslisted with: AGRO 365  
Prerequisite(s): AGRO/HORT 100, CHEM 111G or equivalent and MATH 120 or equivalent.

HORT 377. Introduction to Turfgrass Management  
4 Credits (3+3P)  
Establishment and maintenance of turfgrass with emphasis on seeding methods, soil and water management, mowing, disease insects and turfgrass varieties. Crosslisted with: AGRO 377

HORT 378. Turfgrass Science  
4 Credits (3+3P)  
Introduction to the scientific fundamentals for turfgrass management cultural practices, pest management, rootzone construction and ecology. Prerequisite(s): HORT 377 or consent of instructor.

HORT 391. Internship  
1-6 Credits  
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 6 credits toward a degree. Consent of instructor required. Graded: S/U. Crosslisted with: AGRO 391 and SOIL 391

HORT 447. Seminar  
1 Credit  
Review of current literature. Same as AGRO 447 and SOIL 447.

HORT 449. Special Problems  
1-3 Credits  
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and a grand total of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

HORT 450. Special Topics  
1-4 Credits  
Specific subjects as announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits. May be repeated up to 9 credits. Consent of Instructor required.

HORT 462. Plant Breeding  
3 Credits  
Principles and practices involved with the genetic improvement of plants. Same as AGRO 462.  
Prerequisites: ANSC/AGRO/Biol/HORT 305.

HORT 465. Landscape Construction and Maintenance  
4 Credits (3+2P)  
Application of landscape design and construction principles to build and maintain residential, small commercial and selected public managed landscapes.

HORT 471. Plant Mineral Nutrition  
3 Credits  
Basic and applied aspects of plant requirements for soil-derived minerals and the processes whereby minerals are acquired, absorbed, translocated, and utilized throughout the plant. Same as AGRO/EPWS 471.  
Prerequisite: EPWS/BIOL 314, or concurrent enrollment, or consent of instructor.

HORT 479. Advanced Turfgrass Science  
3 Credits  
Extensive reviews of turfgrass sciences including ecology, physiology, entomology, pathology, weed science, and soil science.  
Prerequisite: HORT 378 or consent of instructor.

HORT 485. Vegetable Crop Management  
4 Credits (3+2P)  
Physiological, environmental and cultural aspects of vegetable crop production. Corequisite(s): AGRO 365 or HORT 365, or consent of instructor.

HORT 486. Materials from Biorenewable Resources  
3 Credits  
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: AGRO 485, SOIL 485, E S 485 and CHME 485.  
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.
HORT 488. Greenhouse Management
4 Credits (3+3P)
Principles and practices involved in greenhouse structures and
construction, site considerations, covering materials, heating and cooling
systems, greenhouse crop production techniques, and case studies.
Prerequisite: HORT/AGRO 365 or consent of instructor.

HORT 492. Diagnosing Plant Disorders
3 Credits (2+3P)
Systematic diagnosis of the physiological, pathological, and
entomological causes of plant disorders. Same as EPWS 492 and
AGRO 492.
Prerequisites: EPWS 303 and EPWS 310.

HORT 500. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of
Classes. Maximum of 4 credits per semester. No more than 9 credits
toward a degree.

HORT 505. Research Orientation
4 Credits (3+2P)
Training in writing research proposals, presentation of research results,
and interpretation of research results. Crosslisted with: AGRO 505 and
SOIL 505

HORT 506. Plant Genetics
3 Credits
Advanced treatment of the principles of classical genetics and heredity
with emphasis on the nature and action of the gene including molecular
analysis. CHEM 345 recommended. Same as AGRO 506 and MOLB 506.
Prerequisite: AGRO 305 or consent of instructor.

HORT 514. Soil-Plant Relationships
3 Credits
Physical, chemical, and biological soil environment as it affects plant and
crop growth. Same as AGRO/SOIL 514.
Prerequisites: BIOL 314, SOIL 252.

HORT 515. Crop Physiology
3 Credits
Whole plant physiological processes as related to growth, development,
yield, quality and post harvest physiology of crop plants within the
environment of the crop community. Crosslisted with: AGRO 515
Prerequisite(s): EPWS/BIOL 314 or consent of instructor.

HORT 516. Molecular Analysis of Complex Traits
3 Credits
Provide a comprehensive overview of molecular genetic analysis of
complex phenotypes, including case histories/experiments in plants,
animals and humans. Emphasize technological developments in DNA
marker technologies and their application to molecular quantitative
genetics. Explore the efficient application of these technologies in the
future to complex genetic systems, breeding, and other areas of life
sciences. Same as AGRO 516.
Prerequisite: AGRO 305 or consent of instructor.

HORT 525. Scientific Writing How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript
preparation process is more efficient and productive. Students will also
gain experience in peer-review Crosslisted with: AGRO 525, AGRO 625,
EPWS 525, SOIL 625 and SOIL 525.

HORT 533. Environmental Physiology of Plants
3 Credits
Integral responses of plants and crop productivity to naturally occurring
and modified environmental factors such as radiation, temperatures,
water vapor, carbon dioxide, and air flow. Same as AGRO/BIOL 533.
Prerequisite: BIOL 314 or consent of instructor.

HORT 590. Graduate Seminar
1 Credit
Current research discussions presented by masters level graduate
students. Not more than one credit toward the degree. Same as AGRO/
SOIL 590. Crosslisted with: AGRO 590 and SOIL 590.

HORT 595. Internship
1-6 Credits
Supervised professional on-the-job learning experience. Limited to Master
of Horticulture or Plant & Environmental Science candidates. Not more
than 6 credits toward the degree.

HORT 596. Masters Proposal
1 Credit
Current research proposal written by maters level graduate students.
Consent of Instructor required. Crosslisted with: AGRO 596, E S 596,
GENE 596 and SOIL 596. Restricted to: Masters HORT; Masters PLEN
majors.
Prerequisite(s): Master level graduate students.

HORT 597. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of
one AGRO/HORT/SOIL/ES course. The student will prepare and deliver
lectures and will prepare, administer, and grade at least one examination.
The professor in charge of the course will attend and evaluate the
student’s lectures. Consent of instructor required. Crosslisted with:
AGRO 597 and SOIL 597

HORT 598. Special Research Programs
1-6 Credits
Individual investigations, either analytical or experimental. Maximum of 6
credits per semester. No more than 9 credits toward a degree.
Prerequisite: consent of instructor.

HORT 599. Master’s Thesis
15 Credits
Thesis.

HORT 609. Breeding for Plant Disease Resistance
3 Credits
A practically-oriented course of lectures and discussion on concepts and
principles of breeding for disease and pest resistance. Labs familiarize
students with preparation, quantification, and application of inoculum to
hosts. Same as AGRO 609.

HORT 610. Advanced Crop Breeding
4 Credits (3+3P)
Applications of breeding principles to crop improvement. Emphasis
on breeding methodologies using modern techniques, including
biotechnology. Same as AGRO 610.
Prerequisite: AGRO 462 or consent of instructor.

HORT 620. Instrumentation in Agronomy
3 Credits
Use of instruments used in research in all areas of agronomy including
gas chromatography, high performance liquid chromatography, neutron
soil moisture probe, and other instruments. Same as AGRO/SOIL 620.
HORT 625. Scientific Writing: How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Students in the 625 course will be required to perform additional research than those students in the 525 cross-listing. Cross-listed with: AGRO 525, EPWS 525, HORT 525 and SOIL 525.

HORT 670. Biometrical Genetics and Plant Breeding
3 Credits
A statistical approach to gene action and population parameters as applied to plant improvement. Same as AGRO 670.
Prerequisite: AGRO 462 or consent of instructor.

HORT 685. Plant Genetic Engineering
3 Credits
Analysis of plant genome structure and potential applications of emerging molecular techniques to the genetic improvement of plants. Same as AGRO/BIOL 685.
Prerequisites: HORT/AGRO 585 and AGRO/HORT 506 or CHEM 545, or consent of instructor.

HORT 696. Doctors Proposal
1 Credit
Current research proposal written by PhD level graduate students. Consent of Instructor required. Crosslisted with: AGRO 696, E S 696 and SOIL 696. Restricted to: Doctors PLEN majors.
Prerequisite(s): PhD level graduate students.

HORT 697. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: AGRO 697 and SOIL 697

SOIL 200. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

SOIL 252. Soils
3 Credits
Origin, classification, morphology, and physical, chemical, and biological properties of soils.
Prerequisite: CHEM 111G and CHEM 112G.

SOIL 252 L. Soils Laboratory
1 Credit
Morphological, chemical, physical and biological properties of soil in the laboratory and field.
Corequisite: SOIL 252.

SOIL 257. Introduction to Weather Science
4 Credits (3+3P)
Introduction to Earth's atmosphere and the dynamic world of weather as it happens. Working with current meteorological data delivered via the Internet and coordinated with learning investigations keyed to the current weather; and via study of select archives. Consent of instructor required. Crosslisted with: GEOG 257 and AGRO 257

SOIL 300. Special Topics
1-4 Credits
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

SOIL 312. Soil Management and Fertility
3 Credits
Management, conservation, and fertility of soils; physical conditions affecting growth, nutrition, and plant production.
Prerequisite: SOIL 252.
Corequisite: SOIL 312L.

SOIL 312 L. Soil Management and Fertility Lab
1 Credit
Hands-on experience. Includes field trips, videos, calculations, visiting lecturers and other lab activities as possible.
Prerequisite: SOIL 252.
Corequisite: SOIL 312.

SOIL 350. Soils and Land Use
3 Credits (2+2P)
Relationship of soils to the limitations and potentials of land use. Emphasis on soil interpretations and soils as a resource in urban, rural, and recreational development. Same as PLAN 350.

SOIL 357. Climatology
3 Credits
Basic elements of soil chemistry including clay mineralogy, cation and anion exchange and the chemistry of problem (acid, saline and flooded) soils. Credit not given for both SOIL 424 and SOIL 479.
Prerequisite(s): SOIL 252.

SOIL 391. Internship
1-6 Credits (1-6)
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 6 credits toward a degree. Consent of Instructor required. S/U Grading (S/U, Audit).

SOIL 424. Soil Chemistry
3 Credits
Basic elements of soil chemistry including clay mineralogy, cation and anion exchange and the chemistry of problem (acid, saline and flooded) soils. Credit not given for both SOIL 424 and SOIL 479.
Prerequisite(s): SOIL 252L or CHEM 111G and 112G.

SOIL 447. Seminar
1 Credit
Organization, preparation, and presentation of current topics in agronomy, horticulture, and soil science. Same as AGRO/HORT 447.

SOIL 449. Special Problems
1-3 Credits
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and a grand total of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.
SOIL 450. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits towards a degree. May be repeated up to 9 credits. Consent of Instructor required.

SOIL 456. Irrigation and Drainage
3 Credits
Principles and practices required for irrigation to exist as a permanent economy. Equipment and methods for measurement and control of water.

SOIL 472. Soil Morphology and Classification
4 Credits (2+2P)
Terminology used to describe soils. Soil classification systems of the world with emphasis on systems used in the United States. Theory of classification and taxonomy as applied to soils. Same as GEOG 472.
Prerequisite: SOIL 252.

SOIL 476. Soil Microbiology
3 Credits
Nature and physiology of soil microorganisms, how they affect plant growth and recycle nutrients. Land farming, bioremediation and other environmental problems as influenced by soil microorganisms. SOIL 252 and BIOL 311 recommended. Same as BIOL 476.

SOIL 476 L. Soil Microbiology Laboratory
1 Credit
Enumeration of soil microorganisms, their activities, and transformations they mediate. Same as BIOL 476L.
Prerequisites: SOIL 476 or concurrent enrollment.

SOIL 477. Environmental Soil Physics
3 Credits
A description of the physical characteristics of porous media including soil. Examination of processes describing the transport of water, chemicals, heat and gases through porous media with application to environmental quality, waste management, and crop production.

SOIL 477 L. Environmental Soil Physics Laboratory
1 Credit
Concurrent enrollment with SOIL 477 recommended. Hands on experience with techniques for characterizing soil physical properties such as particle size distribution, bulk density, water retention, hydraulic conductivity and solute transport. Demonstrations of field and laboratory techniques for measuring moisture content, soil water potential, gas/air flow and thermal conductivity.
Prerequisite: SOIL 252.

SOIL 479. Environmental Soil Chemistry
3 Credits
Basic elements of soil chemistry including discussion of clay mineralogy, cation and anion exchange and the chemistry of problem (acid, saline and flooded) soils. Credit not given for both SOIL 424 and SOIL 479.
Prerequisite(s): SOIL 252L or CHEM 111G and 112G.

SOIL 485. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: AGRO 485, HORT 486, E S 485 and CHME 485.
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

SOIL 500. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

SOIL 505. Research Orientation
4 Credits (3+2P)
Training in writing research proposals, presentation of research results, and interpretation of research results. Crosslisted with: AGRO 505 and HORT 505

SOIL 514. Soil-Plant Relationships
3 Credits
Physical, chemical, and biological soil environment as it affects plant and crop growth. Same as AGRO/HORT 514.
Prerequisites: BIOL 314, SOIL 252.

SOIL 525. Scientific Writing- How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Crosslisted with: AGRO 525, AGRO 625, HORT 525, HORT 625, SOIL 625 and EPWS 525.

SOIL 590. Graduate Seminar
1 Credit
Current research discussions presented by master level graduate students. Not more than one credit toward the degree. Same as AGRO/HORT 590. Crosslisted with: AGRO 590 and HORT 590.

SOIL 596. Masters Proposal
1 Credit
Current research proposal written by masters level graduate students. Consent of Instructor required. Crosslisted with: AGRO 596, E S 596, GENE 596 and HORT 596. Restricted to: Masters HORT; Masters PLEN majors.
Corequisite(s): Master level graduate students.

SOIL 597. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student's lectures. Consent of instructor required. Crosslisted with: AGRO 597 and HORT 597

SOIL 598. Special Research Programs
1-6 Credits
Individual investigations, either analytical or experimental. Maximum of 6 credits per semester. No more than 9 credits toward a degree.

SOIL 600. Doctoral Research
1-15 Credits
Research.

SOIL 625. Scientific Writing- How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Students in the 625 course will be required to perform additional research than those students in the 525 cross-listing. Crosslisted with: AGRO 525, HORT 525 and EPWS 525.
SOIL 630. Advanced Soil Classification  
3 Credits  
Philosophy and organization of various soil classification systems, some international in scope, with emphasis on the new USDA system and classroom and field experience in using this system.  
Prerequisite: SOIL 472 or consent of instructor.

SOIL 640. Advanced Soil Microbiology  
3 Credits  
Advanced topics in soil microbiology and biochemistry, including carbon cycling, nitrogen cycling, humus formation and nature, and microbial-plant root interactions. Consent of instructor required.

SOIL 650. Advanced Topics  
1-3 Credits  
Colloquium on contemporary topics associated with agriculture, environmental science and engineering. Multidisciplinary topics will be chosen to encourage participation of students from diverse disciplines. May be repeated for a maximum of 9 credits.  
Prerequisite: consent of instructor.

SOIL 652. Advanced Soil Physics  
3 Credits  
Advanced treatment of soil physics, modeling, includes working on an existing/new research project, modeling existing or new data, step by step guide on the use of some 1-D and 2-D models. Specific areas of specialization will be field scale variability of soil properties, water flow, solute transport, and plant root relations. Consent of instructor required. Pre/ Corequisite(s): SOIL 477 and computer literacy; or consent of instructor.

SOIL 655. Moisture Heat Contaminant Transport Modeling  
3 Credits  
Provides clear coverage of the basic principles of heat, moisture and contaminant transport through porous media, and a step-by-step guidance and hands on application on the use of some spreadsheet based and physically based one-and two-dimensional transport models. A similar course does not exist in the college for students that can encourage them to pursue modeling as a means of solving vadose zone and groundwater contamination and remediation problems. Consent of instructor required. Pre/ Corequisite(s): Graduate student with at least two 400.

SOIL 694. Doctoral Seminar  
1 Credit  
Current research discussions presented by doctoral level graduate students. Not more than 2 credits toward the degree. Same as AGRO 694.  
Prerequisite: doctoral level graduate students.

SOIL 696. Doctoral Proposal  
1 Credit  
Current research proposal written by doctoral level graduate students. Not more than 1 credit toward the degree. Same as AGRO 696.  
Prerequisite: doctoral level graduate students.

SOIL 697. University Teaching Experience  
1-3 Credits (1-3)  
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student's lectures. Consent of instructor required. Crosslisted with: AGRO 697 and HORT 697

SOIL 698. Topics in Agronomy  
1-6 Credits  
Topics of current interest, designated by title and credit. Maximum of 6 credits per semester. No more than 9 credits toward a degree.

Name:
Office Location:
Phone: (575) 646-3405
Website: http://aces.nmsu.edu/academics/pes/

Agronomy - Bachelor of Science in Agriculture

Agronomy is an understanding of the principles of plant and soil science and an application of these principles in the production of crops. Commercial sector careers include positions in agricultural consulting companies, agricultural seed or chemical companies, research and development with commercial companies, as well as farm and/or ranch management. Careers in county, state or federal agencies are in the areas of USDA, Cooperative Extension Service, Natural Resources Conservation Service, Forest Service and Bureau of Land Management.

Two options are available in the agronomy major. In addition to the completion of the requirements of the major listed above, you must elect an option and complete 25 credits from the requirements for that option. To deviate from the courses required within a concentration, you must file a formal petition, subject to approval by departmental committee. You should develop a specific program of study in consultation with a departmental agronomy advisor.

Requirements

<table>
<thead>
<tr>
<th>Agronomy and Soil Science Courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRO 100G Introductory Plant Science</td>
<td>4</td>
</tr>
<tr>
<td>AGRO 305 Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 365 Principles of Crop Production</td>
<td>4</td>
</tr>
<tr>
<td>AGRO 447 Seminar</td>
<td>1</td>
</tr>
<tr>
<td>AGRO 483 Sustainable Production of Agronomic Crops</td>
<td>4</td>
</tr>
<tr>
<td>SOIL 252 Soils</td>
<td>3</td>
</tr>
<tr>
<td>SOIL 252 L Soils Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>SOIL 312 Soil Management and Fertility</td>
<td>3</td>
</tr>
<tr>
<td>SOIL 312 L Soil Management and Fertility Lab</td>
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</table>

Other Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ST 311 Statistical Applications</td>
<td>3</td>
</tr>
<tr>
<td>AG E 250 Technology and Communication for Business Management</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 449 Special Problems</td>
<td>1-3</td>
</tr>
<tr>
<td>BIOL 111G Natural History of Life &amp; BIOL 211G and Cellular and Organismal Biology</td>
<td>6</td>
</tr>
<tr>
<td>CHEM 111G General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112G General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 211 Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>Select 3 credits from MATH – to equal the proficiency level of MATH 142G or MATH 121G</td>
<td>3</td>
</tr>
<tr>
<td>Select one from the following:</td>
<td>4</td>
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<tr>
<td>EPWS 303 Economic Entomology</td>
<td></td>
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</tbody>
</table>
**Concentration: Crop Consulting**

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG E 236</td>
<td>Principles of Food and Agribusiness Management</td>
<td>3</td>
</tr>
<tr>
<td>AG E 315V</td>
<td>World Agriculture and Food Problems</td>
<td>3</td>
</tr>
<tr>
<td>AG E 450</td>
<td>Spreadsheet Applications in Food and Agriculture</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 311</td>
<td>Introduction to Weed Science</td>
<td>4</td>
</tr>
<tr>
<td>AGRO 365</td>
<td>Principles of Crop Production (mandatory course)</td>
<td>4</td>
</tr>
<tr>
<td>AGRO 462</td>
<td>Plant Breeding (mandatory course)</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 483</td>
<td>Sustainable Production of Agronomic Crops (mandatory course)</td>
<td>4</td>
</tr>
<tr>
<td>AGRO 492</td>
<td>Diagnosing Plant Disorders (mandatory course)</td>
<td>3</td>
</tr>
<tr>
<td>B A 202</td>
<td>Small Business Enterprise</td>
<td>3</td>
</tr>
<tr>
<td>EPWS 314</td>
<td>Plant Physiology</td>
<td>3</td>
</tr>
<tr>
<td>EPWS 455</td>
<td>Advanced Integrated Pest Management</td>
<td>3</td>
</tr>
<tr>
<td>EPWS 373</td>
<td>Fungal Biology</td>
<td>3</td>
</tr>
<tr>
<td>HORT 471</td>
<td>Plant Mineral Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HORT 485</td>
<td>Vegetable Crop Management</td>
<td>4</td>
</tr>
<tr>
<td>SOIL 456</td>
<td>Irrigation and Drainage</td>
<td>3</td>
</tr>
<tr>
<td>SOIL 476</td>
<td>Soil Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>SPAN 111</td>
<td>Elementary Spanish I</td>
<td>4</td>
</tr>
<tr>
<td>SPAN 211</td>
<td>Intermediate Spanish I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits**: 59

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**Concentration: General Agronomy**

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG E 236</td>
<td>Principles of Food and Agribusiness Management</td>
<td>3</td>
</tr>
<tr>
<td>AG E 305</td>
<td>Marketing and Food Agricultural Products</td>
<td>3</td>
</tr>
<tr>
<td>AG E 315V</td>
<td>World Agriculture and Food Problems</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 391</td>
<td>Internship</td>
<td>1-6</td>
</tr>
<tr>
<td>AGRO 471</td>
<td>Plant Mineral Nutrition (mandatory course)</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 492</td>
<td>Diagnosing Plant Disorders (mandatory course)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits**: 59

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**Environmental Science - Bachelor of Science in Environmental Science**

The environmental science major is a multidisciplinary program based on a strong general science curriculum and an environmental curriculum that focuses on environmental problems and solutions. Although administered by the Department of Plant and Environmental Sciences, a multidisciplinary advisory committee recommends curriculum and other changes to the program. Graduates are very competitive for careers in industry and government and have excellent preparation for graduate programs in a variety of fields. A grade of C- or better must be earned in the Basic Background and Core Requirements.

**Requirements**

**Basic Science Background**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
<td>3</td>
</tr>
</tbody>
</table>
BIOL 111G Natural History of Life 3
BIOL 211G Cellular and Organismal Biology 3
BIOL 311 General Microbiology 3
CHEM 111G General Chemistry I 4
CHEM 112G General Chemistry II 4
CHEM 211 Organic Chemistry 4
GEOL 111G Introductory to Geology 4
MATH 191G Calculus and Analytic Geometry I 4
MATH 192G Calculus and Analytic Geometry II 4
PHYS 215G Engineering Physics I 3
SOIL 252 Soils 3
SOIL 252 L Soils Laboratory 1

Environmental Science Core
E S 110G Introductory Environmental Science 4
E S 256 Environmental Engineering and Science 3
E S 256 L Environmental Science Laboratory 1
E S 301 Principles of Ecology 3
E S 312 Emergency Response to Hazardous Material Incidents 2
E S 330 Environmental Management Seminar I 1
E S 361 Basic Toxicology 3
or E S 423 Environmental Toxicology 3
E S 370 Environmental Soil Science 3
E S 391 Internship 3
E S 422 Environmental Chemistry 3
E S 430 Environmental Management Seminar II 1
E S 452 Geohydrology 4
E S 460 Introduction to Air Pollution 3
E S 462 Sampling and Analysis of Environmental Contaminants 3
E S 470 Environmental Impacts of Land Use and Contaminant Remediation 3
FWCE 434 Aquatic Contaminants and Toxicology 4
or FWCE 459 Aquatic Ecology 4

Total Credits 87

Genetics and Biotechnology - Bachelor of Science in Genetics

Codirectors of the Program:

Professor, Michelle Nishiguchi, Department Head, Biology

Associate Professor, Rolston St. Hilaire, Interim Department Head, Plant and Environmental Sciences

Professors Bosland, Cramer, Houde, Milligan, Nishiguchi, O’Connell, Ray, Sengupta-Gopalan, C. Shuster, St. Hilaire; Associate Professors Bailey, Curtiss, M. Shuster, Zhang

Have you ever wondered why your hair or eye color, facial features, or the build of your body resembles that of your parents, grandparents, or other close relatives? What factors are responsible for generating all the variety of colors and shapes of flowers, trees, and different types of animals? If these questions have crossed your mind, then you have been thinking about Genetics; the science of heredity. Genetics is studied at the DNA/ gene/genome level (molecular genetics, biotechnology, genomics and bioinformatics), the level of organisms (classical or Mendelian genetics), and within/among populations of individuals (population and quantitative genetics).

One of the most significant scientific accomplishments in history has been the use of genomic technologies to recently identify most human genes, as well as, most genes for a number of other animals, plants, fungi, and bacteria. Geneticists now have tremendous opportunities to use molecular, biochemical, mathematical, and computer science-based (bioinformatics) approaches to investigate how these genes determine observable traits. This information can be used to significantly advance human health and well being, and to meet the food and fiber needs of the world.

A degree in Genetics can provide excellent preparation for careers in academic research and technical support, teaching, agriculture, the biotechnology industry, medicine and health sciences, forensic science, technical writing, and sales or marketing. It is also an excellent background for students wishing to enter a graduate program, medical school, and veterinary school.

Undergraduates in the Genetics program must earn a grade of C- or better to receive credit for required Basic Science Background and Genetics Core courses. Within the Genetics Core curriculum, Tier I courses must be taken by all majors, for a total of 28 credit hours. To accommodate varying interests among students, a series of Tier II courses comprising 11 to 13 credits are provided. Ethical considerations of genetic based technologies will be infused throughout the curriculum, with a focused course on Science and Ethics in the Tier III portion of the core curriculum.

Requirements

General Education Requirements

Area I: Communications

English Composition-Level 1. Select one from the following: 4
ENGL 111G Rhetoric and Composition
ENGL 111GH Rhetoric and Composition Honors
SPCD 111G Advanced ESL Composition
ENGL 111 M Rhetoric and Composition for International and Multilingual Students

English Composition-Level 2:
ENGL 218G Technical and Scientific Communication 3
or ENGL 318G Advanced Technical and Professional Communication

Oral Communication. Select one from the following: 3
AXED 201G Effective Leadership and Communication in Agricultural Organizations
COMM 253G Public Speaking
COMM 265G Principles of Human Communication
HON 265G Principles of Human Communication Honors

Area II: Mathematics/Algebra

MATH 191G Calculus and Analytic Geometry I 4

Area III: Laboratory Science

CHEM 111G General Chemistry I 4
CHEM 112G General Chemistry II 4

Area IV & V: Social/Behavioral Sciences and Humanities and Fine Arts

Genetics and Biotechnology - Bachelor of Science in Genetics (Tier I Core: 28 Credits)

Requirements

General Education Requirements

Area I: Communications

English Composition-Level 1. Select one from the following: 4
ENGL 111G Rhetoric and Composition
ENGL 111GH Rhetoric and Composition Honors
SPCD 111G Advanced ESL Composition
ENGL 111 M Rhetoric and Composition for International and Multilingual Students

English Composition-Level 2:
ENGL 218G Technical and Scientific Communication 3
or ENGL 318G Advanced Technical and Professional Communication

Oral Communication. Select one from the following: 3
AXED 201G Effective Leadership and Communication in Agricultural Organizations
COMM 253G Public Speaking
COMM 265G Principles of Human Communication
HON 265G Principles of Human Communication Honors

Area II: Mathematics/Algebra

MATH 191G Calculus and Analytic Geometry I 4

Area III: Laboratory Science

CHEM 111G General Chemistry I 4
CHEM 112G General Chemistry II 4

Area IV & V: Social/Behavioral Sciences and Humanities and Fine Arts
Select a total of 15 credits combined from Areas IV and V, with 6 credits in one area and 9 credits in the other area: 1

Area IV: Social/Behavioral Sciences: Select 6-9 credits

Area V: Humanities and Fine Arts: Select 6-9 credits

Viewing a Wider World
Select one Viewing a Wider World course 2

Basic Science Background Requirements
A ST 311 Statistical Applications 3
or BIOL 455 Biometry
BCHE 395 Biochemistry I 3
BCHE 396 Biochemistry II 3
BIOL 111G Natural History of Life 3
CHEM 111G General Chemistry I 4
or CHEM 115 Principles of Chemistry I
CHEM 112G General Chemistry II 4
or CHEM 116 Principles of Chemistry II
CHEM 313 Organic Chemistry I 3
CHEM 314 Organic Chemistry II 3
CHEM 315 Organic Chemistry Laboratory 2
MATH 191G Calculus and Analytic Geometry I 4
MATH 192G Calculus and Analytic Geometry II 4
PHYS 211G General Physics I 3
or PHYS 221G General Physics for Life Sciences I
PHYS 212G General Physics II 3
or PHYS 222G General Physics for Life Sciences II

Core Requirements
Tier I Courses
GENE 110 Experimental Systems in Genetics 1
BIOL 211G Cellular and Organismal Biology 3
BIOL 211GL Cellular and Organismal Biology Laboratory 1
BIOL 311 General Microbiology 3
BIOL 311 L General Microbiology Laboratory 2
GENE 305 L Genetic Techniques 1
GENE 315 Molecular Genetics 3
GENE 320 Hereditary and Population Genetics 3
BIOL 377 Cell Biology 3
GENE 440 Genetics Seminar 1
GENE 452 Applied Bioinformatics 3
or BIOL 446 Bioinformatics and NCBI Database
BCHE 494 Biochemical Genetics Laboratory 3
or BIOL 302 Molecular Biology Techniques Laboratory

Tier II Courses
Select one course from each of the following four areas: 12-14

Selection response:
AGRO 462 Plant Breeding
ANSC 423 Animal Breeding
BIOL 467 Evolution

Physiology:
ANSC 421 Physiology of Reproduction
BIOL 354 Physiology of Humans
BIOL 381 Animal Physiology

BIOL 385 An Introduction to Cancer
BIOL 451 Physiology of Microorganisms
BIOL 474 Immunology
EPWS 314 Plant Physiology
HORT 471 Plant Mineral Nutrition

Organism Structure:
ANSC 370 Anatomy and Physiology of Farm Animals
BIOL 313 Structure and Function of Plants
BIOL 322 Zoology
BIOL 330 Comparative Anatomy and Embryology
BIOL 382 Plant Signalling and Development
BIOL 470 Developmental Biology
BIOL 465 Invertebrate Zoology
EPWS 303 Economic Entomology

Molecular Genetics:
BIOL 475 Virology
BIOL 478 Molecular Biology of Microorganisms
GENE 486 Genes and Genomes
GENE 488 Gene Regulation

Tier III Courses 3
Select one from the following:
AGRO 303V Genetics and Society
HON 306V Science, Ethics and Society
PHIL 321 Biomedical Ethics

Additional Courses
Select electives to bring total to 120 credits including 48 upper division credits.

Recommended Electives (Honors College)
HON 400 Honors Thesis
Select 9 credits from the following:
HON 205G Life, Energy, and Evolution
HON 214 Successful Fellowship Writing
HON 225G History of Ethics

Select 6 credits from the following:
HON 306V Science, Ethics and Society
HON 314 Successful Fellowship Writing
HON 410 Honors Internship

Total Credits 127-129

1 Total of 15 credits combined between Areas IV and V, with 6 credits in one area and 9 credits in the other area. See General Education Courses (p. 47) for listing of available courses.

2 One VWW area will be satisfied using the nine-hour rule. Students with Biology as their home department will use GENE courses and students with Plant and Environmental Science as their home department use BIOL courses.

Horticulture - Bachelor of Science in Agriculture

Horticulture includes a wide variety of topics that relate to fruit, vegetable and ornamental crops. Careers range from production management to processing and marketing, retail and wholesale management, greenhouse...
and nursery production, floriculture, landscaping, turf management, research and development, various service activities and positions with local, state and federal agencies.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
</tr>
<tr>
<td>or BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
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</table>

Select one from the following:

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<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 112G</td>
<td>General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>EPWS 303</td>
<td>Economic Entomology</td>
<td>3</td>
</tr>
<tr>
<td>EPWS 310</td>
<td>Plant Pathology</td>
<td>4</td>
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<tr>
<td>EPWS 314</td>
<td>Plant Physiology</td>
<td>3</td>
</tr>
<tr>
<td>HORT 447</td>
<td>Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MATH 142G</td>
<td>Calculus for the Biological and Management Sciences</td>
<td>3</td>
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<tr>
<td>or MATH 121G</td>
<td>College Algebra</td>
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<tr>
<td>SOIL 252</td>
<td>Soils</td>
<td>3</td>
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</table>

**Horticulture Courses**

Select at least 29 credits from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORT 100G</td>
<td>Introductory Plant Science</td>
<td></td>
</tr>
<tr>
<td>HORT 200</td>
<td>Special Topics</td>
<td></td>
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<tr>
<td>HORT 205</td>
<td>Introduction to Horticulture</td>
<td></td>
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<tr>
<td>HORT 210</td>
<td>Ornamental Plants I</td>
<td></td>
</tr>
<tr>
<td>HORT 211</td>
<td>Ornamental Plants II</td>
<td></td>
</tr>
<tr>
<td>HORT 240</td>
<td>Floral Quality Evaluation and Design</td>
<td></td>
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<tr>
<td>HORT 241</td>
<td>Floriculture Field Practicum</td>
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<tr>
<td>HORT 250</td>
<td>Plant Propagation</td>
<td></td>
</tr>
<tr>
<td>HORT 300</td>
<td>Special Topics</td>
<td></td>
</tr>
<tr>
<td>HORT 302V</td>
<td>Forestry and Society</td>
<td></td>
</tr>
<tr>
<td>HORT 305</td>
<td>Principles of Genetics</td>
<td></td>
</tr>
<tr>
<td>HORT 307</td>
<td>Landscape Design</td>
<td></td>
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<tr>
<td>HORT 310</td>
<td>Medicinal Herbs</td>
<td></td>
</tr>
<tr>
<td>HORT 365</td>
<td>Principles of Crop Production</td>
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<tr>
<td>HORT 377</td>
<td>Introduction to Turfgrass Management</td>
<td></td>
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<tr>
<td>HORT 391</td>
<td>Internship</td>
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<td>HORT 447</td>
<td>Seminar</td>
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<tr>
<td>HORT 449</td>
<td>Special Problems</td>
<td></td>
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<tr>
<td>HORT 450</td>
<td>Special Topics</td>
<td></td>
</tr>
<tr>
<td>HORT 462</td>
<td>Plant Breeding</td>
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<tr>
<td>HORT 465</td>
<td>Landscape Construction and Maintenance</td>
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<tr>
<td>HORT 471</td>
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<td>HORT 485</td>
<td>Vegetable Crop Management</td>
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</tr>
<tr>
<td>HORT 488</td>
<td>Greenhouse Management</td>
<td></td>
</tr>
<tr>
<td>HORT 492</td>
<td>Diagnosing Plant Disorders</td>
<td></td>
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</table>

**Program Concentrations/Options**

Select one from the following concentrations/options:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop Consulting</td>
<td></td>
<td>24-44</td>
</tr>
<tr>
<td>General Horticulture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horticulture Business</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landscape Design</td>
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<td></td>
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</tbody>
</table>

**Ornamental Horticulture**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credits</td>
<td></td>
<td>81-101</td>
</tr>
</tbody>
</table>

1 requires a grade of C- or above in horticulture courses
2 Four concentrations and one option are available in the horticulture major. In addition to the completion of the requirements of the major listed above, you must elect a concentration or an option and complete the requirements for that option. You should develop a specific program of study in consultation with a departmental horticulture advisor. To deviate from the courses required within a concentration or an option, you should develop a specific program of study in consultation with a departmental horticulture advisor.

If you want to apply for certification as a professional horticulturist, you should also complete:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORT 305</td>
<td>Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BCHE 341</td>
<td>Survey of Biochemistry</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 211</td>
<td>Organic Chemistry</td>
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</table>

Total Credits 7

**Concentration: Crop Consulting**

**Required Courses**

Select 13-14 credits from the following:

<table>
<thead>
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<th>Course Name</th>
<th>Credits</th>
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<tr>
<td>AG E 236</td>
<td>Principles of Food and Agribusiness Management</td>
<td></td>
</tr>
<tr>
<td>AG E 250</td>
<td>Technology and Communication for Business Management</td>
<td></td>
</tr>
<tr>
<td>AG E 315V</td>
<td>World Agriculture and Food Problems</td>
<td></td>
</tr>
<tr>
<td>AG E 450</td>
<td>Spreadsheet Applications in Food and Agriculture</td>
<td></td>
</tr>
<tr>
<td>AGRO 311</td>
<td>Introduction to Weed Science</td>
<td></td>
</tr>
<tr>
<td>AGRO 483</td>
<td>Sustainable Production of Agronomic Crops</td>
<td></td>
</tr>
<tr>
<td>B A 202</td>
<td>Small Business Enterprise</td>
<td></td>
</tr>
<tr>
<td>BIOL 301</td>
<td>Principles of Ecology</td>
<td></td>
</tr>
<tr>
<td>BIOL 313</td>
<td>Structure and Function of Plants</td>
<td></td>
</tr>
<tr>
<td>EPWS 373</td>
<td>Fungal Biology</td>
<td></td>
</tr>
<tr>
<td>EPWS 455</td>
<td>Advanced Integrated Pest Management</td>
<td></td>
</tr>
<tr>
<td>EPWS 481</td>
<td>Plant Nematology</td>
<td></td>
</tr>
<tr>
<td>FSTE 320</td>
<td>Food Microbiology</td>
<td></td>
</tr>
<tr>
<td>FSTE 421</td>
<td>Food Chemistry</td>
<td></td>
</tr>
<tr>
<td>SOIL 312</td>
<td>Soil Management and Fertility</td>
<td></td>
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<tr>
<td>SOIL 456</td>
<td>Irrigation and Drainage</td>
<td></td>
</tr>
<tr>
<td>SOIL 476</td>
<td>Soil Microbiology</td>
<td></td>
</tr>
<tr>
<td>SPAN 111</td>
<td>Elementary Spanish I</td>
<td></td>
</tr>
<tr>
<td>SPAN 211</td>
<td>Intermediate Spanish I</td>
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</table>

Total Credits 37-41
Option: General Horticulture

Required Courses
Select 12-16 credits from the following:

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<th>Course Code</th>
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<td>Statistical Applications</td>
</tr>
<tr>
<td>BCHE 341</td>
<td>Survey of Biochemistry</td>
</tr>
<tr>
<td>CHEM 211</td>
<td>Organic Chemistry</td>
</tr>
<tr>
<td>HORT 210</td>
<td>Ornamental Plants I</td>
</tr>
<tr>
<td>HORT 211</td>
<td>Ornamental Plants II</td>
</tr>
<tr>
<td>HORT 250</td>
<td>Plant Propagation</td>
</tr>
<tr>
<td>HORT 305</td>
<td>Principles of Genetics</td>
</tr>
<tr>
<td>HORT 307</td>
<td>Landscape Design</td>
</tr>
<tr>
<td>HORT 315</td>
<td>Crop Physiology</td>
</tr>
<tr>
<td>HORT 365</td>
<td>Principles of Crop Production</td>
</tr>
<tr>
<td>HORT 462</td>
<td>Plant Breeding</td>
</tr>
<tr>
<td>HORT 465</td>
<td>Landscape Construction and Maintenance</td>
</tr>
<tr>
<td>HORT 471</td>
<td>Plant Mineral Nutrition</td>
</tr>
<tr>
<td>HORT 485</td>
<td>Vegetable Crop Management</td>
</tr>
<tr>
<td>HORT 488</td>
<td>Greenhouse Management</td>
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<tr>
<td>HORT 492</td>
<td>Diagnosing Plant Disorders</td>
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Select 20-28 credits from the following:

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<tr>
<td>A ST 456</td>
<td>Statistical Methods and Data Analysis</td>
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<tr>
<td>ACCT 221</td>
<td>Financial Accounting</td>
</tr>
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<td>ACCT 222</td>
<td>Management Accounting</td>
</tr>
<tr>
<td>AG E 236</td>
<td>Principles of Food and Agribusiness Management</td>
</tr>
<tr>
<td>AG E 250</td>
<td>Technology and Communication for Business Management</td>
</tr>
<tr>
<td>AG E 305</td>
<td>Marketing and Food Agricultural Products</td>
</tr>
<tr>
<td>AG E 315V</td>
<td>World Agriculture and Food Problems</td>
</tr>
<tr>
<td>AG E 425</td>
<td>Food and Agribusiness Financial Management</td>
</tr>
<tr>
<td>AG E 450</td>
<td>Spreadsheet Applications in Food and Agriculture</td>
</tr>
<tr>
<td>AGRO 303V</td>
<td>Genetics and Society</td>
</tr>
<tr>
<td>AGRO 311</td>
<td>Introduction to Weed Science</td>
</tr>
<tr>
<td>AGRO 483</td>
<td>Sustainable Production of Agronomic Crops</td>
</tr>
<tr>
<td>ANSC 423</td>
<td>Animal Breeding</td>
</tr>
<tr>
<td>ART 150</td>
<td>Drawing I</td>
</tr>
<tr>
<td>or ART 151</td>
<td>Drawing II</td>
</tr>
<tr>
<td>AXED 331</td>
<td>Agricultural Structures</td>
</tr>
<tr>
<td>BCHE 396</td>
<td>Biochemistry II</td>
</tr>
<tr>
<td>BCHE 397</td>
<td>Experimental Biochemistry Laboratory</td>
</tr>
<tr>
<td>BCHE 494</td>
<td>Biochemical Genetics Laboratory</td>
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<tr>
<td>BIOL 301</td>
<td>Principles of Ecology</td>
</tr>
<tr>
<td>BIOL 313</td>
<td>Structure and Function of Plants</td>
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<tr>
<td>BIOL 467</td>
<td>Evolution</td>
</tr>
<tr>
<td>BIOL 478</td>
<td>Molecular Biology of Microorganisms</td>
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<tr>
<td>BLAW 316</td>
<td>Legal Environment of Business</td>
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<tr>
<td>BLAW 385V</td>
<td>Consumers and the Law</td>
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<tr>
<td>BUSA 111</td>
<td>Business in a Global Society</td>
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<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
</tr>
<tr>
<td>EPWS 301</td>
<td>Agricultural Biotechnology</td>
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<tr>
<td>EPWS 373</td>
<td>Fungal Biology</td>
</tr>
<tr>
<td>EPWS 455</td>
<td>Advanced Integrated Pest Management</td>
</tr>
<tr>
<td>EPWS 481</td>
<td>Plant Nematology</td>
</tr>
<tr>
<td>E T 106</td>
<td>Drafting Concepts/Computer Drafting Fundamentals I</td>
</tr>
<tr>
<td>FSTE 320</td>
<td>Food Microbiology</td>
</tr>
<tr>
<td>FSTE 421</td>
<td>Food Chemistry</td>
</tr>
<tr>
<td>GENE 305 L</td>
<td>Genetic Techniques</td>
</tr>
<tr>
<td>HORT 449</td>
<td>Special Problems</td>
</tr>
<tr>
<td>HORT 462</td>
<td>Plant Breeding</td>
</tr>
<tr>
<td>MGT 309</td>
<td>Human Behavior in Organizations</td>
</tr>
<tr>
<td>MGT 315V</td>
<td>Human Relations in Organizations</td>
</tr>
<tr>
<td>MGT 332</td>
<td>Human Resources Management</td>
</tr>
<tr>
<td>MKTG 303</td>
<td>Principles of Marketing</td>
</tr>
<tr>
<td>MKTG 305</td>
<td>Marketing Food and Agricultural Products</td>
</tr>
<tr>
<td>MKTG 313</td>
<td>Retail Management</td>
</tr>
<tr>
<td>SOIL 312</td>
<td>Soil Management and Fertility</td>
</tr>
<tr>
<td>SOIL 350</td>
<td>Soils and Land Use</td>
</tr>
<tr>
<td>SOIL 456</td>
<td>Irrigation and Drainage</td>
</tr>
<tr>
<td>SOIL 476</td>
<td>Soil Microbiology</td>
</tr>
<tr>
<td>SPAN 111</td>
<td>Elementary Spanish I</td>
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<tr>
<td>SPAN 211</td>
<td>Intermediate Spanish I</td>
</tr>
</tbody>
</table>

Total Credits: 32-44

Concentration: Horticulture Business

For this option to satisfy the minor in Business Administration, nine credits must be upper division and nine credits must have one of the following prefixes: ACCT, BUSA, ECON, FIN, MGT, MKTG.

Required Courses
Select 8 from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
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<td>ACCT 221</td>
<td>Financial Accounting</td>
</tr>
<tr>
<td>ACCT 222</td>
<td>Management Accounting</td>
</tr>
<tr>
<td>AG E 236</td>
<td>Principles of Food and Agribusiness Management</td>
</tr>
<tr>
<td>AG E 250</td>
<td>Technology and Communication for Business Management</td>
</tr>
<tr>
<td>AG E 425</td>
<td>Food and Agribusiness Financial Management</td>
</tr>
<tr>
<td>AG E 450</td>
<td>Spreadsheet Applications in Food and Agriculture</td>
</tr>
<tr>
<td>AGRO 303V</td>
<td>Genetics and Society</td>
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<tr>
<td>AGRO 311</td>
<td>Introduction to Weed Science</td>
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<tr>
<td>AGRO 483</td>
<td>Sustainable Production of Agronomic Crops</td>
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<tr>
<td>ANSC 423</td>
<td>Animal Breeding</td>
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<tr>
<td>ART 150</td>
<td>Drawing I</td>
</tr>
<tr>
<td>or ART 151</td>
<td>Drawing II</td>
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<tr>
<td>AXED 331</td>
<td>Agricultural Structures</td>
</tr>
<tr>
<td>BCHE 396</td>
<td>Biochemistry II</td>
</tr>
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<td>BCHE 397</td>
<td>Experimental Biochemistry Laboratory</td>
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<tr>
<td>BIOL 313</td>
<td>Structure and Function of Plants</td>
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<td>BIOL 467</td>
<td>Evolution</td>
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<td>BIOL 478</td>
<td>Molecular Biology of Microorganisms</td>
</tr>
<tr>
<td>BLAW 316</td>
<td>Legal Environment of Business</td>
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<tr>
<td>BLAW 385V</td>
<td>Consumers and the Law</td>
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<tr>
<td>BUSA 111</td>
<td>Business in a Global Society</td>
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<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
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<tr>
<td>ECON 252G</td>
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<td>Plant Nematology</td>
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<tr>
<td>E T 106</td>
<td>Drafting Concepts/Computer Drafting Fundamentals I</td>
</tr>
<tr>
<td>FSTE 320</td>
<td>Food Microbiology</td>
</tr>
<tr>
<td>FSTE 421</td>
<td>Food Chemistry</td>
</tr>
<tr>
<td>GENE 305 L</td>
<td>Genetic Techniques</td>
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<td>Special Problems</td>
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<tr>
<td>HORT 462</td>
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<tr>
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<td>Human Relations in Organizations</td>
</tr>
<tr>
<td>MGT 332</td>
<td>Human Resources Management</td>
</tr>
</tbody>
</table>
Horticulture - Master of Science

MKTG 303  Principles of Marketing
MKTG 305  Marketing Food and Agricultural Products
MKTG 313  Retail Management

Total Credits 24

**Concentration: Landscape Design**

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORT 210</td>
<td>Ornamental Plants I</td>
<td>4</td>
</tr>
<tr>
<td>HORT 211</td>
<td>Ornamental Plants II</td>
<td>4</td>
</tr>
<tr>
<td>HORT 307</td>
<td>Landscape Design</td>
<td>3</td>
</tr>
<tr>
<td>HORT 465</td>
<td>Landscape Construction and Maintenance</td>
<td>4</td>
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</table>

Select 24-26 credits from the following: 24-26

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
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<td>Principles of Food and Agribusiness Management</td>
<td></td>
</tr>
<tr>
<td>AG E 250</td>
<td>Technology and Communication for Business Management</td>
<td></td>
</tr>
<tr>
<td>or C S 110</td>
<td>Computer Literacy</td>
<td></td>
</tr>
<tr>
<td>ART 150</td>
<td>Drawing I</td>
<td></td>
</tr>
<tr>
<td>or ART 151</td>
<td>Drawing II</td>
<td></td>
</tr>
<tr>
<td>AXED 331</td>
<td>Agricultural Structures</td>
<td></td>
</tr>
<tr>
<td>BLAW 316</td>
<td>Legal Environment of Business</td>
<td></td>
</tr>
<tr>
<td>BLAW 385V</td>
<td>Consumers and the Law</td>
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</tr>
<tr>
<td>E T 106</td>
<td>Drafting Concepts/Computer Drafting Fundamentals I</td>
<td></td>
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<tr>
<td>MGT 315V</td>
<td>Human Relations in Organizations</td>
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</tr>
<tr>
<td>MKTG 303</td>
<td>Principles of Marketing</td>
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<tr>
<td>SOIL 350</td>
<td>Soils and Land Use</td>
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<td></td>
</tr>
<tr>
<td>SPAN 111</td>
<td>Elementary Spanish I</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 39-40

3 or similar alternative courses with same prefix and level after consultation with advisor

Horticulture - Master of Science

Prerequisite to major graduate work is completion of a curriculum essentially equivalent to that required by the department for the BS degree at New Mexico State University. Qualifications for admission will be reviewed by the departmental graduate faculty. Applications should include a letter of interest. A 3.0 undergraduate grade-point average is needed for admission to study for the MS degree. The department requires the GRE scores and three letters of recommendation, transcripts, as well as the student’s letter of interest as an admission requirement. Acceptance requires that a graduate faculty member in the applicant’s area of interest accept the student into their program.

Horticulture - Undergraduate Minor

Students majoring in subjects other than Agronomy, Environmental Sciences, Soil Science and Turfgrass Management may pursue a minor in Horticulture. Courses in chemistry (CHEM 111G General Chemistry I/CHEM 112G General Chemistry II) and biology (BIOL 211G Cellular and Organismal Biology) are prerequisites for several of the courses.

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORT 100G</td>
<td>Introductory Plant Science</td>
<td>4</td>
</tr>
<tr>
<td>HORT 250</td>
<td>Plant Propagation</td>
<td>3</td>
</tr>
<tr>
<td>SOIL 252</td>
<td>Soils</td>
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</tr>
<tr>
<td>Select 9 credits from the following: 1</td>
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<table>
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<th>Course</th>
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<tr>
<td>HORT 305</td>
<td>Principles of Genetics</td>
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<tr>
<td>HORT 307</td>
<td>Landscape Design</td>
<td></td>
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<tr>
<td>HORT 310</td>
<td>Medicinal Herbs</td>
<td></td>
</tr>
<tr>
<td>HORT 365</td>
<td>Principles of Crop Production</td>
<td></td>
</tr>
<tr>
<td>HORT 377</td>
<td>Introduction to Turfgrass Management</td>
<td></td>
</tr>
<tr>
<td>HORT 378</td>
<td>Turfgrass Science</td>
<td></td>
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<tr>
<td>HORT 391</td>
<td>Internship</td>
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<tr>
<td>HORT 462</td>
<td>Plant Breeding</td>
<td></td>
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<td>HORT 465</td>
<td>Landscape Construction and Maintenance</td>
<td></td>
</tr>
<tr>
<td>HORT 471</td>
<td>Plant Mineral Nutrition</td>
<td></td>
</tr>
<tr>
<td>HORT 485</td>
<td>Vegetable Crop Management</td>
<td></td>
</tr>
<tr>
<td>HORT 488</td>
<td>Greenhouse Management</td>
<td></td>
</tr>
<tr>
<td>HORT 492</td>
<td>Diagnosing Plant Disorders</td>
<td></td>
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</tbody>
</table>

Total Credits 19
or other upper division HORT courses deemed appropriate by student’s advisor

Plant and Environmental Science - Doctor of Philosophy

Qualifications for admission will be reviewed by the departmental graduate faculty. Applications should include a letter of interest. A 3.3 undergraduate grade-point average is needed for admission for Ph.D. studies. The department requires the GRE scores and three letters of recommendation, transcripts, as well as the student's letter of interest as an admission requirement. Acceptance requires that a graduate faculty member in the applicant’s area of interest accept the student into their program.

A student planning a program leading to a Ph.D. must satisfy one of the following departmental requirements approved by the doctoral committee:

1. A thorough knowledge of a language other than English
2. A reading ability in two foreign languages
3. Reading ability in one foreign language and proficiency with a research tool
4. Reading ability in one foreign language and one semester of supervised teaching experience
5. Proficiency with a research tool and one semester of supervised teaching
6. Two semesters of supervised teaching

A number of graduate assistantships are available each year. Inquiries should be addressed to the department.

Plant and Environmental Science - Master of Science

Qualifications for admission will be reviewed by the departmental graduate faculty. Applications should include a letter of interest. A 3.0 undergraduate grade-point average is needed for admission to study for the M.S degree. The department requires the GRE scores and three letters of recommendation, transcripts, as well as the student’s letter of interest as an admission requirement. Acceptance requires that a graduate faculty member in the applicant’s area of interest accept the student into their program.

Soil Science - Bachelor of Science in Agriculture

Soil scientists investigate the physical, chemical and biological characteristics and behaviors of soils, their description and classification, and their management for both agricultural and non-agricultural uses. Career opportunities include: industry jobs; environmental consulting firms; and federal, state and local government careers working on various environmental, agricultural and ecological projects.

Requirements

In addition to the courses listed for each major, you must take 35 credits in the College of Agricultural, Consumer and Environmental Sciences. You must also meet university general education requirements. At least 24 credits of soil science related courses with a grade of C- or above including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SOIL 252</td>
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<tr>
<td>SOIL 252 L</td>
<td>Soils Laboratory</td>
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<tr>
<td>SOIL 312</td>
<td>Soil Management and Fertility</td>
<td>3</td>
</tr>
<tr>
<td>SOIL 312 L</td>
<td>Soil Management and Fertility Lab</td>
<td>1</td>
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<td>SOIL 447</td>
<td>Seminar</td>
<td>1</td>
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<td>SOIL 424</td>
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<tr>
<td>SOIL 456</td>
<td>Irrigation and Drainage</td>
<td>3</td>
</tr>
<tr>
<td>SOIL 472</td>
<td>Soil Morphology and Classification</td>
<td>4</td>
</tr>
<tr>
<td>SOIL 476</td>
<td>Soil Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>SOIL 477</td>
<td>Environmental Soil Physics</td>
<td>3</td>
</tr>
</tbody>
</table>

Soil Science Options

Three options are available in soil science. In each case, your academic advisor has a list of appropriate courses.

Option: Environment and Resource Management

Soil science is integrated into the management of the environment and natural resources. Students interested in careers of conservation, environmental management, urban planning, waste disposal and related fields in government and industry may choose from a variety of course offerings. The economic and social implications as well as the technological aspects of resource management are included in the option courses.

You must select one course from each of the four following subject matter areas and a total of at least ten courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>A EN 475</td>
<td>Soil and Water Conservation</td>
</tr>
<tr>
<td>A EN 478</td>
<td>Irrigation and Drainage Engineering</td>
</tr>
<tr>
<td>C E 256</td>
<td>Environmental Engineering and Science</td>
</tr>
<tr>
<td>C E 331</td>
<td>Fluid Mechanics and Hydraulics</td>
</tr>
<tr>
<td>C E 356</td>
<td>Fundamentals of Environmental Engineering</td>
</tr>
<tr>
<td>C E 357</td>
<td>Soil Mechanics</td>
</tr>
<tr>
<td>C E 482</td>
<td>Hydraulic Structures</td>
</tr>
<tr>
<td>C E 483</td>
<td>Surface Water Hydrology</td>
</tr>
<tr>
<td>RGSC 294</td>
<td>Rangeland Resource Management</td>
</tr>
<tr>
<td>RGSC 318</td>
<td>Watershed Management</td>
</tr>
</tbody>
</table>
Soil Science - Bachelor of Science in Agriculture

RGSC 325  Rangeland Restoration Ecology
RGSC 440  Rangeland Resource Ecology
RGSC 460  Rangeland and Natural Resource Planning and Management

Any SOIL Course

Any FWCE course numbered 255-499

Ecology, Plant Biology or Crop Production:
AGRO 311  Introduction to Weed Science
AGRO 315  Crop Physiology
AGRO 365  Principles of Crop Production
AGRO 462  Plant Breeding
AGRO 471  Plant Mineral Nutrition
AGRO 483  Sustainable Production of Agronomic Crops
AGRO 492  Diagnosing Plant Disorders
BIOL 301  Principles of Ecology
BIOL 312  Plant Taxonomy
BIOL 314  Plant Physiology
BIOL 408  Ecology of Plants
BIOL 462  Conservation Biology
BIOL 470  Developmental Biology
BIOL 471  Molecular and Cellular Mycology
BIOL 473  Ecology of Microorganisms
BIOL 477  Applied and Environmental Microbiology
E S 423  Environmental Toxicology
EPWS 303  Economic Entomology
EPWS 310  Plant Pathology
EPWS 311  Introduction to Weed Science
EPWS 373  Fungal Biology
EPWS 455  Advanced Integrated Pest Management
EPWS 462  Parasitology
EPWS 481  Plant Nematology
EPWS 486  Plant Virology
EPWS 492  Diagnosing Plant Disorders
HORT 205  Introduction to Horticulture
HORT 250  Plant Propagation
HORT 307  Landscape Design
HORT 310  Medicinal Herbs
HORT 465  Landscape Construction and Maintenance
HORT 471  Plant Mineral Nutrition
HORT 485  Vegetable Crop Management
HORT 488  Greenhouse Management
TOX 361  Basic Toxicology
TOX 461  Toxicology I

Earth, Mineral or Climatic Resources:
AG E 315V  World Agriculture and Food Problems
AG E 337V  Natural Resource Economics
AG E 384V  Water Resource Economics
AG E 385  Applied Production Economics
AG E 456  Case Studies in Food and Agribusiness Management

Any GEOG course numbered 257-499
Any GEOL course numbered 295-499
Any SUR course

Math, Statistical or Computer Sciences:
A ST 311  Statistical Applications
Any 300-level BCIS course
Any 300-level C S course
Any 300-level CHEM course
Any 300-level MATH course
Any 300-level PHYS course
Any STAT course numbered 311-499

Total Credits 30

Option: Soils

Crop production and plant growth are emphasized in the general soils option. Soil management, soil conservation, and soil reclamation are related to plant growth for those students interested in both private industry and government employment opportunities as well as farm management.

You must select one course from each of the four following subject matter areas and a total of at least ten courses:

Soil, Water and Agricultural Business Management:
GEOG 381  Cartography and Geographic Information Systems
GEOG 481  Fundamentals of Geographic Information Science and Technology (GIS & T)
GEOL 295  Environmental Geology
GEOL 353  Geomorphology
GEOL 475  Geology of Mineral Resources
Any AG E course
Any SOIL course

Crop Production and Protection:
AGRO 311  Introduction to Weed Science
AGRO 365  Principles of Crop Production
AGRO 471  Plant Mineral Nutrition
AGRO 483  Sustainable Production of Agronomic Crops
AGRO 485  Materials from Biorenewable Resources
AGRO 492  Diagnosing Plant Disorders
HORT 250  Plant Propagation
HORT 307  Landscape Design
HORT 310  Medicinal Herbs
HORT 365  Principles of Crop Production
HORT 462  Plant Breeding
HORT 465  Landscape Construction and Maintenance
HORT 485  Vegetable Crop Management
Any EPWS course

Plant Biology and Ecology:
BIOL 301  Principles of Ecology
BIOL 312  Plant Taxonomy
BIOL 314  Plant Physiology
BIOL 408  Ecology of Plants
<table>
<thead>
<tr>
<th>Course Code</th>
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<tr>
<td>BIOL 462</td>
<td>Conservation Biology</td>
</tr>
<tr>
<td>BIOL 470</td>
<td>Developmental Biology</td>
</tr>
<tr>
<td>BIOL 471</td>
<td>Molecular and Cellular Mycology</td>
</tr>
<tr>
<td>CE 256</td>
<td>Environmental Engineering and Science</td>
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<tr>
<td>CE 355V</td>
<td>Technology and the Global Environment</td>
</tr>
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<td>RGSC 294</td>
<td>Rangeland Resource Management</td>
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<tr>
<td>RGSC 316</td>
<td>Rangeland Plants</td>
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<td>RGSC 317</td>
<td>Rangeland Communities</td>
</tr>
<tr>
<td>RGSC 325</td>
<td>Rangeland Restoration Ecology</td>
</tr>
<tr>
<td>RGSC 357</td>
<td>Grass Taxonomy and Identification</td>
</tr>
<tr>
<td>RGSC 440</td>
<td>Rangeland Resource Ecology</td>
</tr>
<tr>
<td>RGSC 452</td>
<td>Vegetation Measurements for Rangeland Assessment</td>
</tr>
<tr>
<td>RGSC 460</td>
<td>Rangeland and Natural Resource Planning and Management</td>
</tr>
</tbody>
</table>

**Advanced Science, Computing and Statistics:**

- Any 300-level BCIS course
- Any 300-level C S course
- Any 300-level CHEM course
- Any 300-level MATH course
- Any 300-level PHYS course
- Any STAT course numbered 311-499

**Total Credits:** 30

**Option: Soil and Water Science**

The soil and water science option is for students interested in careers in water management and water quality. Employment opportunities exist with irrigation districts, consulting firms, and government agencies dealing with water management and quality. The optimum use of water in semi-arid areas is emphasized through selection of courses in the technical and social sciences.

You must select one course from each of the four following subject matter areas and a total of at least ten courses:

**Crop Production and Water Use:**

- AGRO 365 Principles of Crop Production
- AGRO 471 Plant Mineral Nutrition
- AGRO 483 Sustainable Production of Agronomic Crops
- AGRO 492 Diagnosing Plant Disorders
- EPWS 311 Introduction to Weed Science
- EPWS 314 Plant Physiology
- HORT 307 Landscape Design
- HORT 315 Crop Physiology
- HORT 462 Plant Breeding
- HORT 485 Vegetable Crop Management
- HORT 488 Greenhouse Management

**Soil and Water Engineering and Management:**

- A EN 459 Design of Water Wells/Pumping Systems
- A EN 475 Soil and Water Conservation
- A EN 478 Irrigation and Drainage Engineering
- AG E 337V Natural Resource Economics
- CE 256 Environmental Engineering and Science

- CE 356 Fundamentals of Environmental Engineering
- CE 357 Soil Mechanics
- CE 382 Hydraulic and Hydrologic Engineering
- CE 452 Geohydrology
- CE 482 Hydraulic Structures
- CE 483 Surface Water Hydrology

**Total Credits:** 30

**Soil Science - Undergraduate Minor**

College of Agriculture and Home Economics constants are not required for those students majoring in other colleges. However, CHEM 111G General Chemistry I and concurrent enrollment in CHEM 112G General Chemistry II are prerequisites for most SOIL courses.

**Required Courses**

- SOIL 252 Soils 3
- SOIL 252 L Soils Laboratory 1
- SOIL 312 Soil Management and Fertility 3
- SOIL 312 L Soil Management and Fertility Lab 1
Turfgrass Science and Management - Bachelor of Science in Agriculture

Turfgrass managers help build, maintain, and manage golf courses, athletic fields, parks, and other recreational areas. The curriculum of each option allows you to focus on a specific segment of the turfgrass industry. All majors are required to pursue two internships with a golf course, parks department, athletic field, lawn care operator or other acceptable turfgrass segment. A grade of C- or above in all Core & Option credits is required.

Requirements

Core Requirements I

- CHEM 111G General Chemistry I 4
- CHEM 112G General Chemistry II 4
- EPWS 311 Introduction to Weed Science 4
- EPWS 314 Plant Physiology 3
- HORT 377 Introduction to Turfgrass Management 4
- HORT 378 Turfgrass Science 4
- HORT 391 Internship (two internships) 1-6
- HORT 447 Seminar 1
- HORT 479 Advanced Turfgrass Science 3
- MATH 121G College Algebra 3
- or MATH 142G Calculus for the Biological and Management Sciences 3
- SOIL 252 Soils 3
- BIOL 211G Cellular and Organismal Biology 3

Core Requirements II

Select 27 credits from the following: 1

- CHEM 211 Organic Chemistry 3
- EPWS 303 Economic Entomology 3
- EPWS 310 Plant Pathology 3
- HORT 100G Introductory Plant Science 3
- HORT 110 Athletic Field and Golf Course Management 3
- HORT 210 Ornamental Plants I 3
- HORT 211 Ornamental Plants II 3
- HORT 250 Plant Propagation 3
- HORT 300 Special Topics 3
- HORT 305 Principles of Genetics 3
- HORT 307 Landscape Design 3
- HORT 365 Principles of Crop Production 3
- HORT 450 Special Topics 3
- HORT 462 Plant Breeding 3
- HORT 471 Plant Mineral Nutrition 3
- HORT 492 Diagnosing Plant Disorders 3
- P E 250 Intermediate Golf 3
- SOIL 252 Soils 3
- SOIL 252 L Soils Laboratory 3
- SOIL 312 Soil Management and Fertility 3
- SOIL 312 L Soil Management and Fertility Lab 3
- SOIL 350 Soils and Land Use 3
- SOIL 424 Soil Chemistry 3
- SOIL 456 Irrigation and Drainage 3
- SOIL 476 Soil Microbiology 3
- SOIL 476 L Soil Microbiology Laboratory 3
- SOIL 477 Environmental Soil Physics 3
- SOIL 477 L Environmental Soil Physics Laboratory 3
- SPAN 212 Intermediate Spanish II 3

Program Options

Select 15-18 credits from one of the following options: 15-18

Athletic Field Management Athletics
- Golf Course Management
- Turfgrass Business
- Turfgrass Science

Total Credits 79-87

1 with a grade of C- or above in Core Requirements II

Option: Athletic Field Management Athletics

Required Courses

Select 7 credits from the following: 7

- BLAW 313 Sports and the Law 3
- P E 117 Beginning Soccer 3
- P E 250 Intermediate Golf 3
- PE P 296 Theory of Coaching I 3
- PE P 323 Racquet Sports 3
- PE P 394 Designing Student Centered Afterschool Physical Activity Clubs 3

Business

Select two from the following: 6

- AG E 236 Principles of Food and Agribusiness Management 3
- ECON 337V Natural Resource Economics 3
- ECON 384V Water Resource Economics 3
- ECON 406 The Economics of Sports 3
- FIN 206 Introduction to Finance 3
- or FIN 341 Financial Analysis and Markets 3
- MGT 315V Human Relations in Organizations 3
- or MGT 309 Human Behavior in Organizations 3
- MGT 332 Human Resources Management 3
- SPAN 212 Intermediate Spanish II 3

Technical

Select 3 credits from the following: 3

- AXED 303 Small Engine Technology 3
- HORT 300 Special Topics 3

Total Credits 16

Option: Golf Course Management

Required Courses

Turfgrass Science and Management - Bachelor of Science in Agriculture
### Business

Select two from the following: 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>AG E 236</td>
<td>Principles of Food and Agribusiness Management</td>
</tr>
<tr>
<td>BLAW 313</td>
<td>Sports and the Law</td>
</tr>
<tr>
<td>ECON 337V</td>
<td>Natural Resource Economics</td>
</tr>
<tr>
<td>ECON 384V</td>
<td>Water Resource Economics</td>
</tr>
<tr>
<td>ECON 406</td>
<td>The Economics of Sports</td>
</tr>
<tr>
<td>FIN 206</td>
<td>Introduction to Finance</td>
</tr>
<tr>
<td>or FIN 341</td>
<td>Financial Analysis and Markets</td>
</tr>
<tr>
<td>MGT 315V</td>
<td>Human Relations in Organizations</td>
</tr>
<tr>
<td>or MGT 309</td>
<td>Human Behavior in Organizations</td>
</tr>
<tr>
<td>MGT 332</td>
<td>Human Resources Management</td>
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<tr>
<td>MKTG 354</td>
<td>Sports Marketing</td>
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### Science

Select 6 credits from the following: 6

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<tbody>
<tr>
<td>BIOL 221</td>
<td>Introductory Microbiology</td>
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<td>BIOL 311</td>
<td>General Microbiology</td>
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<td>BIOL 312</td>
<td>Plant Taxonomy</td>
</tr>
<tr>
<td>BIOL 313</td>
<td>Structure and Function of Plants</td>
</tr>
<tr>
<td>CHEM 211</td>
<td>Organic Chemistry</td>
</tr>
<tr>
<td>EPWS 303</td>
<td>Economic Entomology</td>
</tr>
<tr>
<td>EPWS 310</td>
<td>Plant Pathology</td>
</tr>
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<td>EPWS 455</td>
<td>Advanced Integrated Pest Management</td>
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### Technical

Select 3 credits from the following: 3

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<tr>
<td>HORT 300</td>
<td>Special Topics</td>
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Total Credits 15

### Option: Turfgrass Business

**Required Courses**

**Personnel Management**

Select two from the following: 6

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<th>Title</th>
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<td>MGT 315V</td>
<td>Human Relations in Organizations</td>
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<tr>
<td>or MGT 309</td>
<td>Human Behavior in Organizations</td>
</tr>
<tr>
<td>MGT 332</td>
<td>Human Resources Management</td>
</tr>
<tr>
<td>MGT 333</td>
<td>Training and Development</td>
</tr>
<tr>
<td>MGT 359</td>
<td>The Management of Diversity</td>
</tr>
<tr>
<td>SPAN 212</td>
<td>Intermediate Spanish II</td>
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</table>

**Economics and Finance**

Select one from the following: 3

<table>
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<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>ACCT 200</td>
<td>A Survey of Accounting</td>
</tr>
<tr>
<td>AG E 236</td>
<td>Principles of Food and Agribusiness Management</td>
</tr>
<tr>
<td>BLAW 313</td>
<td>Sports and the Law</td>
</tr>
<tr>
<td>ECON 337V</td>
<td>Natural Resource Economics</td>
</tr>
<tr>
<td>ECON 384V</td>
<td>Water Resource Economics</td>
</tr>
<tr>
<td>ECON 406</td>
<td>The Economics of Sports</td>
</tr>
<tr>
<td>FIN 206</td>
<td>Introduction to Finance</td>
</tr>
<tr>
<td>or FIN 341</td>
<td>Financial Analysis and Markets</td>
</tr>
<tr>
<td>MGT 351</td>
<td>Supply Chain Management</td>
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Total Credits 18

### Science and Technical

Select 6 credits from the following: 6

<table>
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<th>Course</th>
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<tbody>
<tr>
<td>AXED 303</td>
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<tr>
<td>CHEM 211</td>
<td>Organic Chemistry</td>
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<tr>
<td>EPWS 303</td>
<td>Economic Entomology</td>
</tr>
<tr>
<td>EPWS 310</td>
<td>Plant Pathology</td>
</tr>
<tr>
<td>EPWS 455</td>
<td>Advanced Integrated Pest Management</td>
</tr>
<tr>
<td>HORT 300</td>
<td>Special Topics</td>
</tr>
</tbody>
</table>

Total Credits 15

### Option: Turfgrass Science

**Required Courses**

**Science I**

Select 6 credits from the following: 6

<table>
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<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
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<tr>
<td>A ST 456</td>
<td>Statistical Methods and Data Analysis</td>
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<tr>
<td>BCHE 341</td>
<td>Survey of Biochemistry</td>
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<td>BCHE 395</td>
<td>Biochemistry I</td>
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<td>BIOL 221</td>
<td>Introductory Microbiology</td>
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<td>General Microbiology</td>
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<td>BIOL 313</td>
<td>Structure and Function of Plants</td>
</tr>
<tr>
<td>CHEM 211</td>
<td>Organic Chemistry</td>
</tr>
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</table>

**Science II**

Select 6 credits from the following: 6

<table>
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<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>EPWS 303</td>
<td>Economic Entomology</td>
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<tr>
<td>EPWS 310</td>
<td>Plant Pathology</td>
</tr>
<tr>
<td>EPWS 420</td>
<td>Environmental Behavior of Pesticides</td>
</tr>
<tr>
<td>EPWS 455</td>
<td>Advanced Integrated Pest Management</td>
</tr>
<tr>
<td>ECON 384V</td>
<td>Water Resource Economics</td>
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</table>

**Business and Technical**

Select 6 credits from the following: 6

<table>
<thead>
<tr>
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<th>Title</th>
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</thead>
<tbody>
<tr>
<td>AXED 303</td>
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<td>BLAW 313</td>
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<td>MGT 332</td>
<td>Human Resources Management</td>
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<td>MGT 351</td>
<td>Supply Chain Management</td>
</tr>
<tr>
<td>MKTG 354</td>
<td>Sports Marketing</td>
</tr>
</tbody>
</table>

Total Credits 18

### Turfgrass Science and Management - Undergraduate Minor

NMSU Requirements: 18 credits; 9 must be upper division. Grades of C- or better are required in all courses applied to the minor.
### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORT 100G</td>
<td>Introductory Plant Science</td>
<td>4</td>
</tr>
<tr>
<td>HORT 110</td>
<td>Athletic Field and Golf Course Management</td>
<td>1</td>
</tr>
<tr>
<td>HORT 378</td>
<td>Turfgrass Science</td>
<td>4</td>
</tr>
<tr>
<td>HORT 479</td>
<td>Advanced Turfgrass Science</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 6 or more credits from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRO 311</td>
<td>Introduction to Weed Science</td>
<td></td>
</tr>
<tr>
<td>EPWS 310</td>
<td>Plant Pathology</td>
<td></td>
</tr>
<tr>
<td>EPWS 314</td>
<td>Plant Physiology</td>
<td></td>
</tr>
<tr>
<td>HORT 377</td>
<td>Introduction to Turfgrass Management</td>
<td></td>
</tr>
<tr>
<td>HORT 391</td>
<td>Internship</td>
<td></td>
</tr>
<tr>
<td>HORT 471</td>
<td>Plant Mineral Nutrition</td>
<td></td>
</tr>
<tr>
<td>HORT 492</td>
<td>Diagnosing Plant Disorders</td>
<td></td>
</tr>
<tr>
<td>SOIL 252</td>
<td>Soils</td>
<td></td>
</tr>
<tr>
<td>SOIL 252 L</td>
<td>Soils Laboratory</td>
<td></td>
</tr>
<tr>
<td>SOIL 312</td>
<td>Soil Management and Fertility</td>
<td></td>
</tr>
<tr>
<td>SOIL 312 L</td>
<td>Soil Management and Fertility Lab</td>
<td></td>
</tr>
<tr>
<td>SOIL 424</td>
<td>Soil Chemistry</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 18

---

### School of Hotel, Restaurant and Tourism Management

#### Undergraduate Program Information

The School of Hotel, Restaurant & Tourism Management is committed to the broad land-grant mission of New Mexico State University. The school's mission is to serve the needs of our constituents through innovative teaching, research, service, professional applications and partnerships in a multi-cultural and international environment.

This bachelor degree program prepares students for supervisory and management positions in all areas of the diverse and growing hospitality and tourism industry. The program also provides a foundation for continuing development to advance to more senior management or to pursue entrepreneurial opportunities. In this professional program, faculty, students and industry partners bring together theory and practice to forge hospitality management excellence. The curriculum is designed to educate students as individuals and professionals in a changing society. Students will take a core curriculum until senior year, when they develop an individual plan with a faculty advisor for selecting professional elective courses. A grade of C- or better must be earned in each upper-division HRTM class to satisfy the requirement of the major.

Students are required to participate in an internship program that is offered only after completion of 400 hours of hospitality work experience (practicum). The HRTM 307 Professional Development, HRTM 408 Hospitality Internship, and HRTM 409 HRTM Internship Seminar internship sequence, which includes another 400 hours in the field, must be completed prior to enrolling in other 400-level professional electives. Thus, at the end of both the work experience practicum and the internship, students will have completed a minimum of 800 hours professional work experience in the field.

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### Degree for the Department

#### Hotel, Restaurant and Tourism Management - Bachelor of Science (p. 170)

Hotel, Restaurant and Tourism Management - Undergraduate Minor (p. 171)

**Director** - Jean Hertzman

**Professors** - Priscilla Bloomquist; Jean Hertzman; Keith Mandabach; Betsy Stringam **Associate Professors** - Gregory Blanch **College Assistant Professors** - Daren Bloomquist; Julie Correa; John Hartley; Peter Mitchell

**HRTM 111. Freshman Orientation**
1 Credit
Orientation to university life, including available resources and methods to promote success at NMSU. Open to all freshmen and transfer students. Graded S/U.

**HRTM 200. Special Topics**
1-4 Credits
Specific subjects and credits to be assigned on a semester basis for both lecture and laboratory assignments. May be repeated for a maximum of 4 credits.

**Prerequisite:** consent of instructor.

**HRTM 201. Introduction to Tourism**
3 Credits
Survey of travel and tourism development and operating characteristics.

**HRTM 221. Introduction to Hospitality Management**
3 Credits
Overview of the major segments of the hospitality industry, with a focus on basic management principles.

**HRTM 231. Safety, Sanitation and Health in the Hospitality Industry**
2 Credits
Addresses public health, HACCP, safety and culinary nutrition responsibilities in the hospitality industry. Sanitation certification test allows students to receive national credential.

**HRTM 263. Food Production and Service Fundamentals**
3 Credits (1+4P)
Basic overview of food service systems including menu management, purchasing and production. The course includes basic principles of food fabrication and production. Topics include knife skills, culinary terminology, product identification, quality standards, nutritional cooking theory and application of food preparation techniques. The course includes laboratory aspects and demonstration of basic food production techniques, service styles, practices and procedures in food service operations including culinary math. This course provides students with an understanding of food service sanitation and culinary nutrition. Completion of a national certification examination is required. Restricted to Las Cruces campus only.

**Prerequisite(s):** HRTM 221 or FSTE 263G.

**HRTM 301. Hotel, Restaurant, and Tourism Marketing**
3 Credits
The development of effective marketing programs for hospitality service organizations. Prerequisites: HRTM 221
HRTM 302. Hospitality Management Accounting
3 Credits
Specialized accounting for hotel revenue and expenses; accounting for inventory, property, and equipment; hospitality payroll accounting; hotel departmental financial statements; income statement, balance sheet, and statement of cash flows; the analysis of financial statements; interim and annual reports; budgeting expenses; forecasting sales; budgetary reporting and analysis; and financial decision making.
Prerequisite: ACCT 221.

HRTM 304. Hospitality and Travel Law
3 Credits
Specialized applications of the law to the hospitality and tourism industry.
Prerequisite: HRTM 221.

HRTM 307. Professional Development
1 Credit
Covers essential elements of career management including preparation for a successful internship. Restricted to majors. Graded S/U.

HRTM 311. Hospitality Leadership Management
3 Credits
Examines modern leadership theory in the context of the hospitality industry. Connects contemporary leadership topics to their historical antecedents through focused reading, discussion and film.
Prerequisites: HRTM 221 and HRTM 201.

HRTM 331. Hotel Operations I
3 Credits
Analysis of hotel systems design, process, and applications for operating areas including guest services, reservations, reception, telecommunications, guest/city ledger, and the night audit.
Prerequisites: HRTM 201 and HRTM 221.

HRTM 363. Quantity Food Production and Service
6 Credits (1+10P)
Covers quantity food production including cooking concepts, sanitation and safety, teamwork, and management responsibilities. Students will apply this knowledge developing product for sale in a student run restaurant. Proof of current ServSafe or NM Food Handler certification required. May be repeated up to 6 credits. Crosslisted with: HNDS 363.
Prerequisite(s): HRTM 263.

HRTM 404. Gaming Operations and Organization
3 Credits
Introduction to the multi-billion-dollar industry, including an historical overview, social and economic impacts of gaming, and casino operations.
Prerequisites: HRTM 201 and HRTM 221.

HRTM 408. Hospitality Internship
1 Credit
Hospitality and tourism professional work experience for HRTM majors only. Restricted to majors.
Prerequisites: HRTM 307 and consent of instructor.

HRTM 409. HRTM Internship Seminar
1 Credit
A case based approach to analyzing internship experiences. Students will write case studies about specific business issues they encountered during HRTM 408 (Internship) and analyze them. Restricted to majors.
Prerequisites: HRTM 408.

HRTM 410. Hospitality Cost Control
3 Credits
Familiarizes students with all aspects of cost control including financial data entry and hospitality accounting practices, financial report production, analysis and problem solving. Students will learn to understand the roles of the various stakeholders (owners, managers, employees and customers.) Provides tools needed to communicate effectively about global financial issues affecting the hospitality business.
Prerequisite: HRTM 408.

HRTM 412. Beverage Management
3 Credits
Survey of all aspects of beverage management, including wine/beer/distilled spirits origins and trends, cost control, bar management, beverage purchasing, and wine appreciation.
Prerequisite: HRTM 408.

HRTM 413. Restaurant Operations Management
4 Credits (1+6P)
Provides a detailed understanding of the processes of restaurant operations management. Students are expected to increase kitchen technical skills, learn to cook from recipes and develop a personal culinary style. Provides the opportunity to perform a detailed analysis of a food and beverage operation, including running and selectively analyzing the reports from systems. Proof of current NM Alcohol Server certification required. May be repeated up to 4 credits.
Prerequisite(s): HRTM 363.

HRTM 414. International Food and Wine
3 Credits
An experiential examination of wine through lectures, films, guest speakers and focused tasting of food and wine. Topics include viticulture, wine making varietals, terroir, and food pairings. Student must be at least 21 years old.
Prerequisite: consent of instructor.

HRTM 420. Club Management and Marketing
3 Credits
Provides an understanding of the general operational and administrative procedures practiced in private clubs from a marketing perspective with a special emphasis on managing and marketing club food and beverage operations and service. It will provide the professional golf management and hospitality students with the unique sensitivities required in managing and operating in the increasingly lucrative club management market.

HRTM 430. Hospitality Facilities Management
3 Credits
Exploration of the engineering and maintenance requirements specific to the hospitality industry. Emphasis on environmental issues, renovation and management of the physical plant.
Prerequisite(s): HRTM 331, HRTM 408.

HRTM 431. Hotel Operations II
3 Credits
The duties and administration of a hotel front office, including housekeeping. Additional focus on the procedures of reservations and night audit. Students also gain exposure to property management systems.
Prerequisite(s): HRTM 331, HRTM 408.
HRTM 432. Hotel Revenue and Sales Management
3 Credits
Examines methods used for profitably managing capacity, including dynamic pricing and allocation of the rooms inventory across market segments to maximize revenues. Focuses on the integration of revenue management principles with information technology, management, marketing and sales concerns at the property and market level. 
Prerequisite: HRTM 408.

HRTM 433. Training for Hospitality Operations
3 Credits
Analysis of training needs and methods in hospitality organizations. 
Prerequisite(s): MGT 332.

HRTM 434. Senior Capstone Experience
3 Credits
Synthesizes all previous work. Students apply multi-disciplinary principles to the analysis of hospitality business cases and tourism problems. 
Prerequisite: HRTM 408.

HRTM 443. Meetings, Conventions and Special Events
3 Credits
Examination of the role of the meeting/event planner, including setting objectives, site selection, negotiations, design, budgeting, marketing, registration, on-site logistics, and evaluation. May be repeated up to 3 credits. Consent of Instructor required. 
Prerequisite(s): HRTM 408.

HRTM 450. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits. 
Prerequisite: consent of instructor.

HRTM 492. Special Problems
1-4 Credits
Individual research in a selected subject area of hospitality management. Maximum of 4 credits per semester and a total of 6 credits toward a degree. 
Prerequisite: consent of instructor.

HRTM 507. Hospitality and Tourism Internship
3 Credits
Supervised placement in a hospitality or tourism organization. An in-depth written report of the experience is required. Graded S/U. 
Prerequisite: consent of instructor.

HRTM 530. Facilities Management
3 Credits
Exploration of the engineering and maintenance requirements specific to the hospitality industry. Emphasis on environmental issues, renovation and management of the physical plant. Same as HRTM 430 with additional work for graduate credit. Consent of Instructor required.

HRTM 531. Hotel Operations II
3 Credits
The duties and administration of a hotel front office, including housekeeping. Additional focus on the procedures of reservations and night audit. Students also gain exposure to property management systems. Same as HRTM 431 with additional work for graduate credit. Consent of Instructor required.

HRTM 532. HOTEL REV/SALES MGT
3 Credits
Examines methods used for profitably managing capacity, including dynamic pricing and allocation of the rooms inventory across market segments to maximize revenues. Focuses on the integration of revenue management principles with information technology, management, marketing and sales concerns at the property and market level. Same as HRTM 432 with additional work for graduate credit. Consent of Instructor required.

HRTM 534. Meetings, Conventions and Special Events
3 Credits
Examination of the role of the meeting/event planner, including setting objectives, site selection, negotiations, design, budgeting, marketing, registration, on-site logistics, and evaluation. Same as HRTM 443 with additional work for graduate credit. Consent of Instructor required.

HRTM 543. Meetings, Conventions and Special Events
3 Credits
Examination of the role of the meeting/event planner, including setting objectives, site selection, negotiations, design, budgeting, marketing, registration, on-site logistics, and evaluation. Same as HRTM 443 with additional work for graduate credit. Consent of Instructor required.

HRTM 550. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree. 
Prerequisite: consent of instructor.

HRTM 598. Special Research Programs
1-4 Credits
Individual investigations, either analytical or experimental. Maximum of 4 credits per semester and no more than 6 credits toward a degree. 
Prerequisite: consent of instructor.

HRTM 599. Master’s Thesis
6 Credits
Thesis. 
Prerequisite: consent of instructor.

Name: Dr. Jean Hertzman, Director
Office Location: Gerald Thomas Hall 138
Phone: (575) 646-5995
Website: http://aces.nmsu.edu/academics/shrtm/

Hotel, Restaurant and Tourism Management - Bachelor of Science

Core Courses

General Education Requirements
Select 36 credits of general education requirements and 6 credits of Viewing A Wider World Courses. 1, 2
## Departmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRTM 201</td>
<td>Introduction to Tourism</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 221</td>
<td>Introduction to Hospitality Management</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 263</td>
<td>Food Production and Service Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 301</td>
<td>Hotel, Restaurant, and Tourism Marketing</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 302</td>
<td>Hospitality Management Accounting</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 304</td>
<td>Hospitality and Travel Law</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 307</td>
<td>Professional Development</td>
<td>1</td>
</tr>
<tr>
<td>HRTM 311</td>
<td>Hospitality Leadership Management</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 331</td>
<td>Hotel Operations I</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 363</td>
<td>Quantity Food Production and Service Fundamentals</td>
<td>6</td>
</tr>
<tr>
<td>HRTM 408</td>
<td>Hospitality Internship Seminar</td>
<td>1</td>
</tr>
<tr>
<td>HRTM 410</td>
<td>Hospitality Cost Control</td>
<td>3</td>
</tr>
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<td>HRTM 430</td>
<td>Hospitality Facilities Management</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 434</td>
<td>Senior Capstone Experience</td>
<td>3</td>
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## Nondepartmental Requirements

<table>
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<tbody>
<tr>
<td>A ST 251G</td>
<td>Statistics for Business and the Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td>or STAT 251G</td>
<td>Statistics for Business and the Behavioral Sciences</td>
<td></td>
</tr>
<tr>
<td>ACCT 221</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
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</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 201G</td>
<td>Introduction to Economics</td>
<td>3</td>
<td>3-6</td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>&amp; ECON 252G</td>
<td>Principles of Microeconomics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>FIN 341</td>
<td>Financial Analysis and Markets</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MGT 309</td>
<td>Human Behavior in Organizations</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MGT 332</td>
<td>Human Resources Management</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SPAN 111</td>
<td>Elementary Spanish I (or any higher level Spanish course)</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Any MKTG #300 and above

### Departmental Electives

Select 9 credits of Professional Departmental Electives in consultation with your advisor.

Student may need open elective credits to bring total credits to 120 credits for graduation.

Total Credits: 118-121

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1. A list of specific general education requirements available in the department. Please check with your advisor.
2. Viewing A Wider World Requirement - Two courses in two different colleges, with at least one from outside ACES. See list of approved courses in the catalog. (300+ level courses with a "V" behind them.)
3. Complete during final semester.
4. Counts as Area II - Math/Algebra requirement
5. Counts as Area IV - Social/Behavioral Sciences requirement

## Hotel, Restaurant and Tourism Management - Undergraduate Minor

A minor in the School of Hotel, Restaurant and Tourism Management consists of 18 or more credit hours of approved course work of which at least 12 must be numbered 300 or higher: all completed with a grade of "C" or higher.

### Requirements

#### Required Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRTM 221</td>
<td>Introduction to Hospitality Management</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 302</td>
<td>Hospitality Management Accounting</td>
<td>3</td>
</tr>
</tbody>
</table>

Choose one additional HRTM course (200-level):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRTM 201</td>
<td>Introduction to Tourism</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 263</td>
<td>Food Production and Service Fundamentals</td>
<td>3</td>
</tr>
</tbody>
</table>

Choose nine credits of 300-level courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRTM 301</td>
<td>Hotel, Restaurant, and Tourism Marketing</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 311</td>
<td>Hospitality Leadership Management</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 331</td>
<td>Hotel Operations I</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 408</td>
<td>Hospitality Internship Seminar</td>
<td>1</td>
</tr>
<tr>
<td>HRTM 410</td>
<td>Hospitality Cost Control</td>
<td>3</td>
</tr>
<tr>
<td>HRTM 434</td>
<td>Senior Capstone Experience</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 18

Permission to take the Hospitality Internship sequence of classes or HRTM 400 level classes may be granted on an individual basis.

## Water Science and Management Graduate Program Information

New Mexico faces serious challenges concerning the supply, development, quality, management and administration of water resources; responses to the challenges will have major impacts on the regional economy, environmental quality and the quality of life of the residents of New Mexico. A major need exists to train the next generation of water resource researchers, educators, and managers to address these challenges, both inside and outside New Mexico. To help meet these needs, an interdisciplinary program in Water Science & Management (WSM) has been developed at NMSU by the departments of

- Agricultural Economics and Agricultural Business,
- Animal and Range Science,
- Civil Engineering,
- Geography, and

- Water Science and Management
• Plant and Environmental Sciences.

The primary purposes of the interdisciplinary masters and doctoral degree programs in WSM are to provide graduate education for addressing state, national, and international water issues, and to train the next generation of water professionals needed to meet the challenges noted above. A Master of Science WSM degree can be earned with 26 credits of formal course work, plus additional thesis research credits, and a Doctor of Philosophy WSM can be earned with 30-40 credits of formal course work beyond the masters, plus additional dissertation research credits.

Five (5) fields of study are offered in the program and are detailed below (suggested classes for each area are detailed in the following section):

• **Agricultural Water Resources** relates to the major use of ground and surface water in providing safe and secure food systems while ensuring ecosystem services. This field of study includes water allocation, water conservation and water management issues facing urban water supply and irrigated agriculture.

• **Watershed, Riparian and Aquatic Systems** includes the processes of organizing and guiding land and other resources used in a river basin to provide desired goods and services without adversely affecting soil and water resources. Watershed, riparian, and aquatic system management involves an array of nonstructural (vegetation management) practices, as well as an array of structural (engineering) activities, when conditions warrant.

• **Water Quality and Treatment** includes processes used to make water acceptable for desired end-uses. These can include use as drinking water, industrial processes, agricultural uses and environmental management. The goal of water treatment processes is to remove existing contaminants in the water or reduce the concentration of such contaminants so the water becomes fit for its desired end-use.

• **Water Economics and Policy** examines the demand for water by all its competing uses, including irrigated agriculture, energy, urban supply, and environmental restoration and management. Policies are examined for their influence on water supplies, water demands, and economic values of water reallocations among agricultural, environmental, energy, and urban users. It examines the role of water markets, water user decisions, institutional adjustments, and water-related policies with respect to resource costs, water quality, profitability, and environmental effects.

• **Water Informatics** is an interdisciplinary science primarily concerned with the collection, classification, manipulation, storage, retrieval and especially the dissemination of water information, including both human and machine readable documents. Examples of human readable documents include maps, field data sheets, operational schedules, and long term asset management plans with narrative text. Machine readable documents include files for geographic information systems (GIS), Global Positioning Systems (GPS), relational database management systems and emerging applications.

### Admission Requirements

**Admission Requirements for the Master of Science (MS)** in water science and management include all general requirements for a graduate degree as set forth in the NMSU Catalog, plus the following:

• Possession of a bachelor’s degree from an accredited university grade point average of 3.5 or higher on a 4.0 scale. However, students with grade point averages between 3.0 and 3.5 will be given consideration, this degree being preparatory to the Water Science and Management degree.

• A letter of intent or statement of purpose that addresses individual professional and personal goals related to water science and management and discusses how these goals fit within the degree programs at NMSU. It is expected that the candidate will have made contact with prospective advisor(s) at NMSU and speak to how he or she would work with said advisor(s) to advance their research and study.

• Three letters of recommendation submitted directly from persons who know the applicant professionally, including a recommendation from the candidate’s current employer/sponsor. These letters should provide evidence of professional ability, research experience and the potential for professional development.

• A brief resume or curriculum vitae not to exceed five pages that summarize the candidate’s background and qualifications.

### Admission Requirements for the Doctor of Philosophy (Ph.D.) in water science and management include all general requirements for a graduate degree as set forth in the NMSU Catalog, plus the following:

• Possession of a master’s degree from an accredited university with a grade point average of 3.5 or higher on a 4.0 scale. However, students with grade point averages between 3.0 and 3.5 will be given consideration. This degree being preparatory to the Water Science and Management doctorate.

• Three letters of recommendation submitted directly from persons who know the applicant professionally, including a recommendation from the candidate’s current employer/sponsor. These letters should provide evidence of professional ability, research experience, and the potential for professional development.

• In addition, applicants to the Ph.D. program should provide evidence of research experience. This could include a master’s thesis, a professional paper, peer reviewed manuscripts, consulting reports, or other evidence of experience conducting research.

• A letter of intent or statement of purpose that addresses individual professional and personal goals related to water science and management and discusses how these goals fit within the degree programs at NMSU. It is expected that the candidate will have made contact with prospective advisor(s) at NMSU and speak to how he or she would work with said advisor(s) to advance their research and study.

• A brief resume or curriculum vitae not to exceed five pages that summarize the candidate’s background and qualifications.

### Degree Requirements

#### Water Science & Management Graduate Courses

The following courses are courses deemed likely to support each of the five fields of study, but this list is not meant to be all inclusive. Variations from or additions to this list may be made by the candidate, subject to the approval by the thesis or dissertation committee chairperson.

#### Agricultural Water Resources

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A EN 459</td>
<td>Design of Water Wells/Pumping Systems</td>
<td>3</td>
</tr>
<tr>
<td>A EN 475</td>
<td>Soil and Water Conservation</td>
<td>3</td>
</tr>
<tr>
<td>A EN 478</td>
<td>Irrigation and Drainage Engineering</td>
<td>3</td>
</tr>
<tr>
<td>AGRO 620</td>
<td>Instrumentation in Agronomy</td>
<td>3</td>
</tr>
<tr>
<td>C E 452</td>
<td>Geohydrology</td>
<td>3-4</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
</tr>
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### Degrees for the Department

**Water Science and Management - Master of Science** (p. 175)

**Water Science and Management - Doctor of Philosophy** (p. 174)

### Minors for the Department

Both minors within the WSAM program are affiliated with other departments.

**Geographic Information Science and Technology (GIS&T) - Graduate Minor** (p. 174)

**Applied Statistics - Graduate Minor** (p. 174)

Affiliated Faculty – S. Angadi, Ph.D. (University of Manitoba, Canada); S. Archambault, Ph.D. (UNM); A. Salim Bawazir, Ph.D. (NMSU); M.P. Bleiweiss, M.S. (California State-Los Angeles); W. Boeing, Ph.D. (Louisiana State); K. Boykin, Ph.D. (NMSU); C. E. Brewer, Ph.D. Iowa State); C. Brown, Ph.D. (San Diego State/California-Santa Barbara); S. W. Brown, Ph.D. (NMSU); C. A. Caldwell, Ph.D. (Tennessee); K. C. Carroll, Ph.D. (Arizona); D. E. Cowley, Ph.D. (Wisconsin); D. S. Cram, Ph.D. (NMSU); M. N. DeMers, Ph.D. (Kansas); C. M. Downes, Ph.D. (New Mexico); D. W. DuBois, Ph.D. (Nebraska); W. R. Gould, Ph.D. (North Carolina State); S. J. Guldan, Ph.D. (Colorado State); A. Ghassemi, Ph.D. (Drexel University); J. P. King, Ph.D. (Colorado State);
A. S. Lara, Ph.D. (NMSU); B. Leinauer, Ph.D. (Hohenheim University, Germany); H. Luo, Ph.D. (Tulane); M. C. Mitchell, Ph.D. (Minnesota); M. O’Neill, Ph.D. (Arizona); L. Papelis, Ph.D. (Stanford); J. T. Peach, Ph.D. (Texas); G. A. Picchioni, Ph.D. (Texas A&M); R. C. Pratt, Ph.D. (Purdue); A. Rango, Ph.D. (Colorado State); D. A. Rockstraw, Ph.D. (Oklahoma); R. Sallenave, Ph.D. (University of Guelph-Canada); Z. A. Samani, Ph.D. (Utah State); M. K. Shukla, Ph.D. (University of Agricultural Sciences-Vienna, Austria); G. Sims, Ph.D. (Purdue); G. B. Smith, Ph.D. (North Carolina State); R. G. Smits, Ph.D. (Purdue); S. N. Smirnov, Ph.D. (Novosibirsk University, Russia); R. St. Hilaire, Ph.D. (Iowa State); C. M. Steele, Ph.D. (King’s College, University of London-UK); K. Stevens, M.S. (NMSU); B. L. Stringam, Ph.D. (Utah State); A. L. Ulery, Ph.D. (California-Riverside); J. Urquidi, Ph.D. (Texas Tech); F. A. Ward, Ph.D. (Colorado State); N. Webb, Ph.D. (University of Queensland, Australia); B. Widner, Ph.D. (Colorado State); P. Xu, Ph.D. (Ecole Nationale de Gunie Rural, Des Eaux Et Des Forets, France)

WSAM 589. Landscape Hydrology Modeling
3 Credits
Understand the landscape scale of hydrologic cycle and related hydrological processes. Quantitatively evaluate hydrological system components. Retrieve, visualize and model some of the physical processes using some of the available tools. Consent of Instructor required.

WSAM 599. Masters Thesis
1-15 Credits (1-15)

WSAM 605. Arid Land Water Resources
3 Credits (2+2P)
The course will cover various issues of relevance to water resources and water supply management within the Southwest US and other semiarid and arid regions. Discussions may include development and sustainability, climate change and drought, socioeconomic and cultural, and transboundary issues.

WSAM 610. Water and Sustainable Economic Development
3 Credits
For graduate students in the Water Science and Management or other research degree programs, use the water economics literature as a model for student research leading to an M.S. thesis or Ph.D. dissertation.

WSAM 700. Doctoral Dissertation
15 Credits (15)

Name:

Office Location:

Phone: (575) 646-4198

Website: http://wsm.research.nmsu.edu

Coordinating Institute

- Water Resources Research Institute, (575) 646-4337

Sponsoring Departments


- Civil and Engineering, (575) 646-3801, http://ce.nmsu.edu

- Geography, (575) 646-3509, http://geography.nmsu.edu

- Plant and Environmental Sciences, (575) 646-3405, http://aces.nmsu.edu/academics/pes

Applied Statistics - Graduate Minor

Students interested in completing a Geographic Information Science and Technology minor should consult with the Economics, Applied Statistics and International Business department (http://business.nmsu.edu/academics/graduate-programs/ms-astat-minor/).

Geographic Information Science and Technology (GIS&T) - Graduate Minor

Student interested in completing a Geographic Information Science and Technology minor should consult with the geography department (http://geography.nmsu.edu)

Water Science and Management - Doctor of Philosophy

Core Courses

This degree is designed to give students a thorough and comprehensive knowledge of water science and hydrology and training in methods of research. The Ph.D. degree can be earned in about 30-40 credits of formal course work beyond the Masters Degree, plus additional dissertation research credits, for a minimum total of 75 credits beyond the BS degree, as detailed below.

Master’s Degree Requirements

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<td>Fundamentals of Geographic Information Science and Technology (GIS &amp; T)</td>
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<td>WSAM 610</td>
<td>Water and Sustainable Economic Development</td>
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<td>GEOG 501</td>
<td>Research Design and History of Geographic Thought</td>
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Electives from the designated water list for the relevant field of study 10

Free electives in consultation with the student’s committee 5
Students are expected to have a basic foundation in Geographic Information System (GIS) within a classroom, research experience, or professional experience. Students without this background are required to take an appropriate GIS class as advised by their advisor such as: GEOG 578 Fundamentals of Geographic Information Science and Technology (GIS & T), or GEOG 521 GIS & T Applications and Modeling, or FWCE 535 Special Topics.

Water Science and Management - Master of Science

Core Courses
This degree is designed primarily for students who wish to complement their primary discipline by obtaining scientific, technical, and managerial expertise in water. The Master’s degree can be earned with 26 credits of formal course work, plus six additional thesis research credits, as detailed below.

Core Courses

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<td>Total Credits</td>
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</tr>
</tbody>
</table>

1. With the consent of the instructor and the approval of the student’s advisor, C E 582 Statistical Hydrology or GEOG 585 Advanced Spatial Analysis may be used as a substitute.

2. Seminar may be substituted by WSAM 605 Arid Land Water Resources, or WSAM 610 Water and Sustainable Economic Development, or GEOG 501 Research Design and History of Geographic Thought.
College Undergraduate Degree Requirements

1. In accordance with NMSU policy, students in all majors in the College of Arts and Sciences must meet the Basic Academic Skills requirements in English and Mathematics. See "Basic Academic Skills (p. 53)" in the General Information, Regulations section.

   **Basic Academic Skills rules:**
   a. Students must complete, with a C- grade or better, in MATH 111 Fundamentals of Elementary Mathematics I and MATH 112G Fundamentals of Elementary Math II, or any mathematics course numbered 120 or above which includes a ST 251G Statistics for Business and the Behavioral Sciences, STAT 251G Statistics for Business and the Behavioral Sciences and STAT 271G Statistics for Psychological Sciences. Please see department requirements for each major for specific mathematics requirements.
   b. Students must complete, with a C - grade or better, ENGL 111G Rhetoric and Composition, ENGL 111GH Rhetoric and Composition Honors, or ENGL 111 M Rhetoric and Composition for International and Multilingual Students prior to enrolling in upper division courses numbered 300 or higher.
      NOTE: Transfer students must complete an English course listed above and begin their Math sequence no later than their second semester at NMSU in order to continue enrolling in upper division courses numbered 300 level or higher.
   c. Students whose ACT or other test scores require them to take developmental Mathematics or English courses must complete those courses prior to enrolling in the English and Mathematics basic skills courses listed above.

2. University graduation requirements. See “Graduation Requirements (p. 53)” in the “General Information” section in this catalog. In order to graduate, students must have met all degree requirements for their major, earned a minimum of 120 university level credits, or more if required for the degree, of which at least 48 must be upper division and must have a cumulative GPA of 2.0 in all courses taken at NMSU. Each student must complete at least 30 of the necessary credits for their Bachelor Degree at NMSU. A minimum of "C" in all courses counting toward the major, supplemental major and minor is required of all students.

3. Some departments in the college require a second language and some do not. For those students whose major requires a second language, the following parameters apply unless otherwise specified in their departmental requirements. A student must meet one of the following requirements.

   - If two years are required for the major, students need to complete the second language course sequence: 111, 112, 211 and 212 in French, German, Spanish, Portuguese, Japanese or Chinese. If one year is required then students should complete the first year of language study or equivalent, for example PORT 213 and 214. Students should enter the sequence at their proficiency level. Heritage speakers of Spanish should complete the Spanish 112-213-214 sequence. Students who successfully complete either SPAN 113 Spanish for Heritage Learners I or SPAN 213 Spanish for Heritage Learners II or SPAN 214 Spanish for Heritage Learners III (or all) may not take SPAN 111 Elementary Spanish I, SPAN 112 Elementary Spanish II, SPAN 211 Intermediate Spanish I or SPAN 212 Intermediate Spanish II for credit.
   - Challenge the 212 level of Chinese, French, German, Japanese, Chinese, or Spanish, or the 214 level of Spanish for Heritage Learners of Spanish, or Portuguese.
   - Obtain college certification of completion of a second language at the high school level by fulfilling one of the following:

      **Option A:** For those departments requiring one year of a second language a student must pass two years of a high school language with a C- or better in the last year level.

      **Option B:** For those departments requiring two years of a second language a student must pass three years of a high school language with a C- or better in the last year level.

   - Obtain, from the head of the Department of Languages and Linguistics, certification of a working knowledge of a second language if such language is not taught at New Mexico State University.

   - Obtain certification of a working knowledge of a Native American language from the American Indian program director, or as attested by a Native American Elder.

   - Successfully complete a regular university course taught in a language other than English. A student can receive credit only once for the same course taught in two languages.

   - Pass a three-credit upper-division course (numbered 300 or above) taught in a second language by the Department of Languages and Linguistics.

   - Pass C D 476 American Sign Language III, with a grade of C- or better.

   - In the case of an international student who is required to take the TOEFL exam for admission to NMSU, the dean will automatically waive the second language requirement.

College Undergraduate Degree Requirements

While the ultimate responsibility for planning an academic program in compliance with university, college and departmental requirements rests with the student, the college recognizes the importance of helping students work out appropriate academic programs.

Students should consult the "Academic Regulations (p. 53)" section of the catalog regarding general limitations for total credit hours, independent study and registration under S/U option. Students in the College of Arts and Sciences on Academic Probation 1 are limited to 13 credit hours, and students on Probation 2 are limited to 7 credit hours. The Regulations section of the catalog discusses registration, drop/add and withdrawal deadlines. Students may not do additional course work or repeat course exercises after the semester has ended in order to raise a grade in any course. Exceptions will be made for students completing an official Incomplete grade.

College Undergraduate Degree Requirements

1. In accordance with NMSU policy, students in all majors in the College of Arts and Sciences must meet the Basic Academic Skills requirements in English and Mathematics. See "Basic Academic Skills (p. 53)" in the General Information, Regulations section.

   **Basic Academic Skills rules:**
   a. Students must complete, with a C- grade or better, in MATH 111 Fundamentals of Elementary Mathematics I and MATH 112G Fundamentals of Elementary Math II, or any mathematics course numbered 120 or above which includes a ST 251G Statistics for Business and the Behavioral Sciences, STAT 251G Statistics for Business and the Behavioral Sciences and STAT 271G Statistics for Psychological Sciences. Please see department requirements for each major for specific mathematics requirements.
   b. Students must complete, with a C - grade or better, ENGL 111G Rhetoric and Composition, ENGL 111GH Rhetoric and Composition Honors, or ENGL 111 M Rhetoric and Composition for International and Multilingual Students prior to enrolling in upper division courses numbered 300 or higher.
      NOTE: Transfer students must complete an English course listed above and begin their Math sequence no later than their second semester at NMSU in order to continue enrolling in upper division courses numbered 300 level or higher.
   c. Students whose ACT or other test scores require them to take developmental Mathematics or English courses must complete those courses prior to enrolling in the English and Mathematics basic skills courses listed above.
Students should satisfy the second language requirement as soon as possible and take the necessary courses in consecutive semesters.

Please note: SPCD or English language may not be used to fulfill the second language requirements.

**S/U Grading Option for Undergraduate Students**

Instructors may establish individual standards for an S grade, but the minimum standard for an S grade in the College of Arts and Sciences courses is a C-.

**Developmental and Applied Credit Limitations for Undergraduate Students**

The College of Arts and Sciences will accept all applied coursework, which include Occupational Education courses, BOT, CMT, UNIV (not including UNIV 150 The Freshman Year Experience and UNIV 350 Peer Education), ART (applied), DANC (applied), MUS (applied and participation), THTR (applied), NURS, A EN, AXED, AG E, AGHE, COLL, CCDL, CCDS, all lower-division RDG. These courses count towards overall credit hours to bring the students total to the minimum credit hours required. Students must still complete all university requirements: GEN ED; VWW; a minimum of 48 upper division credits as well as all requirements for their declared major degree.

Credits earned in developmental courses (N suffix) are not counted toward any arts and sciences degree. Students should contact the Student Records Center regarding the acceptability of specific courses.

**Independent Study/Directed Reading Courses for Undergraduate Students**

Students are limited to six credits in any independent study course. Independent study courses include directed reading and special topic courses, which do not carry a subtitle.

**Distance Education Courses**

The College of Arts and Sciences offers a variety of distance education/online courses each semester. Specific courses can be found under departmental course listings online. Students who successfully complete NMSU distance education courses receive the same credit as students who take an equivalent course on the Las Cruces campus. Distance education courses appear on a student's transcript in the same way a course taken on the Las Cruces campus does. Students will be charged a Course Delivery Fee for taking online courses.

**Majors, Minors and Supplementary Majors for Undergraduate Students**

Students who wish to obtain a bachelor’s degree must select a major field or fields. For a listing of majors, the student should refer to the list of majors in this catalog. Course requirements for majors are listed under individual departments. Students should consult the department for current admissions requirements. Until a major is selected, the student is designated as undeclared.

Each major consists of not less than 20 credits of upper-division courses (300 and above) in a specific field. Students must earn a grade of C- or better for all course requirements indicated for each major, minor, or supplementary major, including any courses required from outside the department. Students may not count an S grade towards completion of any major, minor or supplementary major requirement unless a course is automatically S/U for all enrolled students. A student may not earn a minor that bears the same name as a bachelor’s degree that the student is earning. (For example, a student earning a B.S. in Biology cannot also earn a minor in Biology.) Some departments also require specific courses outside the major field. Please refer to the departmental section of the catalog for specific nondepartmental requirements. These nondepartmental requirements must be passed with a grade of C- or better. It is imperative that students consult the departmental sections of this catalog and the department(s) for advice in planning to fulfill requirements for their declared majors.

The requirements for academic minors in the College of Arts and Sciences are found under each offering department or program section of this catalog. Requirements for supplementary majors are found as follows:

- the Supplementary Majors in Chicano Studies, Latin American Studies, and Linguistics (p. 339) are listed under Languages and Linguistics (p. 339);
- the Supplementary Major in Law and Society (p. 306) is listed under Government (p. 306); and
- the Supplementary Major in Applied Mathematics (p. 352) is listed under Mathematical Sciences (p. 352).

Most students have considerable latitude in choosing elective courses. These are the courses beyond university and major requirements that a student must take to bring her or his total credits to the minimum overall credits required for the degree 120 or 128. This latitude provides students with opportunities to major in more than one field, to take a minor or to devise interdisciplinary programs tailored to individual interests or future career needs.

Regardless of the option elected, students should consult regularly with an advisor and track their progress towards degree completion and graduation using the online degree audit system STAR (Student Academic Requirements), at: http://www.my.nmsu.edu.

**Supplementary Majors**

- Applied Mathematics in the Department of Mathematical Sciences (p. 352)
- Chicano Studies in the Department of Languages & Linguistics (p. 339)
- Latin American Studies in the Department of Languages & Linguistics (p. 339)
- Law and Society in the Department of Government (p. 306)
- Linguistics in the Department of Language & Linguistics (p. 339); and
- Sustainable Development in the Department of Anthropology (p. 181)

**Preprofessional Studies**

- Prehealth Studies in the Department of Biology (p. 211)
- Prelaw Studies in the Department of Government (p. 306)

**Bachelors Degrees**

**Bachelor of Applied Studies** (p. 329)

**Bachelor of Arts**

**Majors in:**

- Anthropology (p. 181)
- Art (p. 193)
- Biology (p. 211)
- Chemistry (p. 226)
• Communication Studies (p. 235)
• Computer Science (p. 240)
• Economics (p. 271)
• Engineering Physics (p. 387) (through the College of Engineering)
• English (p. 274)
• Foreign Languages (p. 339)
• Gender & Sexuality Studies (p. 329)
• Government (p. 306)
• History (p. 317)
• Journalism and Mass Communications (p. 336)
• Philosophy (p. 383)
• Physics (p. 387)
• Psychology (p. 396)
• Sociology (p. 402)
• Theatre Arts (p. 409)

Bachelor of Individualized Studies (p. 329)

Bachelor of Science

Majors in:
• Biochemistry (p. 226)
• Biology (p. 211)
• Chemistry (p. 226)
• Computer Science (p. 240)
• Geography (p. 293)
• Geology (p. 300)
• Mathematics (p. 352)
• Microbiology (p. 211)
• Physics (p. 387)

Designated Bachelor’s Degree
Bachelor in Conservation Ecology (p. 211)

Bachelor of Creative Media

Majors in:
• Animation and Visual Effects
• Digital Film Making

Bachelor of Criminal Justice (p. 263)
Bachelor of Fine Arts (p. 193)
Bachelor of Science in Genetics (p. 211)
Bachelor of Music (p. 370)
Bachelor of Music Education (p. 370)

Dual Degrees
Bachelor of Science/Master of Science in Computer Science (p. 240)

Masters Degrees
Master of Applied Geography (p. 293)

Master of Arts

• Anthropology (p. 181)
• Art (p. 193)
• Communication Studies (p. 235)
• English (p. 274)
• Government (p. 306)
• History (p. 317)
• Psychology (p. 396)
• Sociology (p. 402)
• Spanish (p. 339)

Master of Criminal Justice (p. 263)
Master of Fine Arts (p. 193)

Master of Fine Arts in Creative Writing

Master of Music (p. 370)
Master of Public Administration (p. 306)

Master of Science

• Astronomy (p. 206)
• Bioinformatics (p. 240)
• Biology (p. 211)
• Chemistry (p. 226)
• Computer Science (p. 240)
• Geology (p. 300)
• Mathematics (p. 352)
• Molecular Biology (p. 366)
• Physics (p. 387)

Dual Degrees
Master of Public Administration/Master of Arts in Public History (p. 306)
Master of Public Administration/Master of Criminal Justice (p. 306)

Graduate Certificates
Cultural Resource Management (p. 181)
Museum Studies (p. 181)

Doctoral Degrees
Doctor of Philosophy

• Astronomy (p. 206)
• Biology (p. 211)
• Chemistry (p. 226)
• Computer Science (p. 240)
• Mathematics (p. 352)
• Molecular Biology (p. 366)
• Physics (p. 387)
• Psychology (p. 402)
• Rhetoric and Professional Communication (p. 274)

Undergraduate Minors
• Aerospace Studies (p. 179)
• Algorithm Theory (p. 240)
• American Government and Politics (p. 306)
• Animation and Visual Effects (p. 256)
• Anthropology (p. 181)
• Art (p. 193)
• Art History (p. 193)
• Astronomy (p. 206)
• Biochemistry (p. 226)
• Bioinformatics (p. 240)
• Biology (p. 211)
• Chemistry (p. 226)
• Child Advocacy Studies (p. 263) (through the FCS department, in the College of ACES)
• Communication Studies (p. 235)
• Communications and National Security (p. 235)
• Comparative Politics (p. 306)
• Computer Systems (p. 240)
• Conservation Ecology (p. 211)
• Contemporary Social Studies (p. 306)
• Creative Writing (p. 274)
• Digital Film Making (p. 256)
• Economics (p. 271)
• English (p. 274)
• Environmental Chemistry (p. 226)
• Ethics (p. 383)
• Forensic Science (p. 263)
• French (p. 339)
• Gender & Sexuality Studies (p. 329)
• Genetics and Biotechnology (p. 211)
• Geographic Information Science and Technology (p. 293)
• Geography (p. 293)
• Geology (p. 300)
• German (p. 339)
• Government (p. 306)
• History (p. 317)
• Human Biology (p. 211)
• International Relations (p. 306)
• International Studies (p. 329)
• Journalism and Mass Communications (p. 336)
• Linguistics (p. 339)
• Literature (p. 274)
• Mathematics (p. 352)
• Medieval and Early Modern Studies (p. 274)
• Microbiology (p. 211)
• Military Science (p. 364)
• Molecular Biology (p. 366)
• Museum Conservation (p. 193)
• Music (p. 370)
• Native American Studies (p. 181)
• Philosophy (p. 383)
• Physics (p. 387)
• Political Theory (p. 306)

• Psychology (p. 402)
• Public Administration (p. 306)
• Public Law (p. 306)
• Religious Studies (p. 181)
• Rhetoric and Professional Communication (p. 274)
• Sociology (p. 402)
• Software Development (p. 240)
• Spanish (p. 339)
• Sustainable Development (p. 181)
• Theatre Arts (p. 409)

Graduate Minors
• Archaeology (p. 181)
• Bioinformatics (p. 366)
• Communication and National Security (p. 235)
• Communication Studies (p. 235)
• Computer Science (p. 240)
• Food Studies (p. 181)
• Gender & Sexuality Studies (p. 329)
• Geographic Information Science and Technology (p. 293)
• History (p. 317)
• Molecular Biology (p. 366)
• Native American Studies (p. 181)
• Psychology (p. 402)
• Security Studies (p. 306)

• In the College of Arts and Sciences, the Department of Chemistry and Biochemistry is accredited by the American Chemical Society.
• The Bachelor of Science in Computer Science is accredited by ABET.
• Music curricula in the Department of Music are accredited by the National Association of Schools of Music.
• The Master of Public Administration program in the Department of Government is accredited by the National Association of Schools of Public Affairs and Administration.

Aerospace Studies
Undergraduate Program Information
Air Force Reserve Officer Training Corps (AFROTC) is a nationwide program that allows students to pursue commissions (become officers) in the United States Air Force (USAF) while simultaneously attending college. AFROTC classes are held on college campuses throughout the United States and Puerto Rico; students can register through normal course registration processes. AFROTC consists of four years of Aerospace Studies classes (Foundations of the USAF, Evolution of USAF and Space Power, Air Force Leadership Studies, and National Security Affairs/Preparation for Active Duty), and a corresponding Leadership Laboratory for each year (where students apply leadership, demonstrate command and effective communication, develop physical fitness, and practice military customs and courtesies). College students enrolled in the AFROTC program (known as "cadets") who successfully complete both AFROTC training and college degree requirements will graduate and simultaneously commission as Second Lieutenants in the Active Duty Air Force. The AFROTC program is currently offered at New Mexico State University (NMSU), but they have a crosstown agreement that allows our students to enroll in AFROTC and become full-fledged cadet participants.
Freshman and Sophomore Years (General Military Course or GMC)

This group provides a general background knowledge of the military establishment with emphasis on the Air Force. GMC courses may be taken out of sequence.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AERO 121 &amp; 122</td>
<td>The Air Force Today I and The Air Force Today II</td>
<td>4</td>
</tr>
<tr>
<td>AERO 221 &amp; 222</td>
<td>The Air Force Way I and The Air Force Way II</td>
<td>2</td>
</tr>
<tr>
<td>AERO 223</td>
<td>Air Force Leadership Development</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credits: 9

Junior and Senior Years (Professional Officer Course or POC)

This group constitutes an in-depth study of topics that provides a broad preparation for a career as an Air Force officer. Students must have certain qualifications for entry and have a desire to be commissioned in the Air Force. These qualifications include, achieving a passing score on the Air Force Officer’s Qualifying Test, passing a physical fitness test, and successfully completing a medical exam. They must also complete a four- or five-week summer orientation course.

Students may, with departmental approval, take POC courses out of normal sequence. However, compressed or dual enrollment in upper-division POC courses is normally prohibited. Through this department, you can also earn a minor in Aerospace Studies.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AERO 301</td>
<td>Air Force Leadership and Management I</td>
<td>4</td>
</tr>
<tr>
<td>AERO 302</td>
<td>Air Force Leadership and Management II</td>
<td>4</td>
</tr>
<tr>
<td>AERO 401</td>
<td>Preparation for Active Duty I</td>
<td>4</td>
</tr>
<tr>
<td>AERO 402</td>
<td>Preparation for Active Duty II</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits: 16

Leadership Laboratory

This is an integral and mandatory portion of the Aerospace Studies curriculum. Within the framework of the cadet wing, it provides a progression of experiences designed to develop each student's leadership potential and serves as an orientation to military life.

Minors for the Department

Aerospace Studies - Undergraduate Minor (p. 181)

Lieutenant Colonel Jeremy Klomp, Department Head

Assistant Professors and Staff: Capt Evin Greensfelder, Capt Michael Vetri, TSgt Melissa Cadman, Sr Airman Alan Crossley, and Patti Alarcon

A E 102. Introduction to Aerospace Engineering

1 Credit

A survey course of aeronautical, aerospace, and astronomical engineering, with an emphasis on basic aerospace concepts and major aerospace principles without going into detailed math and analysis. Students are given the opportunity to listen to guest speakers and participate in projects utilizing the NMSU Ultralight and NMSU wind tunnel. Restricted to: Main campus only.
A E 447. Aerofluids Laboratory
3 Credits (2+3P)
Use of subsonic wind tunnels and other flow to study basic flow phenomena and methods of fluid measurement and visualization.
Prerequisite(s)/Corequisite(s): A E 439. Prerequisite(s): M E 345.

A E 451. Aircraft Design
3 Credits
Conceptual design of aircraft based on existing designs, empirical relationships, and theory. Dimensioning, structural design, and performance analysis of major subcomponents such as fuselage, wing, and propulsion system. Static stability and control analysis.
Prerequisite(s): A E 339 and A E 363.

A E 459. Individualized Study
3 Credits
Individualized study covering specialized topics in aerospace engineering. Consent of instructor required. Restricted to A E & M E majors.

A E 510. Special Topics
1-6 Credits (1-6)
Topics in aerospace engineering. May be repeated for a maximum of 6 credits. Consent of instructor required.

A E 527. Control of Mechanical Systems
3 Credits
Rigorous introduction to the control of dynamical systems, with a focus on mechanical systems. Includes basic systems theory, controllability, feedback and stabilization, observers and dynamic feedback, and applications of methods to systems of importance in mechanical engineering. Consent of instructor required. Cross-listed with: M E 527

A E 529. Nonlinear and Optimal Control
3 Credits
Introduction to optimal control theory, Pontryagin's Maximum Principle, control of simple mechanical systems, Lagrangian and Hamiltonian methods, introduction to geometric control-Lie algebras, distributions, controllability and observability. Cross-listed with: M E 529

A E 552. Introduction to Gasdynamics
3 Credits
Gas kinetics, rarefied gas dynamics, collision dynamics; velocity distribution function, finite rate chemical process; thermal nonequilibrium and chemically reacting flows; introduction to quantum and statistical mechanics; Boltzmann equation and the BGK model; moments of the Boltzmann Equation; the Navier-Stokes Equation; the structure of shock waves.

A E 556. Aeroelasticity
3 Credits
Introduction to aeroelasticity with emphasis on fluid-structure interactions occurring in aircraft. Phenomena considered include flutter/LCD (limit cycle oscillation), buffet, divergence, and control reversal. Primary emphasis on structural dynamics, with use of simple aerodynamic models.

A E 598. Special Research Programs
1-3 Credits (1-3)
Individual investigations, either analytical or experimental. May be repeated for a maximum of 6 credits. Restricted to A E & M E majors.

A E 599. Master's Thesis
15 Credits (15)

A E 600. Doctoral Research
1-15 Credits (1-15)
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination. Graded: Thesis/Dissertation.

A E 700. Doctoral Dissertation
15 Credits (15)

Name:

Office Location:

Phone: (575) 646-2136

Website: http://airforcerotc.nmsu.edu

Aerospace Studies - Undergraduate Minor

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AERO 301</td>
<td>Air Force Leadership and Management I</td>
<td>4</td>
</tr>
<tr>
<td>AERO 302</td>
<td>Air Force Leadership and Management II</td>
<td>4</td>
</tr>
<tr>
<td>AERO 401</td>
<td>Preparation for Active Duty I</td>
<td>4</td>
</tr>
<tr>
<td>AERO 402</td>
<td>Preparation for Active Duty II</td>
<td>4</td>
</tr>
</tbody>
</table>

Select two from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 312V</td>
<td>Modern Latin America</td>
<td></td>
</tr>
<tr>
<td>HIST 341</td>
<td>American Agricultural History</td>
<td></td>
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<tr>
<td>GOVT 360</td>
<td>International Relations</td>
<td></td>
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<td>GOVT 371</td>
<td>Latin American Politics</td>
<td></td>
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<tr>
<td>GOVT 474</td>
<td>European Politics</td>
<td></td>
</tr>
<tr>
<td>MGT 315V</td>
<td>Human Relations in Organizations</td>
<td></td>
</tr>
<tr>
<td>MGT 333</td>
<td>Training and Development</td>
<td></td>
</tr>
<tr>
<td>MGT 347</td>
<td>Management Functions and Processes</td>
<td></td>
</tr>
<tr>
<td>MGT 388V</td>
<td>Leadership and Society</td>
<td></td>
</tr>
<tr>
<td>MGT 453</td>
<td>Leadership and Motivation</td>
<td></td>
</tr>
<tr>
<td>M SC 310</td>
<td>Leading Small Organizations I</td>
<td></td>
</tr>
<tr>
<td>M SC 320</td>
<td>Leading Small Organizations II</td>
<td></td>
</tr>
<tr>
<td>M SC 401</td>
<td>Leadership Challenges and Goal Setting</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 22

Anthropology

Undergraduate Program Information

Anthropology is the study of humankind, a multidisciplinary endeavor involving the social sciences, the humanities, and the natural sciences. Anthropologists study the human species and the human condition in all its diversity. Anthropologists ask questions such as: "Who are we?"
"Where did we come from?" "How did we get here?" "Why are we different from each other?" and, “How can we better understand each other?”

Studies in anthropology might focus, for example, on our distant ancestors from the African plains, modern workers in a high-tech factory, historic military forts in the Mesilla Valley, Native American Languages, or prehistoric or contemporary cultures of the American Southwest and Mesoamerica.

Undergraduate education at New Mexico State University covers all four sub-disciplines of the field:

- Biological Anthropology - the study of human origins, primate relatives, and human biological diversity
- Archaeology - the study of the origin and change of the human past in both historic and prehistoric times, using material remains
- Cultural Anthropology - the study of beliefs, values, shared understandings, traditions and modern practices of peoples from around the world
- Linguistic Anthropology - the study of human language, linguistic diversity, and speech

**Graduate Program Information**

The Anthropology M.A. program is designed for students who are interested in the traditional sub-disciplines of anthropology, as well as such related fields as cultural resource management, food studies, medical anthropology, museum studies, and social impact assessment. The program is directed both toward students who intend to take a terminal M.A. degree and students who intend, after NMSU, to enter a Ph.D. program. In addition to the M.A. in anthropology, our program also offers graduate minors in anthropology, archaeology, food studies, and Native American studies, as well as graduate certificates in cultural resource management and museum studies.

An undergraduate anthropology degree is not required for entry into the M.A. program. Students who lack the equivalent of ANTH 301, ANTH 315, ANTH 320, and ANTH 355 may be required to take these courses. ANTH 350 or the equivalent is recommended.

**Degrees for the Department**

- Anthropology - Bachelor of Arts (p. 188)
- Sustainable Development - Undergraduate Supplemental Major (p. 193)
- Anthropology - Master of Arts (p. 189)
- Cultural Resource Management - Graduate Certificate (p. 190)
- Museum Studies - Graduate Certificate (p. 191)

**Minors for the Department**

- Anthropology - Undergraduate Minor (p. 190)
- Religious Studies - Undergraduate Minor (p. 192)
- Sustainable Development - Undergraduate Minor (p. 193)
- Native American Studies - Undergraduate Minor (p. 192)
- Native American Studies - Graduate Minor (p. 191)
- Archaeology - Graduate Minor (p. 190)
- Food Studies - Graduate Minor (p. 190)

**Professor, Rani T. Alexander, Department Head**

**Professors**
- Alexander, Benefit, Chaiken, Rushforth, Stanform, Walker; **Associate Professors**
- Arakawa, McCrossin, Stanford; **Assistant Professors**
- Arakawa, Jenks, Scott; **College Professors**
- Conelly, Pepion; **Emeritus Professors**
- Eber, O’Leary, Staski, Trevathan **Affiliated Faculty**
- Berryman, DeBoer, LeBeau, Loendorf, Marinas-Feliner, Robles; Steele, Stinson; Strankman, Torezani


**ANTH 110. North American Prehistory**

3 Credits
Introduction to major prehistoric cultural developments and changes in North America from the first entry of people into the New World until prior to the arrival of European settlers. Restricted to Community Colleges campuses only.

**ANTH 115. Native Peoples of North America**

3 Credits
General survey of the ethnology of selected native American groups.

**ANTH 116. Native Peoples of the American Southwest**

3 Credits
Introduction to the early history and culture of native people of the Southwest.

**ANTH 118. Introduction to Historic Preservation**

3 Credits
Introduction to historic preservation, its history, goals, methods, legal basis, and economic importance. Explores public role in decision-making. Community Colleges only.
ANTH 120G. Human Ancestors
3 Credits
Evolutionary history of the human species from its origin in the primate order, with primary emphasis on the evolution of humankind during the past three million years. Examination of the social lives of apes and consideration of similarities to and differences from them. Biological foundations of human behavior, emphasizing thought, movement, and interaction.

ANTH 125G. Introduction to World Cultures
3 Credits
Examine cross-cultural diversity and human universals through the lens of anthropological inquiry. Explore human thought and behavior in contemporary world cultures covering kinship, economic patterns, power structures, and religious practices and beliefs. The impact of cultural influence on everyday life is emphasized.

ANTH 130G. Human's Place in Nature: Introduction to Biological Anthropology
3 Credits
This course uses scientific methods and principles to examine human evolutionary history and family tree relationships, as well as the biological foundations of human behavior. Through lectures, readings and laboratory assignments students are introduced to the history and development of modern evolutionary biology, molecular and population genetics, the primate and human fossil record and modern human biological diversity. By examining the social lives of apes and other primates, primitive and unique aspects of human behavior are identified and the lives of fossil ancestors are reconstructed.

Corequisite(s): ANTH 130GL.

ANTH 130GL. Human's Place in Nature Laboratory
1 Credit
This one credit laboratory course uses scientific methods and principles to examine evidence for human evolutionary history and family tree relationships, primate ecology and behavior, and modern human diversity.

ANTH 201G. Introduction to Anthropology
3 Credits
Exploration of human origins and the development of cultural diversity. Topics include biological and cultural evolution, the structure and functions of social institutions, belief systems, language and culture, human-environmental relationships, methods of prehistoric and contemporary cultural analysis, and theories of culture.

ANTH 202G. Introduction to Archaeology and Physical Anthropology
3 Credits
Provides an introduction to the methods, theories, and results of two subfields of anthropology: archaeology and physical anthropology. Archaeology is the study of past human cultures. Physical anthropology is the study of human biology and evolution.

ANTH 203G. Introduction to Language and Cultural Anthropology
3 Credits
Provides an introduction to the methods, theories, and results of two subfields of anthropology: linguistics and cultural anthropology. Linguistics is the study of human language. Cultural anthropology is the study of the organizing principles of human beliefs and practices.

ANTH 297. Elementary Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

ANTH 301. Cultural Anthropology
3 Credits
Human concepts of culture and life processes.

ANTH 305V. Contemporary Native Americans
3 Credits
Introduction to contemporary native peoples and cultures of North America. Emphasis on sociocultural and socioeconomic history, sociocultural change and persistence, present day reservation life, and current social and economic goals.

ANTH 306V. Peoples of Latin America
3 Credits
Introduction to cultural patterns and diversity of Latin America with emphasis on indigenous groups, peasants, plantation workers, and urban residents throughout South America, the Caribbean, Mexico, and Central America.

ANTH 307. Anthropology of Mexico and Guatemala
3 Credits
This course focuses on ethnographic study of people in Mexico and Guatemala. Through reading and discussing a variety of ethnographic works, the course will examine some historical and contemporary issues facing different groups of people in this region and will include topics such as gender, indigenous movements, migration, urbanization, and tourism.

ANTH 312. The Ancient Maya
3 Credits
Archaeological evidence of culture change in the Maya civilizations of Mexico and Central America from 2000 BC to the Spanish Conquest.

ANTH 313. Ancient Mexico
3 Credits
Archaeological evidence of culture change among the Aztecs, Zapotecs, and their predecessors in Central Mexico and Oaxaca from 7,000 BC to the Spanish Conquest.

ANTH 315. Introduction to Archaeology
3 Credits
Concepts and methods for study of prehistoric cultures; history of archaeological research.

ANTH 316. Archaeology of the American Southwest
3 Credits
Introduction to the prehistoric peoples of the North American Southwest, a historical approach emphasizing the rise of method and theory in the region.

ANTH 318. Historical Archaeology in Latin America
3 Credits
Examination of theoretical and methodological issues in historical archaeology in Latin America from 1450 to present, including conquest, colonialism, capitalism, and modernity as anthropological processes. The contributions and limitations of historical, ethnohistorical, and archaeological evidence are emphasized.

ANTH 320. Anthropological Linguistics
3 Credits
The study of language and culture with particular emphasis on the cultural factors in the communication process.

ANTH 330V. Magic, Witchcraft and Religion
3 Credits
Provides an overview of old and new methods and theories for the study of religion. Exposure to the ways groups of people in diverse cultural systems construct and change their religious traditions to serve practical and meaningful ends. Crosslisted with: HIST 330V and SOC 330V.
ANTH 345. Introduction to Museology
3 Credits
Museum philosophy, history, administration, and collection management. Emphasis on cataloging, care, and exhibition, as well as ethics and public responsibility.

ANTH 348. Museums & Society
3 Credits
Examines theoretical frameworks that shape museum administration, exhibits and collections development. Examines themes of gender, space, place, multiculturalism, national and international politics in museum contexts.

ANTH 350. Anthropological Theory
3 Credits
This course introduces students to historical and contemporary theory in anthropology with a focus on understanding why theory matters in our discipline. Key questions the course explores include: How have anthropologists thought about the concept of culture in different ways throughout the history of anthropology? What is the relevance of anthropological theory, both inside and outside the discipline? What new and promising trajectories do we see in anthropological theory today?

ANTH 355. Physical Anthropology
3 Credits
An introduction to primate behavior, human evolution, and physical variation in modern human populations.

ANTH 357V. Medical Anthropology
3 Credits
This course introduces students to evolutionary, ecological, interpretive, political-economic, and applied anthropological perspectives on health, illness, and healing to address some of the major questions in the field. How do humans adapt to changing environments that bring with them new illnesses and diseases? How do anthropologists understand the multiple meanings of health and illness cross-culturally? How can anthropologists effectively study health inequalities? What can medical anthropological perspectives contribute to addressing the health issues that we face in our current global context?

ANTH 360V. Food and Culture Around the World
3 Credits
Study of the interaction between food and human culture from an anthropological perspective. Examines the traditional role of food in local economies, social relations, and identity around the world. Also examines the impact of globalization on traditional food systems and cultures.

ANTH 362. Environmental Anthropology
3 Credits
This course examines ecology and current environmental studies from an anthropological point of view. The class focuses on how cultural values mediate environmental management. The class will cover topics such as theoretical foundations of ecological anthropology, large scale development, biodiversity conservation, sustainable environmental management, indigenous groups, consumption and globalization.

ANTH 376. Lithic Technology Organization
3 Credits
Advanced seminars and laboratory exercises to learn and develop techniques and methods that will help us determine how to interpret behavioral and cultural information from lithic (stone tool) data. 
Prerequisite(s): ANTH 315.

ANTH 378. Introduction to Lab Methods in Archaeology
3 Credits
Laboratory techniques used in the analysis of archaeological materials.
ANTH 404. Cultures of Africa
3 Credits
Explores the rich history and cultural diversity of the continent of Africa. The course first examines the historical processes that shaped modern Africa, including the evolution of modern humans in Africa, the origins of agriculture and pastoralism, the formation of indigenous African states, the slave trade, and European colonialism. The course also looks at contemporary African societies, including hunter-gatherer, pastoral, and farming/fishing peoples. In addition, contemporary issues facing modern Africa such as famine and agricultural policy, the status of women, and environmental challenges such as deforestation are discussed. Taught with ANTH 504. Crosslisted with: HIST 404

ANTH 415. Applied Anthropology
3 Credits
Examines the intellectual roots of applied anthropology and early case studies of anthropologists working as administrators. Examines the ethical and methodological approaches that applied anthropologists employ. Examination of case studies that show role of applied anthropologists in improving human service delivery, cultural preservation, planning and implementing programs of participatory change, advocacy, and economic development. Taught with ANTH 515.

ANTH 431. Nutritional Anthropology
3 Credits
Evolutionary and cross-cultural perspective on human nutrition.

ANTH 432. Women, Gender, and Culture
3 Credits
Survey of the history of ideas about women and gender in the discipline of anthropology and a comparison of gender roles, relations, and ideologies across a range of cultures. Same as W S 433.

ANTH 434. Human Evolution
3 Credits
Overview of human biological evolution from the emergence of Miocene apes to modern human diaspora. May be repeated up to 3 credits. Crosslisted with: BIOL 434.
Prerequisite(s): ANTH 355 or consent of instructor.

ANTH 434 L. Human Evolution Laboratory
1 Credit
Laboratory in human evolution, includes exercises and activities to learn the human fossil record. Crosslisted with: BIOL 434 L.
Prerequisite(s): ANTH 355 or consent of instructor.
Corequisite(s): ANTH 434.

ANTH 449. Directed Reading
1-6 Credits
Comprehensive reading on selected topics. May be repeated for a maximum of 6 credits.
Prerequisite(s): Upper division anthropology majors with consent of instructor.

ANTH 449 H. Directed Reading Honors
1-3 Credits
Same as ANTH 449. Additional work to be arranged. May be repeated for a maximum of 6 credits.

ANTH 455. Federal Indian Policy
3 Credits
Federal Indian policy and its impact on Native Americans. This course will provide basic understanding of how federal Indian policy impacts almost all activities and situations with Native Americans. Course will also look at issues such as sovereignty and how it impacts most interactions with tribal groups.

ANTH 458. Sex, Reproduction and Birth
3 Credits
This course examines pregnancy and birth practices cross-culturally, including such topics as gendered roles and responsibilities, pregnancy and birth as rites of passage, cultural concepts of personhood, global family planning initiatives, the medicalization of pregnancy and birth, and developing reproductive technologies.
Prerequisite(s): ANTH 201G, ANTH 357V or consent of instructor.

ANTH 459. Peru: From Incas to Inca Kola
3 Credits
Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalization, and the drug trade. Crosslisted with: HIST 459

ANTH 467. Archaeology of the American Southwest
3 Credits
Description and analysis of prehistoric archaeology of the American Southwest including paleo-environmental reconstruction, culture change, and relations with contemporary cultures.
Prerequisite: ANTH 315.

ANTH 472. Primate Behavior and Ecology
3 Credits
Survey of the social behavior and ecology of nonhuman primates. Crosslisted with: BIOL 472.

ANTH 473. Primate Adaptation and Evolution
3 Credits
Survey of the adaptations and evolutionary history of nonhuman primates. Crosslisted with: BIOL 423.
Prerequisite(s): ANTH 355 or consent of instructor.
Corequisite(s): ANTH 473 L when offered.

ANTH 474. Human Osteology
3 Credits
A survey of the functional, developmental, and evolutionary biology of the human skeleton. Identifying bones and teeth from hands-on experience with skeletal and dental material. Provides a foundation for human evolutionary studies, bioarchaeology and forensic anthropology. May be repeated up to 3 credits. Crosslisted with: BIOL 424.
Prerequisite(s)/Corequisite(s): Recommend ANTH 355 or equivalent.

ANTH 477. Zooarchaeology
3 Credits
Detailed study and analysis of taphonomic processes affecting animal bone recovered from archaeological and paleontological contexts.
Prerequisite(s): Either ANTH 315, ANTH 355, or BIOL 330.

ANTH 485. Special Research Project
1-3 Credits
Anthropological, archaeological, or museum field work or laboratory experience in academic, private, state, or federal agencies. Must spend 30 hours in a field, museum, or laboratory setting per credit hour earned. May be repeated up to 6 credits.
Prerequisite(s): Complete 12 ANTH credits and consent of instructor.
ANTH 486. Community Engagement and Service Learning
3 Credits
Course combines classroom instruction with a local community service project. Formal instruction component will examine social science research findings and perspectives on a locally relevant social issue or problem. In the service learning component, students will be trained and work on a local community service project. Students will develop field experience and methodological skills in community engagement. Projects and social issues may vary for different semesters.

ANTH 488. Archaeological Field School Advanced
1-6 Credits
Archaeological field methods, including excavations of prehistoric sites, record keeping, mapping and analysis of data. Consent of Instructor required.

ANTH 497. Special Topics
1-6 Credits (1-6)
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.
Prerequisite(s): Junior or above standing.

ANTH 500. Seminar in Anthropological Theory
3 Credits
Detailed focus on specific areas of anthropological theory. Course subtitled in the Schedule of Classes. Course may be repeated.
Prerequisite(s): graduate standing in Anthropology or consent of instructor.

ANTH 501. Concepts in Anthropology
3 Credits
Survey of concepts and theories central to the subdisciplines of anthropology.

ANTH 502. Fundamentals of Anthropology
1-4 Credits (1-4)
Review of fundamental knowledge and theories in biological, cultural, or linguistic anthropology or archaeology. Graded S/U.

ANTH 504. Cultures of Africa
3 Credits
Explores the rich history and cultural diversity of the continent of Africa. The course first examines the historical processes that shaped modern Africa, including the evolution of modern humans in Africa, the origins of agriculture and pastoralism, the formation of indigenous African states, the slave trade, and European colonialism. The course also looks at contemporary African societies, including hunter-gatherer, pastoral, and farming/fishing peoples. In addition, contemporary issues facing modern Africa such as famine and agricultural policy, the status of women, and environmental challenges such as deforestation are discussed. Taught with ANTH 404. Crosslisted with: HIST 504

ANTH 505. Issues in Anthropological Practice
3 Credits
Anthropological approaches to research design, implementation, and dissemination. Restricted to: Main campus only.

ANTH 506. Advanced Studies in Physical Anthropology
1-3 Credits
Lectures, seminars, or laboratory research in selected topics. May be repeated for a maximum of 12 credits.
Prerequisite(s): graduate standing in Anthropology or consent of instructor.

ANTH 507. Advanced Studies in Archaeology
1-3 Credits
Lectures, seminars, field or laboratory research in selected topics. May be repeated for a maximum of 12 credits.
Prerequisite(s): graduate standing in Anthropology or consent of instructor.

ANTH 508. Advanced Studies in Cultural Anthropology
1-3 Credits
Lectures, seminars, or field research in selected topics. May be repeated for a maximum of 12 credits.
Prerequisite(s): graduate standing in Anthropology or consent of instructor.

ANTH 509. Advanced Studies in Anthropological Linguistics
1-3 Credits
Lectures, seminars, or field research in selected topics. May be repeated for a maximum of 12 credits.

ANTH 510. Ethnography
3 Credits
An ethnography of a culture or ethnic group. Prerequisite: Graduate standing or consent of instructor.

ANTH 511. Field School in Archaeology
1-3 Credits
Field research experience. Prerequisite: Graduate standing or consent of instructor.

ANTH 512. Analytical Methods in Anthropology
3 Credits
Examination of major theoretical and methodological issues in biological anthropology.

ANTH 513. Biological Anthropology
3 Credits
Examination of major theoretical and methodological issues in biological anthropology.

ANTH 514. Applied Anthropology
3 Credits
Examines the intellectual roots of applied anthropology and early case studies of anthropologists working as administrators. Examines the ethical and methodological approaches that applied anthropologists employ. Examination of case studies that show the role of applied anthropologists in improving human service delivery, cultural preservation, planning and implementing programs of participatory change, advocacy, and economic development. Taught with ANTH 415.

ANTH 515. Advanced Archaeology of the American Southwest
3 Credits
Advanced topics in Southwestern archaeology including ritual architecture, environmental reconstruction, violence, site formation processes, and experiment and research.

ANTH 516. Advanced Topics in Mesoamerican Archaeology
3 Credits
Specific subjects in Mesoamerican archaeology to be announced in the Schedule of Classes. May be repeated for a maximum of 6 credits.
Prerequisite: graduate standing.

ANTH 517. Advanced Topics in Prehistoric Archaeology
3 Credits
Seminar on specialized research archaeology.
Prerequisite: graduate standing.

ANTH 518. Advanced Historical Archaeology
3 Credits
Advanced methodological and theoretical concepts applicable to the archaeology of historic periods.

ANTH 519. Advanced Topics in Archaeology
3 Credits
Seminar on specialized research archaeology.
Prerequisite: graduate standing.

ANTH 520. Ethnographic Field Methods
3 Credits
Basic methodologies used in conducting qualitative ethnographic research. Projects in participant observation, ethnographic interviews, life history interviews, folk taxonomy construction, and coding of field notes.
ANTH 521. Advanced Anthropologist Study Odyssey
3-6 Credits (3-6)
This course allows students to explore an anthropological topic, such as an archaeological tradition or culture, through classroom and field activities. Students are initially exposed to a topic during several days of intensive in class work and then pursue greater understanding of the topic through a field trip and possibly limited fieldwork. Readings, site tours, on-site lectures by specialists, and field exercises provide students an opportunity to develop an understanding of anthropological perspectives on the topic as well as to provide exposure to anthropological field and analytic methods. This course also allows students to experience other cultures, prehistoric sites, and/or locales firsthand. May be repeated for credit under a different odyssey title. Taught with ANTH 386. May be repeated up to 6 credits. Consent of Instructor required.

ANTH 522. Archaeological Field School-Graduates
2-6 Credits
Techniques of archaeological data collection, analysis, and interpretation. Emphasis on archaeological field work in the Southwest.

ANTH 523. Archaeological Mapping
3-6 Credits (3-6)
Techniques for mapping archaeological sites and recording spatial distributions of archaeological data using a variety of surveying equipment and computer mapping software.

ANTH 526. Conquest and Colonialism
3 Credits
Examination of major theoretical and methodological issues in historical anthropology and archaeology of the Americas from AD1500 to present, including conquest, colonialism, capitalism, and modernity as anthropological processes. The contributions and limitations of historical, ethnohistorical, and archaeological evidence are emphasized. Prerequisite(s): graduate standing in Anthropology or History or consent of instructor.

ANTH 531. Issues in Nutritional Anthropology
3 Credits
Evolutionary and cross-cultural perspective on human nutrition.

ANTH 534. Advanced Human Evolution
3 Credits
Advanced overview of human biological evolution from the emergence of Miocene apes to the modern human diaspora. May be repeated up to 3 credits. Crosslisted with: BIOL 534.

ANTH 534 L. Advanced Human Evolution Lab
1 Credit
Advanced laboratory in human evolution, includes exercises and activities to learn the human fossil record. Crosslisted with: BIOL 534 L. Corequisite(s): ANTH 534.

ANTH 537. Applied Medical Anthropology
3 Credits
This course introduces students to applications of medical anthropological perspectives to health care, international development, public health, and health policy.

ANTH 538. Plants, Culture, and Sustainable Development
3 Credits
Study of role of indigenous cultures and indigenous knowledge systems in plant domestication, ethnoecology, and preservation of traditional crop diversity. Examination of issues related to conserving cultural diversity, food systems, food security and biodiversity.

ANTH 539. Culture and Foodways
3 Credits
Study of interaction between food and culture from anthropological perspective. Study of role of food in cultural history, social relations, ritual, and identity. Examination of impact of globalization of food systems on traditional cultures, local food systems, and food security.

ANTH 540. Cultural Resource Management
3 Credits
Study of federal and state of New Mexico historic preservation laws and regulations and their application in current Cultural Resource Management and a review of relevant case studies.

ANTH 541. Decolonizing Methodologies in Native American Studies
3 Credits
This course utilizes decolonizing methodologies and praxis to gain insight into the complex effects of oppression and colonization. Critical and indigenous concepts are used to identify and analyze hegemonic, ethnocentric, historic and contemporary human rights and social justice issues of indigenous people. Research theory and methodology such as community participatory action research that is collaborative, inclusive, and pragmatic to ethics, intellectual property, and cultural boundaries of indigenous people is emphasized.

ANTH 542. Cultural Resource Management II
3 Credits
Continuation of ANTH 540 to include the study of cultural resource management practices, research design, and completion of proposals in response to requests. Overview of management practices and budgeting of projects and specialized studies (geophysical investigations, National Register nominations).

ANTH 543. Indigenous Ways of Knowing
3 Credits
This course examines Indigenous knowledge and ways of knowing as a means to gain an appreciation of an epistemology and ontology that may be outside the boundaries of Eurocentric theory, concepts, and principles. Knowledge development through mythology and story telling is viewed from the nature of difference rather then comparative analysis.

ANTH 545. Advanced Museology I
3 Credits
Museum philosophy, history, administration, and collection management. Emphasis on collecting, cataloging, care, and exhibition, as well as ethics, public responsibility, and grantmanship.

ANTH 546. Advanced Contemporary Medical Anthropology
3 Credits
This advanced seminar in medical anthropology addresses contemporary issues in the field of medical anthropology through theoretical and ethnographic texts. Topics span a wide range of studies in medical anthropology and may include such issues as the social production of health and illness, medical pluralism, discourses of mental health, the practice of complementary and alternative medicine, health inequalities, and the political economy of infectious disease. Taught with ANTH 402.

ANTH 547. Museum Field Methods
3 Credits
Basic methodologies used in conducting museum research away from the museum, including collections evaluation, collections acquisition, donor interviews, educational outreach, and development.
ANTH 548. Museums & Society  
3 Credits  
Examines theoretical frameworks that shape museum administration, exhibits and collections development. Examines themes of gender, space, place, multiculturalism, national and international politics in museum contexts.

ANTH 559. Peru: From Incas to Inca Kola  
3 Credits  
Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalization, and the drug trade. Same as GOVT 565 and HIST 559.

ANTH 572. Advanced Primate Behavior and Ecology  
3 Credits  

ANTH 573. Advanced Primate Adaptation and Evolution  
3 Credits  
Corequisite(s): ANTH 573 L when offered.

ANTH 574. Advanced Human Osteology  
3 Credits  
Advanced Human Osteology surveying the functional, developmental and evolutionary biology of the human skeleton. Identifying bones and teeth from hands-on experience with skeletal and dental material. Provides a foundation for human evolutionary studies, bioarchaeology and forensic anthropology. May be repeated up to 3 credits. Crosslisted with: BIOL 574.

ANTH 576. Lithic Technology Organization  
3 Credits  
Advanced seminars and laboratory exercises to learn and develop techniques and methods that will help us determine how to interpret behavioral and cultural information from lithic (stone tool) data. Consent of instructor required.

ANTH 577. Advanced Zooarchaeology  
3 Credits  
Detailed study and analysis of taphonomic processes affecting animal bone recovered from archaeological and paleontological contexts.

ANTH 578. Advanced Lab Methods in Archaeology  
3 Credits  
Examination of advanced laboratory techniques used in the analysis of archaeological materials.

ANTH 579. Qualitative Data Analysis and Interpretation  
3 Credits  
This course focuses on methods for qualitative data analysis, both computer-assisted and non-computer-assisted, and interpretation. It includes writing up data for academic articles or theses.

ANTH 585. Method and Theory in Archaeology  
3 Credits  
Focus on major methodological and theoretical aspects of contemporary archeology.

ANTH 587. Field Work in Latin America  
3-12 Credits  
Covers anthropological field methods in Latin America that also incorporate in-field lab analysis. No S/U grading.  
Prerequisite: consent of instructor.

ANTH 596. Readings  
1-6 Credits  
Individual study of selected readings and topics. May be repeated for a maximum of 6 credits. Consent of instructor required.

ANTH 597. Internship  
1-9 Credits  
Anthropological or archaeological internship in private, state, or federal agency. May be repeated for a maximum of 18 credits. Consent of instructor required. Restricted to ANTH majors.  
Prerequisite(s): graduate standing.

ANTH 598. Special Research Problems  
1-6 Credits (6)  
Individual analytic or experimental investigations. May be repeated under different subtitles for a maximum of 6 credits. Consent of instructor required. Restricted to ANTH majors.  
Prerequisite(s): graduate standing.

ANTH 599. Master’s Thesis  
15 Credits  
Thesis. Consent of instructor required. Restricted to ANTH majors.  
Prerequisite(s): graduate standing.

Name:  
Office Location:  
Phone: (575) 646-2725  
Website: http://anthropology.nmsu.edu

Anthropology - Bachelor of Arts

The major in anthropology provides a broadly based education in the social and biological sciences. The undergraduate program prepares students for careers in many areas, such as cultural resource management (or contract archaeology), archaeological research, forensic sciences, health services, cross-cultural field work, community development programs and museum work. Anthropology students can continue for advanced degrees in teaching, museology, other social sciences and anthropology.

Requirements

Departmental Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANTH 301</td>
<td>Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 315</td>
<td>Introduction to Archaeology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 320</td>
<td>Anthropological Linguistics</td>
<td>3</td>
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<tr>
<td>ANTH 350</td>
<td>Anthropological Theory</td>
<td>3</td>
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<tr>
<td>ANTH 355</td>
<td>Physical Anthropology</td>
<td>3</td>
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<tr>
<td>ANTH 399</td>
<td>Professionalism &amp; Practice in Anthropology</td>
<td>3</td>
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Nondepartmental Requirements 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGL 218G</td>
<td>Technical and Scientific Communication</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
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</tbody>
</table>

MATH 210 or above  

Electives  
Select additional electives in anthropology to bring total credits in major to 36, including 27 upper-division.  
Select sufficient electives to bring total credits to 120, including 48 upper-division.
## Second Language Requirement

**Total Credits** 120

1. A grade of C- or better must be earned.

2. Students seeking the B.A. in Anthropology must meet the second language requirement. The requirement is considered satisfied when a student provides evidence that at least the 212 or 214 level of language proficiency has been attained.

## Anthropology - Master of Arts

The MA program in anthropology is designed for students who are interested in the traditional subdisciplines of anthropology and in selected areas of applied anthropology. The program is directed both toward students who intend to take a terminal MA degree and students who intend to enter a Ph.D. program.

A bachelor’s degree in anthropology is not required for entry into the program. Nevertheless, students who lack the equivalent of the following courses may be required to take these courses or corresponding sections of ANTH 502 Fundamentals of Anthropology:

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>ANTH 301</td>
<td>Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 315</td>
<td>Introduction to Archaeology</td>
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<tr>
<td>ANTH 320</td>
<td>Anthropological Linguistics</td>
<td>3</td>
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<tr>
<td>ANTH 355</td>
<td>Physical Anthropology</td>
<td>3</td>
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</tbody>
</table>

## Program Requirements

Students selecting the thesis option must complete 33 hours of basic course work, as described below, plus 6 hours of thesis credit. Students selecting the non-thesis option must complete 39 hours of course work including an internship or special research project for 6 credits.

The 33 hours of basic course work for students selecting either the thesis or non-thesis options are distributed as follows:

### Required Course

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ANTH 505</td>
<td>Issues in Anthropological Practice</td>
<td>3</td>
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</tbody>
</table>

### Core Theory Courses

Select one of the following core theory courses in respective subfield: 1

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 585</td>
<td>Method and Theory in Archaeology (for students in archaeology subfield)</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 513</td>
<td>Biological Anthropology (for students in biological subfield)</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 500</td>
<td>Seminar in Anthropological Theory (for students in cultural anthropology and anthropological linguistics subfields)</td>
<td>3</td>
</tr>
</tbody>
</table>

Select a core theory course in another subdiscipline. 3

### Additional Courses

Select an additional topical/methodological/areal course in respective subfield. 3

Select an additional 21 credits, at least 15 of which must be in anthropology.

### Thesis or Non-Thesis Options

Select one of the following: 6

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 599</td>
<td>Master’s Thesis</td>
<td></td>
</tr>
</tbody>
</table>

### Non-Thesis

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 597</td>
<td>Internship</td>
<td></td>
</tr>
<tr>
<td>ANTH 598</td>
<td>Special Research Problems</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits** 39

1. earning a grade of B or better

## Archaeology Subfield Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 507</td>
<td>Advanced Studies in Archaeology</td>
<td>1-3</td>
</tr>
<tr>
<td>ANTH 516</td>
<td>Advanced Archaeology of the American Southwest</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 517</td>
<td>Advanced Topics in Mesoamerican Archaeology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 518</td>
<td>Advanced Historical Archaeology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 519</td>
<td>Advanced Topics in Prehistoric Archaeology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 526</td>
<td>Conquest and Colonialism</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 540</td>
<td>Cultural Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 577</td>
<td>Advanced Zooarchaeology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 578</td>
<td>Advanced Lab Methods in Archaeology</td>
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</table>

## Biological Anthropology Subfield Courses

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>ANTH 506</td>
<td>Advanced Studies in Physical Anthropology</td>
<td>1-3</td>
</tr>
<tr>
<td>ANTH 531</td>
<td>Issues in Nutritional Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 534</td>
<td>Advanced Human Evolution</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 537</td>
<td>Applied Medical Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 572</td>
<td>Advanced Primate Behavior and Ecology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 573</td>
<td>Advanced Primate Adaptation and Evolution</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 574</td>
<td>Advanced Human Osteology</td>
<td>3</td>
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## Cultural Anthropology and Anthropological Linguistics Subfields Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 455</td>
<td>Federal Indian Policy</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 504</td>
<td>Cultures of Africa</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 508</td>
<td>Advanced Studies in Cultural Anthropology</td>
<td>1-3</td>
</tr>
<tr>
<td>ANTH 509</td>
<td>Advanced Studies in Anthropological Linguistics</td>
<td>1-3</td>
</tr>
<tr>
<td>ANTH 515</td>
<td>Applied Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 520</td>
<td>Ethnographic Field Methods</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 526</td>
<td>Conquest and Colonialism</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 531</td>
<td>Issues in Nutritional Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 538</td>
<td>Plants, Culture, and Sustainable Development</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 539</td>
<td>Culture and Foodways</td>
<td>3</td>
</tr>
</tbody>
</table>

## Admission Requirements

To be considered for admission to the MA program in anthropology, submit the following:

- Application form and fees
- Official undergraduate and graduate transcripts from all colleges and universities attended
• A letter from the candidate addressing his or her interests and
  graduate school objectives
• Letters of recommendation from three persons familiar with the
  candidate's academic record
• A Curriculum Vita
• An undergraduate grade-point average of 3.0 or higher

Application materials are available on the Anthropology website http://anthropology.nmsu.edu.

**Anthropology - Undergraduate Minor**

Students who earn a minor in Anthropology must earn 18 credits, distributed as follows:

**Required Courses**

Select one from the following: 3

- ANTH 301 Cultural Anthropology
- ANTH 315 Introduction to Archaeology
- ANTH 320 Anthropological Linguistics
- ANTH 350 Anthropological Theory
- ANTH 355 Physical Anthropology

Upper division Anthropology courses 300 or above 9
Anthropology courses (any level) 6

Total Credits 18

Students who earn a B.A. in Anthropology may not also earn a minor in Anthropology. Students earning the minor must pass 18 credits with grades of C- or higher. Nine of the credits must be upper-division. Students may count S only in courses in which all grades are S/U.

**Archaeology - Graduate Minor**

**Graduate Minor in Archaeology**

The graduate minor in archaeology allows students in other programs to develop a specialization in archaeology. A minor in archaeology provides a useful concentration for students developing professional careers in cultural resource management, public lands management, environmental sciences, public history, geography, or teaching.

**Course Requirements:**

In order to complete the minor requirements, students are required to complete 9 credit hours (3 classes) of graduate level courses. The core courses for the minor are:

- ANTH 507 Advanced Studies in Archaeology 1-3
- ANTH 516 Advanced Archaeology of the American Southwest 3
- ANTH 517 Advanced Topics in Mesoamerican Archaeology 3
- ANTH 518 Advanced Historical Archaeology 3
- ANTH 522 Archaeological Field School-Graduates 2-6
- ANTH 523 Archaeological Mapping 3-6
- ANTH 540 Cultural Resource Management 3
- ANTH 577 Advanced Zooarchaeology 3
- ANTH 585 Method and Theory in Archaeology 3

Students should choose among these core offerings with the advice of their MA thesis chair and minor area committee member. The minor in archaeology is not available to graduate anthropology majors.

**Cultural Resource Management - Graduate Certificate**

Graduate Certificate programs typically require 12-18 credits, and must be completed within 3 years. Our certificate program will require the student to take 18 credits, 6 credits from two required courses and 12 credits from a comprehensive list of electives in anthropology and cognate fields. All these courses are designed to promote expertise in cultural resource management.

**Required Courses**

- ANTH 540 Cultural Resource Management 3
- ANTH 542 Cultural Resource Management II 3
- HIST 579 Oral History 3
  or HIST 583 Advanced Historic Preservation

**Elective Courses**

Select 9 credits from the following: 1,2 9

- ANTH 455 Federal Indian Policy
- ANTH 507 Advanced Studies in Archaeology
- ANTH 512 Analytical Methods in Anthropology
- ANTH 516 Advanced Archaeology of the American Southwest
- ANTH 522 Archaeological Field School-Graduates
- ANTH 523 Archaeological Mapping
- ANTH 526 Conquest and Colonialism
- ANTH 574 Advanced Human Osteology
- ANTH 577 Advanced Zooarchaeology
- ANTH 578 Advanced Lab Methods in Archaeology
- ANTH 596 Readings
- ANTH 597 Internship
- GEOG 521 GIS & T Applications and Modeling
- GEOG 553 Geomorphology
- GEOG 573 Introduction to Remote Sensing
- GEOG 578 Fundamentals of Geographic Information Science and Technology (GIS & T)
- HIST 579 Oral History
- HIST 586 Interpreting Historic Places for the Public
- HIST 594 Public History Seminar

Total Credits 18

1 Some of these courses have prerequisites, consult the graduate catalog for details.
2 Other classes maybe included in the list of elective courses at the discretion of the Department and with approval of the Anthropology Department Head.

**Food Studies - Graduate Minor**

The purpose of the Food Studies Graduate Minor is to:

1. Enable students to develop a specialization in food studies within their respective graduate program
2. Develop specialized knowledge of the complex and dynamic relationship between food and culture
3. Explore the role of culture in food production, distribution and consumption across different cultures
4. Apply ideas and knowledge from graduate seminars to fieldwork for MA thesis or internship in a food studies topic

Program Requirements

Core Curriculum
Select three from the following: 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 520</td>
<td>Ethnographic Field Methods</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 531</td>
<td>Issues in Nutritional Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 538</td>
<td>Plants, Culture, and Sustainable Development</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 539</td>
<td>Culture and Foodways</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 515</td>
<td>Applied Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 537</td>
<td>Applied Medical Anthropology</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 9

1 This list can be modified as new courses are added to the catalog, or old ones are phased out. Eligible courses to be determined by a committee with at least one representative from Art, Anthropology and History.

Native American Studies - Graduate Minor

The purpose of the Native American Studies Graduate Minor are to:

- Provide an opportunity for all students to learn about Native American cultures and societies.
- Facilitate research and other creative activities that concern Native American peoples and that have potential benefit for them.
- Serve the University and State of New Mexico in ways that support and illuminate the rich heritage of Native American peoples.

NAS focuses on Native American cultures and societies, deals with contemporary and historical experiences of American Indians, and examines the contributions of Indigenous peoples to life in the United States and other American nations. This specialization field has developed in reaction to Western academic views of Native Americans and to the frequently restrictive, assimilationist approach within universities to issues concerning Native peoples. NAS contributes to a new understanding of Native American cultures and societies from contemporary and historical perspectives.

To qualify for a graduate minor in Native American Studies - Anthropology, students are required to complete 9 credit hours (3 classes) of graduate level courses. To record a minor on a student’s transcript, the minor must be listed on the Application for Admission to Candidacy, and the Native American Studies advisor in the Department of Anthropology must sign this form.

Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 541</td>
<td>Decolonizing Methodologies in Native American Studies</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 543</td>
<td>Indigenous Ways of Knowing</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 455</td>
<td>Federal Indian Policy</td>
<td>3</td>
</tr>
</tbody>
</table>

Cognate Area Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOVT 524</td>
<td>American Indian Politics</td>
<td>3</td>
</tr>
<tr>
<td>HIST 509</td>
<td>Native American History</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credits: 9
### Native American Studies - Undergraduate Minor

Students must pass a total of 18 credits of which at least 9 of which must be upper division. ANTH 115 Native Peoples of North America is strongly recommended as the first course for the minor. A grade of C- or better must be obtained for each course. Students may count S grades only in courses in which all grades are S/U, and no more than 6 hours of S credit can be accepted. Students can count no more than 3 credits in independent studies, readings or special topics courses. Such courses, marked below with an asterisk (*), must focus upon Native Americans and must be approved in advance by the director of the minor program, specifying the semester during which a student takes such a course. Students may count no more than 9 credits in Anthropology (except that ANTH 330V Magic, Witchcraft and Religion/HIST 330V Introduction to Religious Studies/SOC 330V Introduction to Religious Studies, may be included above this limit) and no more than 6 credits in History. Please contact the Department of Anthropology regarding the minor.

#### Requirements

Select 18 credits from the following: ¹

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 110</td>
<td>North American Prehistory</td>
<td></td>
</tr>
<tr>
<td>ANTH 115</td>
<td>Native Peoples of North America</td>
<td></td>
</tr>
<tr>
<td>ANTH 116</td>
<td>Native Peoples of the American Southwest</td>
<td></td>
</tr>
<tr>
<td>ANTH 305V</td>
<td>Contemporary Native Americans</td>
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<tr>
<td>ANTH 316</td>
<td>Archaeology of the American Southwest</td>
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</tr>
<tr>
<td>ANTH 330V</td>
<td>Magic, Witchcraft and Religion</td>
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</tr>
<tr>
<td>ANTH 449 H</td>
<td>Directed Reading Honors (preferred)</td>
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<tr>
<td>ANTH 455</td>
<td>Federal Indian Policy</td>
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<tr>
<td>ANTH 467</td>
<td>Archaeology of the American Southwest</td>
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<tr>
<td>GOVT 406</td>
<td>Independent Study (preferred)</td>
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<tr>
<td>GOVT 354</td>
<td>American Indian Politics</td>
<td></td>
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<tr>
<td>HIST 309</td>
<td>American Indian History I</td>
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<tr>
<td>HIST 310</td>
<td>American Indian History II</td>
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</tr>
<tr>
<td>HIST 449</td>
<td>Readings (preferred)</td>
<td></td>
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<tr>
<td>HIST 489</td>
<td>Projects in History (preferred)</td>
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</tr>
<tr>
<td>PHS 460</td>
<td>American Indian Health</td>
<td></td>
</tr>
</tbody>
</table>

or by approval of Minor Advisor

**Total Credits:** 18

¹ Preferred: ANTH 449 H Directed Reading Honors, ANTH 497 Special Topics ANTH 497 Special Topics, GOVT 406 Independent Study, HIST 449 Readings HIST 449 Readings HIST 449 Readings, HIST 489 Projects in History HIST 489 Projects in History, and W S 250 Course W S 250 Not Found.

### Religious Studies - Undergraduate Minor

Students must pass 18 credits of which at least 9 are upper division. Students must earn C- or higher grades and cannot count S/U courses unless all grades in the course must be S/U. No more than 9 credits (upper or lower division) can be earned in any one department. Students may not earn more than 3 credits total in independent studies or special readings courses and must receive approval from the minor advisor to count these credits. Courses that may be eligible as special topics courses when offered with specific subtitles are asterisked. Please contact the Department of Anthropology regarding the minor.

#### Requirements

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 330V</td>
<td>Magic, Witchcraft and Religion</td>
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</table>

Select 15 credits from the following: ¹

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 115</td>
<td>Native Peoples of North America</td>
<td></td>
</tr>
<tr>
<td>ANTH 455</td>
<td>Federal Indian Policy</td>
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<tr>
<td>ART 305</td>
<td>Medieval Art</td>
<td></td>
</tr>
<tr>
<td>ART 310</td>
<td>Native American Art</td>
<td></td>
</tr>
<tr>
<td>ART 311</td>
<td>Art of China I: Neolithic to Song Dynasty</td>
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<td>ART 320</td>
<td>Art and Architecture in Pre-Columbian Meso-America</td>
<td></td>
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<td>ART 321</td>
<td>Pre-Columbian Art and Architecture of the Andes</td>
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<tr>
<td>ART 323</td>
<td>Italian Renaissance Art</td>
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<tr>
<td>ART 325</td>
<td>Northern Renaissance Art</td>
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<tr>
<td>ART 478</td>
<td>Seminar: Selected Topics in Art History</td>
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<tr>
<td>DANC 451V</td>
<td>World Dance</td>
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<tr>
<td>ENGL 243</td>
<td>The Bible as Literature</td>
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<tr>
<td>ENGL 341V</td>
<td>American Indian Literature</td>
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<tr>
<td>ENGL 392V</td>
<td>Mythology</td>
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<td>ENGL 407</td>
<td>Milton</td>
<td></td>
</tr>
<tr>
<td>ENGL 421</td>
<td>Advanced Study in a Literary Period or Movement (preferred)</td>
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<tr>
<td>ENGL 423</td>
<td>Advanced Study in a Major Author (preferred)</td>
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</tr>
<tr>
<td>ENGL 425</td>
<td>Advanced Study in Comparative Literature (preferred)</td>
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</tr>
<tr>
<td>Varying 400-level ENGL Courses ²</td>
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<tr>
<td>GOVT 387</td>
<td>Religion and Politics</td>
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<tr>
<td>HIST 101G</td>
<td>Roots of Modern Europe (when section approved by minor advisor)</td>
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<tr>
<td>HIST 211G</td>
<td>East Asia to 1600</td>
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<td>HIST 221G</td>
<td>Islamic Civilizations to 1800</td>
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<tr>
<td>HIST 222G</td>
<td>Islamic Civilizations since 1800</td>
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</tr>
<tr>
<td>HIST 309</td>
<td>American Indian History I</td>
<td></td>
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<tr>
<td>HIST 353</td>
<td>Colonial Mexico</td>
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</tr>
<tr>
<td>HIST 400</td>
<td>Special Topics (preferred)</td>
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</tr>
<tr>
<td>HIST 433</td>
<td>United States Labor History Since 1877</td>
<td></td>
</tr>
<tr>
<td>HIST 471</td>
<td>China through the Ming Dynasty</td>
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<tr>
<td>HIST 473</td>
<td>History of Japan</td>
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</tr>
<tr>
<td>HON 229G</td>
<td>The New Testament as Literature</td>
<td></td>
</tr>
</tbody>
</table>

¹ Preferred: ANTH 449 H Directed Reading Honors, ANTH 497 Special Topics ANTH 497 Special Topics, GOVT 406 Independent Study, HIST 449 Readings HIST 449 Readings HIST 449 Readings, HIST 489 Projects in History HIST 489 Projects in History, and W S 250 Course W S 250 Not Found.
New Mexico State University

HON 234G  The Worlds of Arthur
HON 237G  Archaeology: Search for the Past
HON 239G  Medieval Understandings: Literature and Culture in the Middle Ages
HON 326V  Art and Mythology
HON 348V  Comparative Mythology: Myth, Ritual, and the Life Cycle
HON 366V  The Gothic Imagination
PHIL 136G  The Quest for God
PHIL 331  Philosophy of Religion
SOC 460  Sociology of Religion

Or by approval of Minor Advisor

Total Credits 18

Preferred: ENGL 421 Advanced Study in a Literary Period or Movement, ENGL 423 Advanced Study in a Major Author, ENGL 425 Advanced Study in Comparative Literature, and HIST 400 Special Topics, HIST 101G Roots of Modern Europe: when section approved by minor advisor.

Sustainable Development - Undergraduate Minor

A minor in Sustainable Development is available for students who want to include Sustainable Development in their academic training. The minor includes a minimum of 18 credit hours of which

• 6 credit hours must be from the core curriculum of the supplemental major,
• 12 credit hours from the elective courses for the supplemental major, and
• 3 credit hours of field study.

Sustainable Development - Undergraduate Supplemental Major

This program consists of 24 credits drawn from the lists below of which 18 credits must be numbered 300 or above. The student must take

Select 6 credit hours (2 classes) from the core curriculum 6
Select 15 credit hours (5 classes) of electives 15
Select 3 credit hours (1 class) of sustainable development field study 3

Total Credits 24

Advisor: Lois Stanford, Anthropology

Requirements

Core Requirements
Select two from the following: 6
AG E 315V  World Agriculture and Food Problems
ANTH 362  Environmental Anthropology
BIOL 301  Principles of Ecology

GEOG 295  Introduction to Climate Science
SOC 465V  Environmental Sociology

Elective Courses
Select 15 credits from the following: 1 15
AG E 337V  Natural Resource Economics
AGRO 483  Sustainable Production of Agronomic Crops
ANTH 360V  Food and Culture Around the World
BIOL 462  Conservation Biology
EPWS 380V  Science & Society
FWCE 255  Principles of Fish and Wildlife Management
HON 305V  Global Environment
HON 321V  Agriculture in an Interconnected World
SOC 361V  Social Issues in the Rural Americas

Additional Courses
With the permission of the program advisor, students may substitute 1 class that presents a topical focus on sustainable development. 2

Field Requirements
Select 3 credits from the following: 3 3
ANTH 485  Special Research Project
FWCE 450  Special Topics
SOC 496  Internship

Total Credits 24

1 Courses are limited in each department in order to encourage students to take classes in different disciplines and broaden their perspective.
2 Certain courses, such as SOC 489 Globalization or special topics courses may have a sustainable development focus, depending on the instructor or subheading. In these cases the student can request permission to substitute this specific course for an elective class listed above.
3 In addition, students are expected to take one class that applies the principles and concepts of sustainable development in a local, regional or international setting. Students may opt to enroll in one of the classes listed below, or they may choose to work on an independent study or internship in sustainable development. In these cases, students should seek the approval of the sustainable development committee before embarking on the field experience or internship.

Art

Undergraduate Program Information

The Department of Art provides a rigorous program for the enrichment, application, development and appreciation of the visual arts. Students in studio develop an individual aesthetic by experimenting with and expressing visual concepts in an articulate manner. Art history students acquire a comprehensive understanding of the aesthetic and cultural issues addressed within the history of art, conducting and presenting independent research. The study of art provides an appropriate background for the pursuit of careers in studio art and art history in such areas as: the visual arts; graphic design; conservation; library work; museum work; advertising; architecture and interior design; photography; crafts; cinematography; education and art therapy;
Degrees for the Department

Art - Bachelor of Arts (p. 201)

Art - Bachelor of Fine Arts (p. 202)

Art - Master of Arts (p. 203)

Art - Master of Fine Arts (p. 204)

Minors for the Department

Art History - Undergraduate Minor (p. 205)

Art - Undergraduate Minor (p. 205)

Degrees for the Department

Art - Bachelor of Arts (p. 201)

Art - Bachelor of Fine Arts (p. 202)

Art - Master of Arts (p. 203)

Art - Master of Fine Arts (p. 204)

Minors for the Department

Art History - Undergraduate Minor (p. 205)

Art - Undergraduate Minor (p. 205)

Museum Conservation - Undergraduate Minor (p. 205)

Professor, Julia Barello, Department Head

Professors Barello, Stevens; Associate Professors Cully, Goehring, Zarur; Assistant Professors d’Agostino, Edgar, Furuhashi, Kline, Taylor; College Instructors Cole-Dorn, Fitzsimmons, Marinas-Feliner; Emeritus Professors Fidler, Jaffe, Ocepek, Rose, St. Aubyn; Gallery Director Sage; Conservator Marinas-Feliner

J. Barello, Department Head, MFA (University of Wisconsin-Milwaukee) – metals; T. Cole-Dorn, MFA (New Mexico State University) – painting and drawing; C. Cully, MFA (University of Arizona) – painting and drawing; B. d’Agostino MFA (University of Maryland) – graphic design; J. Edgar, MFA (Cranbook Academy of Art) – Ceramics; J. Fitzsimmons, MA (New Mexico State University) – art history; M. Furuhashi, MFA (University of Illinois-Champaign) – jewelry and metals; M. Goehring, Ph.D. (Case Western) – art history; R. W. Kline MFA (University of Illinois - Chicago); S. Marinas-Feliner, MA Art Conservation (Universidad Complutense de Madrid, Spain) and MA Anthropology (New Mexico State University) – Art Conservator; M. Sage, MFA (MICA) – University Art Gallery Director; R. Stevens, MFA (Syracuse University) – sculpture; S. Taylor, Ph.D. (Boston University) – art history; E. Zarur, MFA, Ph.D. (University of Georgia) – art history

ART 101G. Orientation in Art
3 Credits (2+3P)
A multicultural examination of the principles and philosophies of the visual arts and the ideas expressed through them.

ART 110G. Visual Concepts
3 Credits (2+4P)
Introduction to the philosophies of art, visual thinking, and principles of visual organization. Designed to give students a broad view of aesthetic traditions, ideologies, and techniques basic to the creation and evaluation of art. Principles and concepts are taught in a common lecture and applied in parallel small studio sections. For non-art majors only.

ART 150. Drawing I
3 Credits (2+4P)
Introduction to the skill of seeing through exercises that emphasize careful drawing from the still life and utilize a range of drawing materials and techniques. Outside assignments required. Intended for non-art majors on main campus. May be repeated up to 3 credits.

ART 151. Drawing II
3 Credits (2+4P)
Continued emphasis on drawing from observation by focusing on still life and other subject matter. Covers a range of materials, techniques and concepts. Outside assignments. Restricted to ART and ANVE/DFM majors.
Prerequisite(s): ART 150.

ART 155. 2-D Fundamentals
3 Credits
Introduction to two-dimensional space emphasizing visual elements and design principles as they apply to composition. A variety of materials are used in the studio projects and sketchbook exercises. Developing knowledge in vocabulary, color theory and skill in translating ideas into design are encouraged. Restricted to Community Colleges campuses only.

ART 156. 3-D Fundamentals
3 Credits
Compositional organization of three-dimensional space explored through a broad range of visual exercises. Resourceful and creative problem solving encouraged. Restricted to Community Colleges campuses only.

ART 157. Color Theory
3 Credits (2+4P)
Various color theories as they relate to compositional organization. Required for art education majors.

ART 160. Computer-Based Illustration
3 Credits (2+4P)
Introduction to the principles of computerized drawing and design. Using the basic concepts, drawing tools, and vocabulary of Adobe Illustrator.
Prerequisite: ART 150, ART 155, or consent of instructor.

ART 161. Digital Imaging I
3 Credits (2+4P)
Work with basic concepts, tools, and vocabulary of Adobe Photoshop to create effective visual communication. Includes selection tools, cloning, copying and pasting, color correction, image restoration, filters, and special effects. Community Colleges only.

ART 163. Digital Graphics
3 Credits (2+4P)
Importing and exporting images and text into various desktop publishing formats. Exploring imaging, drawing, and page layout applications. Introduction to typography.
Prerequisite: ART 161.

ART 165. Web Page Design
3 Credits (2+4P)
Introduction to the creation of well-designed and organized Web sites. Emphasis on building creative but functional user-friendly sites. Introduction to HTML, Flash, Java Script, and Web-authoring software. Community Colleges only. Same as OEPT 165.
Prerequisite: ART 161.

ART 250. Introduction to Drawing
3 Credits (2+4P)
Introduction to drawing with a focus on technical, structural, and methodological skills. Subjects include still life and live figure models.

ART 252. Aspects of Drawing
2-3 Credits
Continued work in drawing with emphasis on personal creative endeavor. Community Colleges only.
Prerequisites: ART 150, ART 151, and ART 250.

publishing; theatre; set design; television; industry and business; communication; management and research in the creative and academic areas. A major in art also provides students with a broad humanistic background appropriate to preparation for advanced degrees in other fields.
ART 255. Introduction to Graphic Design
3 Credits (2+4P)
Introduction to the principles of visual communication and digital media, letterforms, typography and identity marks. Projects produced using conventional and digital tools.

ART 256. Introduction to Letter Forms and Typographic Design
3 Credits (2+4P)
Introduction to letter forms, typography and identify marks. Projects produced using conventional and digital graphic designer tools.

Prerequisite(s): ART 155.

ART 260. Introduction to Painting
3 Credits (2+4P)
Introduction to basic skills of painting through various exercises that emphasize working from observation, images and imagination. May be repeated up to 3 credits.

Prerequisite(s): ART 250 or ART 150.

ART 261. Painting Methods, Techniques and Applications
3 Credits (2+4P)
The investigation of formal aspects of painting, an examination of painting techniques, and an exploration of various methodologies regarding form and content as applied to critical thinking skills through medium of paint.

Prerequisite(s): ART 150, ART 260.

ART 262. Aspects of Painting
2-3 Credits
Varied painting media: continued development of painting skills.

Prerequisites: ART 150, ART 155 (for art majors), ART 260, or consent of instructor.

ART 265. Introduction to Sculpture
3 Credits (2+4P)
Beginning sculpture students “explore space” while learning new processes and skills, including mold making, welding and woodworking.

ART 266. Go Figure: The Body in Contemporary Art
3 Credits (2+4P)
Cultivation of individual direction through constant creative action. Emphasis on self-styled assignments. Rotating themes pertinent to contemporary sculpture supplement aesthetic and conceptual awareness. Restricted to: Main campus only.

ART 267. Art Portfolio Preparation
3 Credits (2+4P)
Refine general marketing strategies, personal portfolio and resumes. Define, target, and penetrate personal target markets. Students develop individual promotional packages.

Prerequisites: ART 163, ART 269, and ART 272, or consent of instructor.

ART 269. Advanced Computer-Based Illustration
3 Credits (2+4P)
Design custom graphics and create special effects with filtering, special effects on type, graphs, technical illustrations, and three-dimensional drawing using Adobe Illustrator.

Prerequisites: ART 157, ART 160, and ART 161, or consent of instructor.

ART 270. Introduction to Photography
3 Credits (2+4P)
Introduction to the production of digital images within the context of contemporary art. Utilizes digital SLR cameras with an emphasis on basic camera operation, picture composition, image processing and digital workflow. A DSLR camera is required. May be repeated up to 3 credits.

ART 271. Introduction to Film and Darkroom
3 Credits (2+4P)
Introduction to silver based photographic materials, film development, enlargement printing and darkroom work. Students will work with a range of cameras including: medium format, toy and pinhole. Emphasis on understanding the syntax of silver halide photographic materials. Development of conceptual vocabulary and the creation of images with thematic unity. May be repeated for a maximum of 6 credits.

Prerequisite(s): ART 270.

ART 272. Digital Imaging II
3 Credits (2+4P)
Refining of individual creative styles and technical skills using Adobe Photoshop. Emphasis on input and output predictability, and working with large file productions. Community colleges only. Restricted to: Community Colleges only.

Prerequisite(s): ART 161.

ART 274. Digital Capture and Output
3-9 Credits (3-9)

ART 275. Introduction to Ceramics
3 Credits (2+4P)
Introduction to the technical processes and conceptual concerns of working with the ceramic material. Students will explore various methods of forming with earthenware to make both functional and expressive works out of clay.

ART 276. Ceramics I, B
3 Credits (2+4P)
Beginning ceramics, complementary half to ART 275. (ART 275 and ART 276 do not need to be taken consecutively.) Basic building techniques of coil, slab, and throwing are introduced. High-fire and low-fire clays are used.

ART 280. Introduction to Printmaking
3 Credits (2+4P)
Introduction to the field of printmaking through projects that focus on specific processes, such as relief, intaglio, collography, paper lithography, and a variety of transfer and stencil techniques. Students engage in several assignments that are collaborative, as well as individual projects designed for development of personal aesthetics.

ART 281. Printmaking II
3 Credits (2+4P)
Printmaking materials and techniques, with emphasis in intaglio and relief procedures.

Prerequisites: ART 150, ART 156 (for ART majors) and 280. Corequisite: ART 150.

ART 285. Introduction to Metals and Jewelry
3 Credits (2+4P)
Introduction to fundamental processes, design, and conceptual development for metal fabrication of jewelry and functional/non-functional objects.

ART 286. Stained Glass
3 Credits (2+4P)
Instruction in the fundamental fabrication and design techniques for stained glass. Introduction to visual decision making skills, historical, and critical issues of the medium. Community Colleges only.
ART 294. Special Topics in Studio
1-3 Credits
Specific subjects and credits to be announced in the Schedule of Classes. No more than 9 credits toward a degree.
Prerequisite: consent of instructor.

ART 295G. Introduction to Art History I
3 Credits
An introduction to the principles of art history within a chronological framework of the art of the Western World. All media will be discussed. From prehistoric times to the fourteenth century.

ART 296G. Introduction to Art History II
3 Credits
Continuation of ART 295, Art of the Western World from Late Gothic to the present. May be repeated up to 3 credits.

ART 298. Writing in Art
3 Credits
This reading- and writing-intensive course will introduce students to various approaches of writing about historical art.

ART 300. Special Topics in Art History
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits. May be repeated up to 12 credits. Restricted to Las Cruces campus only.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 305. Medieval Art
3 Credits
History of painting, stained glass, sculpture, architecture and manuscript illumination in Europe from the Early Christian period to the end of the Gothic period; taught with ART 505.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 310. Native American Art
3 Credits
Cross-cultural introduction to art of the prehistoric and historic native people of the North, Central, and South Americas. Considers the artistic expression and the function of art in diverse cultural and environmental contexts.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 311. Art of China I: Neolithic to Song Dynasty
3 Credits
Survey of the art of China from the neolithic period to the end of the Song dynasty. Non-majors welcome. May be repeated up to 3 credits. Crosslisted with: ART 511.
Prerequisite(s): ART 295G, 296G, and 298 or HIST 211G and HIST 212G or consent of instructor.

ART 320. Art and Architecture in Pre-Columbian Meso-America
3 Credits
Analysis of the art and culture of the Mesoamerican peoples before the arrival of Columbus in the New World. Includes an in-depth formal and historical analysis of architecture, sculpture, painting, pottery, and metal works of Mixtec, Toltec, Aztec, Maya, and other cultures and civilizations.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 321. Pre-Columbian Art and Architecture of the Andes
3 Credits
Examines the arts and history of pre-Columbian Andean cultures in a cultural context. Analysis of architecture, sculpture, pottery, jewelry, textiles, and feather work.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 323. Italian Renaissance Art
3 Credits
History of painting, sculpture and architecture in Italy from the 14th century to the end of the 16th century; taught with ART 523
Prerequisite(s): ART 295G, ART 296G and ART 298 or consent of instructor.

ART 325. Northern Renaissance Art
3 Credits
Study of the arts and history of the Northern Renaissance in Europe from the late 14th century to the mid-16th century; taught with ART 525.
Prerequisite(s): ART 295G, 296G, and 298 or consent of instructor.

ART 328. Baroque Art and Architecture in Northern Europe
3 Credits
Study of architecture, painting sculpture in Flanders, Holland, France, England, and Germany as indigenous developments and as reflections of the Italian Baroque.
Prerequisite(s): ART 295G, ART 296G, ART 298, or consent of instructor.

ART 329. Survey of Western Architecture
3 Credits
Survey of history of Western architecture from prehistoric time to the present.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 330. Modern Architecture
3 Credits
A survey of the history of Modern Architecture with focus given to major architects, monumental buildings, and building groups stressing construction techniques and style from the 18th century to the present.
Prerequisite(s): ART 295G, ART 296G, ART 298, or consent of instructor.

ART 333. Baroque Art and Architecture in Italy, Spain, and Hispanic Latin America
3 Credits
Concentration of Italian Baroque architecture, painting, and sculpture; and on Spanish painting, sculpture, and architecture, as well as the art and architecture of Spanish vice-royalties of the Americas.
Prerequisite(s): ART 295G, ART 296G, ART 298, or consent of instructor.

ART 337. American Art to 1900
3 Credits
Examines painting, sculpture, architecture and other arts in the United States from the colonial period to 1900 and places them within conceptual and historical contexts.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 338. Late Eighteenth- and Nineteenth-Century European Art
3 Credits
History of painting, sculpture, architecture, and other arts created in Europe from 1789 to 1900.
Prerequisite(s): ART 295G, ART 296G, and ART 298.
ART 339. History of Photography  
3 Credits  
Course studies history, theory and use of photographic practices in art, especially from formal introduction of the process in 1839 to the present.  
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 342. Twentieth-Century Art I, 1900-1945  
3 Credits  
Examines themes and monuments of the Western world created between 1900 and 1945 and emphasizes the growth of modern and avant garde cultural practices.  
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 343. Twentieth-Century Art II, 1945-Present  
3 Credits  
History of painting, sculpture, and other arts in Europe, the United States, and elsewhere from 1945 to the present.  
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 350. Intermediate Drawing and Painting  
3 Credits (2+4P)  
Intermediate drawing and painting course focusing on the following topics: Realism, Color, Narrative, and Abstraction. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 12 credits.  
Prerequisite(s): ART 250 and ART 260.

ART 354. History of Graphic Design  
3 Credits  
This course introduces students to the history of graphic design and evolution of visual communication. Course will involve writing and design projects.  
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 355. Special Topics in Graphic Design  
3 Credits (2+4P)  
Intermediate graphic design course focusing on the following topics: production, packaging, layout, identity and interactive design. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 12 credits.  
Prerequisite(s): ART 255.

ART 356. Graphic Design and Multicolor Digital Production  
3 Credits (2+4P)  
Design and production of multicolor projects using conventional and digital techniques.  
Prerequisite(s): Grades of B or higher in each of ART 255 and ART 256; prior passage of ART 355 with a grade of C- or higher.

ART 357. Digital Graphic Design and Illustration  
3 Credits (2+4P)  
Graphic illustrations and icons using vector and bitmap software programs. Emphasis on editorial, information and cultural applications. May be repeated for a maximum of 6 credits.  
Prerequisite(s): ART 150, ART 255, ART 256.

ART 359. Digital Image-Making for Graphic Designers  
3 Credits  
Creation of graphic icons, stylizations and archetypes. Projects produced using vector-based computer programs. Some computer experience required.  
Prerequisite(s): ART 150, ART 255, ART 256, and CMT 145.

ART 360. The Figure  
3 Credits (2+4P)  
Introduction to working from live models, anatomical skeletons, source images and the imagination in a variety of two-dimensional media, including painting and drawing. An emphasis is placed on anatomical accuracy and with a focus on the figure as an expressive subject. May be repeated up to 3 credits.  
Prerequisite(s): ART 150, 250 or consent of instructor.

ART 361. Painting IIIB  
3 Credits (2+4P)  
Media, materials and technical problems of contemporary painting continued. May be repeated for a maximum of 6 credits.  
Prerequisite(s): ART 295G and ART 360.

ART 365. Intermediate Sculpture Special Topics  
3 Credits (2+4P)  
Intermediate sculpture students will expand their fabrication skills in metal, wood and mixed media. Assignments incorporate topics such as Pop art, Process Art, and The Body in Contemporary Art. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 6 credits.  
Prerequisite(s): ART 265.

ART 370. Intermediate Digital Photography  
3 Credits (2+4P)  
Intermediate digital photography course addressing techniques and production of photo media within the context of contemporary art. Course focuses on the following rotating topics: Networks, Photo-book and Video art. May be repeated up to 12 credits.  
Prerequisite(s): ART 270, or consent of instructor.

ART 373. Intermediate Analog Photography  
3 Credits (2+4P)  
Introduction to skills and techniques of black and white film photography within the context of contemporary art. Emphasis on analog camera work and darkroom procedures. 35 mm SLR or rangefinder film camera required for course. May be repeated up to 6 credits.  
Prerequisite(s): ART 270, or consent of instructor.

ART 374. Intermediate Ceramics: Multiples (Design and Production)  
3 Credits (2+4P)  
Intermediate ceramics course focusing on an introduction to the technical processes of throwing, prototyping, mold making, glaze calculation, and alternative firing. May be repeated up to 6 credits.  
Prerequisite(s): ART 275.

ART 375. Intermediate Ceramics: Sculptural Concerns  
3 Credits (2+4P)  
Intermediate ceramics course focusing on the refinement of technical skills with an emphasis on conceptual development related to materiality.  
Prerequisite(s): ART 275 or consent of instructor.

ART 376. Museum/Gallery Research Internship  
1-9 Credits  
Research internship in museum or gallery. Requirements determined by instructor in cooperation with supervising museum/gallery professional. May be repeated up to 9 credits. Consent of Instructor required.  
Prerequisite(s): ART 295G, ART 296G, and ART 298.
ART 380. Intermediate Printmaking
3 Credits (2+4P)
Intermediate printmaking course with emphasis on further investigation of a variety of materials and techniques associated with the print processes of intaglio and relief. Stone lithography, serigraphy and mixed media will be introduced. May be repeated up to 6 credits.
Prerequisite(s): ART 280, or consent of instructor.

ART 385. Intermediate Metals: Special Topics
3 Credits (2+4P)
Intermediate Metals/Jewelry course focusing on the following topics: design and production, materiality and sculptural concern. Techniques may include casting, complex construction, forming, and mix media. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 6 credits.
Prerequisite(s): ART 285.

ART 387. Exhibition Studies
3 Credits
Exhibition theory through practice. Gallery operations and management: collecting, conversation, exhibiting, and public responsibility.

ART 390. Visual Culture of the 1960s
3 Credits
Focus on major cultural trends and historical events in 1960's America. Offers analysis of art, films, and pop culture phenomena of the period.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 392. Visual Culture of the 1980s
3 Credits
Focus on major cultural trends and historical events in 1980's America. Offers analysis of art, films, and pop culture phenomena of the period.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 394. Special Topics in Studio
3 Credits
Specific subjects and credits to be announced in the Schedule of Classes. No more than 9 credits toward a degree.

ART 401. Museum Conservation Techniques I
3 Credits (2+3P)
Introduces the student to conservation theory and the basic principles of conservation for cultural objects. The course integrates the history, philosophy and technologies of art conservation with knowledge of the properties of materials used in conservation. The student will learn and develop conservation skills including learning about the most frequent kinds of deterioration that can occur in various types of art objects, symptoms and causes as well as preventative and restoration techniques. Although this course provides practical experience, it also seeks to provide a broad understanding of the field of conservation. Crosslisted with: ART 501.

ART 402. Museum Conservation Techniques II
3 Credits (2+3P)
Continues conservation theory and the basic principles of conservation for cultural objects. The course integrates the history, philosophy and technologies of art conservation with knowledge of the properties of materials used in conservation. The student will learn and develop conservation skills including learning about the most frequent kinds of deterioration that can occur in various types of art objects, symptoms and causes as well as preventative and restoration techniques. Although this course provides practical experience, it also seeks to provide a broad understanding of the field of conservation. Crosslisted with: ART 502.
Prerequisite(s): ART 401.

ART 403. Preventative Conservation/Collections Care
3 Credits
Introduces the student on how to mitigate the deterioration and damage of cultural property in a museum setting through the formulation and implementation of policies and procedures. The course addresses most aspects of collections management and care for objects in storage, exhibitions and during transportation. Crosslisted with: ART 503.

ART 444. Art and Life in Renaissance Italy
3 Credits
Examines how Italian Renaissance textual and visual culture offered Europe new ways of seeing and portraying itself. 1350-1550. Topics include: Florence, Venice, Rome, Leonardo, Michelangelo, titian, humanism, the Medici, and republican and courtly culture.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 450. Advanced Drawing and Painting: Special Topics
3-6 Credits (2-4+4P)
Advanced drawing and painting course focusing on the following topics: Identity, Place, Spirituality, and Body. Topics will be announced in the course schedule. May be repeated up to 12 credits.
Prerequisite(s): 12 credits of ART 350.

ART 455. Advanced Graphic Design Special Topics
3-6 Credits (3-6)
Advanced graphic design course focusing on the following topics: visual communication, system graphics, typography, portfolio preparation, art of the book and professional practice. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 18 credits.
Prerequisite(s): 6 credits of ART 355.

ART 458. The New Mexico Studio of Design
3 Credits
An advanced graphic design studio providing a design service for nonprofit community organizations. Client-based projects produced by students from concept to completion. May be repeated for a maximum of 6 credits.
Prerequisite(s): ART 355.

ART 460. Painting Workshop
3 Credits
Media, materials and advanced technical problems of contemporary painters. May be taken up to 6 credits.
Prerequisite(s): ART 350 and ART 361.

ART 461. Painting Workshop II
3 Credits (2+4P)
Advanced issues in contemporary painting. May be repeated for a maximum of 6 credits. Restricted to majors.
Prerequisite(s): ART 460.

ART 465. Advanced Sculpture Special Topics
3-6 Credits (2-4+4P)
Thematic classes deepen students' knowledge of contemporary sculpture and extended media through a series of interpretive assignments that culminates in a unified body of work. Course topics include: "Artists’ Maps", Installation Art/Land Art", "Sculpture and the 1960s", "Sculpture and the 1970’s". Topics will be announced in the course schedule. May be repeated up to 18 credits.
Prerequisite(s): 3 credits of ART 365 or permission of the instructor.
ART 470. Advanced Digital Photography
3 Credits (2+4P)
Advanced digital photography course addressing technique and production of photo media within the context of contemporary art. Course focuses on the following rotating topics: Temporality, Photo-installation and Video Art. Each topic may only be taken once. May be repeated up to 12 credits.
Prerequisite(s): ART 370, ART 373 or consent of instructor.

ART 473. Advanced Analog Photography
3 Credits (2+4P)
Advanced photography course focused on skills and techniques of black and white film within the context of contemporary art. Course focuses on the following rotating topics: Large Format Tableau, Experimental Processes and Materials. May be repeated up to 12 credits.
Prerequisite(s): ART 374 and ART 375, or consent of instructor.

ART 474. Advanced Ceramics Design and Production
3-6 Credits (3-6)
Advanced ceramics course focusing on the technical processes of throwing, prototyping, mold making, glaze calculation, and alternative firing. Discussions may also include issues of professional practice, marketing, and branding. May be repeated up to 6 credits.
Prerequisite(s): ART 374 and ART 375, or consent of instructor.

ART 475. Advanced Ceramics Sculptural Concerns
3-6 Credits (2+4+4P)
Advanced ceramics course focusing on conceptual development as it relates the creation of a unified body of work. Topics may include discussions of advanced techniques, professional practices, and contemporary issues in ceramics. May be repeated up to 15 credits.
Prerequisite(s): ART 374 and ART 375, or consent of instructor.

ART 477. Independent Research Problems in Art History
1-9 Credits
Advanced research on special problems to be conducted under supervision of art history faculty. May be taken up to 12 credits. Consent of instructor required.
Prerequisite(s): ART 295G, ART 296G, ART 298 and one 300 level art history course and consent of instructor.

ART 478. Seminar: Selected Topics in Art History
3 Credits
Reading, research, and discussion of advanced problems. Topics will be announced in the course schedule. Each topic may be only taken once. Non-art/art history majors, contact instructor for consent. May be repeated up to 12 credits.
Prerequisite(s): ART 295G, ART 296G and ART 298, and one 300 level art history course.

ART 479. Art Theory, Criticism, and Historiography
3 Credits
Theories and methodologies in art history and art criticism. May be repeated up to 3 credits.
Prerequisite(s): ART 295G, ART 296G, ART 298 and one 300 level art history course and consent of instructor.

ART 480. Special Topics in Printmaking
3-6 Credits (3-6)
Special topics in printmaking. Emphasizing conceptual approaches to printmaking and development of individual content. Topics will be announced in the course schedule. May be repeated up to 18 credits.
Prerequisite(s): 6 credits of ART 380.

ART 485. Advanced Metals: Special Topics
3-6 Credits (2-4+4P)
Advanced Metals/Jewelry course focusing on the following topics: conceptual development and personal aesthetic and style, professional practices, contemporary issues in Metals/Jewelry, and senior exhibition. Techniques may include enameling, coloring, historical processes, and digital technology. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 18 credits.
Prerequisite(s): 6 credits of ART 385.

ART 490. Museum Conservation Internship
1-6 Credits (1-6)
The goal of this internship is to provide a student with a practical learning experience in preventative conservation techniques and policies so that they can relate what they have learned in the classroom from ART 403 Preventative Conservation/Collections Care to applied situations. It will provide the student an opportunity to learn skills and knowledge needed in working with museum collections. Tasks and projects will be assigned by the instructor. 3 credits required for BFA in Museum Conservation. May be repeated up to 6 credits.
Prerequisite(s): ART 403.

ART 494. Special Topics in Studio
3 Credits
Specific subjects and credits to be announced in the Schedule of Classes. No more than 9 credits toward a degree.

ART 495. Undergraduate Studio Thesis
3-6 Credits (3-6)
Special research and independent study leading to undergraduate thesis exhibition. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

ART 496. Fundamentals of Studio Management
1 Credit
Advanced studio course designed to introduce students to the fundamentals of studio management. Includes training in proper tools use and maintenance; safety procedures; and practical experience with studio oversight. Concurrent registration in advanced level studio course of the same media area required. May be repeated for a maximum of 3 credits. Restricted to majors. Graded S/U.
Prerequisite: consent of instructor.

ART 497. Readings in Art History
3 Credits
In-depth study of art historical writing. May be taken up to 12 credits. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): ART 295G, ART 296G, ART 298 and one 300 level art history course.

ART 499. Problems in Studio Art
1-6 Credits (1-6)
Individualized study in specialized studio areas not covered by other advanced courses. May be repeated up to 9 credits. Consent of Instructor required.

ART 500. Special Topics in Art History Advanced
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.
Prerequisite: graduate status.
ART 501. Museum Conservation Techniques I
3 Credits (2+3P)
Introduces the student to conservation theory and the basic principles of conservation for cultural objects. The course integrates the history, philosophy and technologies of art conservation with knowledge of the properties of materials used in conservation. The student will learn and develop conservation skills including learning about the most frequent kinds of deterioration that can occur in various types of art objects, symptoms and causes as well as preventative and restoration techniques. Although this course provides practical experience, it also seeks to provide a broad understanding of the field of conservation. This course also includes how to document the condition of an object during the conservation process. May be repeated up to 3 credits. Crosslisted with: ART 401.

ART 502. Museum Conservation Techniques II
3 Credits (2+3P)
Continues conservation theory and the basic principles of conservation for cultural objects. The course integrates the history, philosophy and technologies of art conservation with knowledge of the properties of materials used in conservation. The student will learn and develop conservation skills including learning about the most frequent kinds of deterioration that can occur in various types of art objects, symptoms and causes as well as preventative and restoration techniques. Although this course provides practical experience, it also seeks to provide a broad understanding of the field of conservation. Crosslisted with: ART 402.

Prerequisite(s): ART 501.

ART 503. Preventive Conservation/Collections Care
3 Credits
Introduces the student on how to mitigate the deterioration and damage of cultural property in a museum setting through the formulation and implementation of policies and procedures. The course addresses most aspects of collections management and care for objects in storage, exhibitions and during transportation. Crosslisted with: ART 403.

ART 505. Medieval Art
3 Credits
History of painting, stained glass, sculpture, architecture and manuscript illumination in Europe from the Early Christian period to the end of the Gothic period; taught with ART 305. Consent of instructor required.

Prerequisite(s): ART 295G; Graduate Standing.

ART 510. Advanced Native American Art
3 Credits
Cross-cultural introduction to art of the prehistoric and historic native people of the North, Central, and South Americas. The artistic expression and the function of art considered in diverse cultural and environmental contexts.

Prerequisite: graduate standing.

ART 511. Art of China I: Neolithic to Song Dynasty
3 Credits
Survey of the art of China from the neolithic period to the end of the Song dynasty. May be repeated up to 3 credits. Crosslisted with: ART 311.

Prerequisite(s): Graduate Standing.

ART 520. Art and Architecture in Pre-Columbian Mesoamerica
3 Credits
Analysis of the art and culture of the Mesoamerican peoples before the arrival of Columbus in the New World. Includes an in-depth formal and historical analysis of architecture, sculpture, painting, pottery and metal works of Mixtec, Toltec, the Aztec, Maya, and other cultures and civilizations.

Prerequisite: graduate standing.

ART 521. Pre-Columbian Art and Architecture of the Andes
3 Credits
Examines the arts and history of pre-Columbian Andean cultures in a cultural context. Analysis of their architecture, sculpture, pottery, jewelry, textiles, and featherwork.

Prerequisite: graduate standing.

ART 523. Italian Renaissance Art
3 Credits
History of painting, sculpture and architecture in Italy from the 14th century to the end of the 16th century, taught with ART 323. Consent of instructor required.

Prerequisite(s): Graduate Standing.

ART 525. Northern Renaissance Art
3 Credits
History of painting, manuscript illumination and graphics in Northern Europe from the late 14th century to the mid-16th century; taught with ART 325. May be repeated up to 3 credits. Consent of Instructor required.

Prerequisite(s): Graduate Standing.

ART 530. Modern Architecture
3 Credits
Study of the architecture of the later eighteenth, nineteenth and twentieth centuries in the context of technological, social and stylistic changes. Focus on the works of Louis Sullivan, Frank Lloyd Wright, and European architects of the International Style, and the current reaction.

Prerequisite: graduate standing.

ART 533. Baroque Art and Architecture in Italy, Spain, and Hispanic Latin America
3 Credits
Concentration on Italian and Spanish Baroque architecture, painting, and sculpture, as well as the art and architecture of Spanish vice-royalties of the Americas.

Prerequisite: graduate standing.

ART 537. American Art to 1900
3 Credits
Covers the history of painting, sculpture, architecture, and other arts in the United States from the colonial period to 1900.

Prerequisite: graduate standing.

ART 539. Advanced History of Photography
3 Credits
Course studies history, theory and use of photographic practices in art, especially from formal introduction of the process in 1839 to the present.

Prerequisite(s): ART 295G, ART 296G, and ART 297; Graduate Standing.

ART 542. Twentieth-Century Art I, 1900-1945
3 Credits
History of painting, sculpture, and other arts in Europe, the United States, and elsewhere from 1900 to 1945.

Prerequisite: graduate standing.

ART 543. Twentieth-Century Art II, 1945-Present
3 Credits
History of painting, sculpture, and other arts in Europe, the United States, and elsewhere from 1945 to the present. Comprehensive research paper required.

Prerequisite: graduate standing.

ART 550. Drawing and Painting Workshop
3-6 Credits (2-4+4P)
Graduate level drawing and painting course focusing on the development of concepts, expression and visual form. May be repeated up to 27 credits. Restricted to: ART majors.
ART 555. Graphic Design
3 Credits
May be repeated up to 27 credits.

ART 560. Painting Workshop
3-9 Credits
Advanced work with painting skills. Emphasis on critical analysis and development of body of work. Restricted to graduate art students. May be repeated up to 27 credits.

Prerequisite(s): Graduate standing.

ART 565. Sculpture Media
3-9 Credits
May be repeated up to 27 credits.

ART 570. Advanced Introduction to Photography
3-9 Credits
Graduate students develop and implement a research program using photographic media and processes. Outcomes and program developed in consultation with photography faculty. May be repeated up to 30 credits. Consent of Instructor required. Prerequisite(s): .

ART 573. Non-Silver Photographic Processes
3 Credits
Advanced work with historic photographic processes. Emphasis on creation of an extended body of work. Taught with ART 373. Consent of instructor required. Restricted to ART majors.

Prerequisite(s): ART 270, ART 271, ART 274.

ART 575. Ceramic Arts
3-9 Credits
May be repeated up to 27 credits.

ART 576. Museum/Gallery Research Internship
1-9 Credits
Research internship in museum or gallery. Requirements determined by instructor in cooperation with supervising museum/gallery professional. For art history credit. May be repeated for a maximum of 9 credits.

Prerequisite: graduate standing.

ART 577. Independent Research Problems in Art History
1-9 Credits
Advanced research on special problems to be conducted under supervision of art history faculty. May be repeated for a maximum of 9 credits. Consent of instructor required.

Prerequisite(s): Graduate standing.

ART 578. Seminar: Selected Topics in Art History
3 Credits
Reading, research, and discussion of advanced problems. May be repeated for a maximum of 9 credits.

Prerequisite: Graduate standing.

ART 579. Graduate Seminar: Art Theory, Criticism, Historiography
3 Credits
Theories and methodologies in art history and art criticism.

Prerequisite: Graduate standing.

ART 580. Printmaking Workshop
3-6 Credits
May be repeated for a maximum of 33 credits.

Prerequisite(s): Graduate standing.

ART 585. Metals and Jewelry Design
3-9 Credits
May be repeated up to 27 credits.

ART 590. Visual Culture of the 1960s
3 Credits
Focuses on major cultural trends and historical events in 1960s America. Offers analysis of art, films, and pop culture phenomena of the period. Fulfill all requirements of ART 390 plus graduate-level research. Graduate standing.

Prerequisite(s): Either ART 297, ART 343, or consent of instructor.

ART 591. Visual Culture of the 1970s
3 Credits
Focuses on major cultural trends and historical events in 1970s America. Offers analysis of art, films, and pop culture phenomena of the period. Fulfill all requirements of ART 391 plus graduate-level research. Graduate standing.

Prerequisite(s): Either ART 297, ART 343, or consent of instructor.

ART 592. Visual Culture of the 1980s
3 Credits
Focuses on major cultural trends and historical events in 1980s America. Offers analysis of art, films, and pop culture phenomena of the period. Fulfill all requirements of ART 392 plus graduate-level research. Graduate standing.

Prerequisite(s): Either ART 297, ART 343, or consent of instructor.

ART 595. Problems in Studio
1-6 Credits
Individualized study in specialized studio areas not covered by other advanced courses. May be repeated up to 12 credits. Consent of instructor required.

ART 596. Graduate Studio Seminar
3 Credits
Explores issues in contemporary art making and their relationship to personal work. Presentation of research in oral, visual, and written form. May be repeated for a maximum of 18 credits. Restricted to majors.

Prerequisite(s): Graduate standing.

ART 597. Readings in Art History
3 Credits
In-depth study of historical writing about art. May be repeated for a maximum of 9 credits.

Prerequisite: Graduate standing.

ART 598. Studio Thesis
1-15 Credits
Special research in studio, leading to an exhibition and written thesis statement.

ART 599. Art History Thesis
15 Credits
Art history master’s thesis research. May be repeated for unlimited credit. Restricted to masters level art history students. Consent of instructor required.

Prerequisite(s): Graduate standing.

Name: Lisa Brain

Office Location: D.W. Williams Hall, Room 100

Phone: (575) 646-1705

Website: http://artdepartment.nmsu.edu/

UAG Gallery Website: http://uag.nmsu.edu

Art - Bachelor of Arts
Concentration: Art History

The art history program is designed to give the student a broad familiarity with the visual arts through the factual and theoretical study of aesthetics, cultural contexts, iconography, pictorial traditions, stylistic development and technical practices. Students are encouraged to take related courses in anthropology, history, languages and literature, music history, philosophy, religion, theatre and costume history.

Students must demonstrate a reading knowledge of a second language either by completing the 212 or 214 course or by taking a 300-level literature course (FREN, GER, SPAN, PORT, JPNS or CHIN). Art History majors may not use C D 476 American Sign Language III to fulfill the language requirement.

Departmental Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ART 150</td>
<td>Drawing I</td>
<td>3</td>
</tr>
<tr>
<td>ART 295G</td>
<td>Introduction to Art History I</td>
<td>3</td>
</tr>
<tr>
<td>ART 298</td>
<td>Writing in Art</td>
<td>3</td>
</tr>
<tr>
<td>Introductory Studio Art Courses 200-level courses</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Credits</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ART 296G</td>
<td>Introduction to Art History II</td>
<td>3</td>
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<tr>
<td>Art History Courses (300 level)</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Studio Art Courses 200-400 level or Art History Courses 300-400 level</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Credits</td>
<td></td>
<td>12</td>
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<tr>
<td>Junior</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Credits</td>
<td></td>
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</tr>
<tr>
<td>Senior</td>
<td></td>
<td></td>
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<tr>
<td>ART 479</td>
<td>Art Theory, Criticism, and Historiography</td>
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<td>Art History Courses (300-400 level)</td>
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<tr>
<td>Studio Art Courses 200-400 level or Art History Courses 300-400 level</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Credits</td>
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<td>12</td>
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<tr>
<td>Total Credits</td>
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</tr>
</tbody>
</table>

Electives

Sufficient to bring total credits to 120 for graduation, including 48 upper-division.

Concentration: Studio Art

The Bachelor of Arts is designed to give the student a broad interdisciplinary understanding of the areas of painting/drawing, graphic design, printmaking, sculpture, photography, ceramics, conservation, jewelry and metalsmithing, through a series of introductory and special topics courses and the history and appreciation of art in the context of a liberal education. Students are required to take 30 credits of upper-level studio art classes and 18 credits of Art History.

Departmental Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
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<tr>
<td>ART 295G</td>
<td>Introduction to Art History I</td>
<td>3</td>
</tr>
<tr>
<td>ART 298</td>
<td>Writing in Art</td>
<td>3</td>
</tr>
<tr>
<td>Introductory Studio Art Courses 200-level</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Credits</td>
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<td>18</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ART 296G</td>
<td>Introduction to Art History II</td>
<td>3</td>
</tr>
<tr>
<td>Introductory Studio Art Courses 200-level courses</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Special Topic Art Courses (300 level)</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Art History (300 level)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Credits</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Topic Art Courses (300 level)</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Art History (300/400 level)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Credits</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Senior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Topic Art Courses 400-level</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Art History (300/400 level)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Credits</td>
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<td>15</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>63</td>
</tr>
</tbody>
</table>

Art - Bachelor of Fine Arts

Concentration: Museum Conservation

Art Conservation is the study of the preservation and restoration of art as well as of other cultural and natural objects. The B.F.A. degree with an concentration in Museum Conservation provides an academic structure within which students master specific sets of practical skills while developing broad professional and theoretical perspectives toward the issue of conserving objects in a museum or collection setting. By combining theory with practice, the program offers students the interpretive, quantitative and administrative skills needed for careers as conservators, curators, registrars, collections managers, exhibit designers and museum administrators, all of whom must have specialized training in the care and handling of works of art to be successful.

Science

Select 16 credits from Option A or Option B: 16

Option A

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>CHEM 313</td>
<td>Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 314</td>
<td>Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 315</td>
<td>Organic Chemistry Laboratory</td>
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<tr>
<td>CHEM 111G &amp; CHEM 112G</td>
<td>General Chemistry I &amp; General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 115 &amp; CHEM 116</td>
<td>Principles of Chemistry I &amp; Principles of Chemistry II</td>
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Option B

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 211G &amp; 211GL</td>
<td>Cellular and Organismal Biology &amp; Cellular and Organismal Biology Laboratory</td>
<td></td>
</tr>
<tr>
<td>or EPWS 303</td>
<td>Economic Entomology</td>
<td></td>
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</tbody>
</table>
Emphasis: Studio Art

The studio art curriculum is designed to give the student a broad, transdisciplinary understanding of the field of visual arts, including appreciation and criticism, art history, ceramics, drawing, graphic design and media arts, jewelry/metal smithing, painting, photography, printmaking, sculpture and museum conservation. This program is recommended for those students who wish to embark on a professional career in art. The maximum number of credits counted toward graduation is 84. The maximum credits for variable courses shall be 6 credits per semester except by permission. The Bachelor of Fine Arts degree is a professional baccalaureate degree, which requires a senior thesis exhibition and capstone class in the final semester of study. Students seeking a BFA must apply in the spring of their sophomore year for acceptance into the BFA program - this is done via a portfolio review.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
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<tr>
<td>ART 295G</td>
<td>3</td>
</tr>
<tr>
<td>ART 298</td>
<td>3</td>
</tr>
<tr>
<td>Introductory Studio Art courses</td>
<td>12</td>
</tr>
<tr>
<td>Credits</td>
<td>18</td>
</tr>
<tr>
<td>Sophomore</td>
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</tr>
<tr>
<td>ART 296G</td>
<td>3</td>
</tr>
<tr>
<td>Introductory Studio Art 200-level courses</td>
<td>3</td>
</tr>
<tr>
<td>Special Topic Art Courses (300 level)</td>
<td>6</td>
</tr>
<tr>
<td>Art History (300 level)</td>
<td>3</td>
</tr>
<tr>
<td>Credits</td>
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</tr>
<tr>
<td>Junior</td>
<td></td>
</tr>
<tr>
<td>Special Topic Art Courses (300 level)</td>
<td>12</td>
</tr>
<tr>
<td>Special Topic Art Courses (400-level)</td>
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</tr>
<tr>
<td>Art History Courses (300-400) level</td>
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<tr>
<td>Credits</td>
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<tr>
<td>Special Topic Art Courses (400-level)</td>
<td>15</td>
</tr>
<tr>
<td>Art History (300/400 level)</td>
<td>3</td>
</tr>
<tr>
<td>ART 495</td>
<td>3-6</td>
</tr>
<tr>
<td>Thesis Exhibition/Capstone Course</td>
<td></td>
</tr>
<tr>
<td>BFA students must have a thesis exhibition at the culmination of their degree.</td>
<td></td>
</tr>
<tr>
<td>ART 495</td>
<td>3-6</td>
</tr>
<tr>
<td>Credits</td>
<td>24-30</td>
</tr>
<tr>
<td>Total Credits</td>
<td>79</td>
</tr>
</tbody>
</table>

Emphasis: Art History

An emphasis in art history requires a minimum of 33 credits of art history courses, 6 of which may be thesis credits. Of the required minimum, 6 credits of related courses may be substituted with the approval of the department head and the student’s major advisor.

Reading proficiency in a foreign language is also required and should be acquired prior to the beginning of thesis research for which it will be employed. A reading proficiency exam will be arranged in conjunction
with the major advisor. Admission to the MA program with an emphasis in art history is based on an accredited BA or BS degree (or equivalent) with a major in art history, including at least 24 art history credits and 9 studio credits. Undergraduate deficiencies must be completed before advancement to candidacy.

### Candidacy and Thesis Committee Selection

Upon satisfactory completion of all required course work (except thesis credits) and foreign language requirement, the student will prepare a thesis proposal under the direction of the major professor. The student will then select the second member of his or her thesis committee and submit the proposal to this committee member for approval. With the backing of these two advisors, the student must then present the proposal to the department faculty. After a successful presentation, the student will advance to candidacy and select the third committee member, who may be from outside the art department.

### Admission

All applicants for admission to the MA program must submit

1. A polished undergraduate research paper
2. A written statement of intent
3. Letters of recommendation from three qualified people of the applicant’s choice

Research papers, statement of intent, and letters of recommendation should be sent to the Department of Art. Applications and official undergraduate transcripts should be sent directly to the Graduate School. Psychometric test scores are not required.

### Application Deadline

The final submission date for all application materials and teaching assistantship applications is January 20 for the fall and spring semesters.

### Art - Master of Fine Arts

#### Emphasis: Studio Art

Art requirements for an MFA degree with an emphasis in studio art include a minimum of 60 credits of academic work, usually completed in three years. Of those 60 credits,

- 9 must be taken in art history,
- 6 in non-art courses numbered 450 or above,
- 6 in thesis work,
- 3 in graduate seminar: art theory, criticism, historiography and
- 12 in ART 596 Graduate Studio Seminar.

In order to remain in good standing in the MFA program, a student must maintain an average GPA of 3.0. Any grade lower than B- in an Art Department graduate course is considered failing. In the event that a student fails a required course, they must repeat the class in order to get credit for it. If a student is awarded a graduate assistantship, he or she must maintain an average GPA of 3.0.

### Program Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art history courses</td>
<td>9</td>
</tr>
<tr>
<td>Non-art 450 level or higher courses</td>
<td>6</td>
</tr>
<tr>
<td>Studio Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>
All applicants for admission to the MFA program in studio art must submit

- Submit a portfolio of 20 images to Slideroom: https://nmsu.slideroom.com/
- Include an Image List that identifies each piece by title, date, size and media.
- A written statement of intent, including scholarly and professional goals and the applicant’s interest in studying at NMSU
- Letters of recommendation from three qualified people of the applicant’s choice
- Official undergraduate transcripts

Admission to the MFA program in studio art will be decided upon consideration of all materials. Application guidelines are available on the Departmental website. The majority of teaching assistantships and studio spaces are awarded in the fall. Psychometric test scores are not required.

Application Deadline
The final submission date for all application materials and teaching assistantship applications is January 20 for the fall and spring semesters.

Art - Undergraduate Minor
The Art minor requires 27 credits. Students cannot earn both a bachelor's degree in the Department of Art and a Art minor unless they pass at least 6 credits in the minor beyond the requirements of the major.

Required Courses
Studio art or art history at the 300-400 level 9
Select six from the following: 18

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ART 250</td>
<td>Introduction to Drawing</td>
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</tr>
<tr>
<td>ART 255</td>
<td>Introduction to Graphic Design</td>
<td>3</td>
</tr>
<tr>
<td>ART 260</td>
<td>Introduction to Painting</td>
<td>3</td>
</tr>
<tr>
<td>ART 265</td>
<td>Introduction to Sculpture</td>
<td>3</td>
</tr>
<tr>
<td>ART 270</td>
<td>Introduction to Photography</td>
<td>3</td>
</tr>
<tr>
<td>ART 275</td>
<td>Introduction to Ceramics</td>
<td>3</td>
</tr>
<tr>
<td>ART 280</td>
<td>Introduction to Printmaking</td>
<td>3</td>
</tr>
<tr>
<td>ART 285</td>
<td>Introduction to Metals and Jewelry</td>
<td>3</td>
</tr>
<tr>
<td>ART 295G</td>
<td>Introduction to Art History I</td>
<td>3</td>
</tr>
<tr>
<td>ART 296G</td>
<td>Introduction to Art History II</td>
<td>3</td>
</tr>
<tr>
<td>ART 298</td>
<td>Writing in Art</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 27

Humanities or studio art, subject to approval by the minor advisor 3

Total Credits 27

Museum Conservation - Undergraduate Minor
The Museum Conservation minor requires 18 credits. Students cannot earn both a bachelor’s degree in the Department of Art and the Museum Conservation minor unless they pass at least 6 credits in the minor beyond the requirements of the major. An undergraduate minor in Museum conservation requires the completion of 9 credits of the three 400 level museum conservation listed below, and 9 credits of the courses selected from one of the three tracks listed below.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 401</td>
<td>Museum Conservation Techniques I</td>
<td>3</td>
</tr>
<tr>
<td>ART 402</td>
<td>Museum Conservation Techniques II</td>
<td>3</td>
</tr>
<tr>
<td>ART 403</td>
<td>Preventative Conservation/Collections Care (Directed Readings)</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one from the following tracks: 9

- Anthropology
- Art
- History

Total Credits 18

Track 1: Anthropology
Select 9 credits from the following: 9

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 313</td>
<td>Ancient Mexico (offered every fall)</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 315</td>
<td>Introduction to Archaeology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 316</td>
<td>Archaeology of the American Southwest</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 318</td>
<td>Historical Archaeology in Latin America</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 378</td>
<td>Introduction to Lab Methods in Archaeology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 485</td>
<td>Special Research Project</td>
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</table>

Total Credits 9

Track 2: Art
Select three from the following: 9

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ART 150</td>
<td>Drawing I</td>
<td>3</td>
</tr>
<tr>
<td>ART 250</td>
<td>Introduction to Drawing</td>
<td>3</td>
</tr>
<tr>
<td>ART 260</td>
<td>Introduction to Painting</td>
<td>3</td>
</tr>
<tr>
<td>ART 265</td>
<td>Introduction to Sculpture</td>
<td>3</td>
</tr>
<tr>
<td>ART 270</td>
<td>Introduction to Photography</td>
<td>3</td>
</tr>
<tr>
<td>ART 275</td>
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<td>Introduction to Printmaking</td>
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<td>ART 285</td>
<td>Introduction to Metals and Jewelry</td>
<td>3</td>
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<td>ART 295G</td>
<td>Introduction to Art History I</td>
<td>3</td>
</tr>
<tr>
<td>ART 296G</td>
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<tr>
<td>ART 298</td>
<td>Writing in Art</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 9

Art History - Undergraduate Minor
The Art History minor requires 27 credits. Students cannot earn both a bachelor’s degree in the Department of Art and an Art History minor unless they pass at least 6 credits in the minor beyond the requirements of the major. Students cannot earn both the Bachelor of Art with an Art History emphasis and a minor in Art History.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 295G</td>
<td>Introduction to Art History I</td>
<td>3</td>
</tr>
<tr>
<td>ART 296G</td>
<td>Introduction to Art History II</td>
<td>3</td>
</tr>
<tr>
<td>ART 298</td>
<td>Writing in Art</td>
<td>3</td>
</tr>
</tbody>
</table>

Art history courses at the 300-499 level 15

Total Credits 27
**Track 3: History**

Select three from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 330V</td>
<td>Introduction to Religious Studies</td>
<td>3</td>
</tr>
<tr>
<td>HIST 334</td>
<td>Art and Life in Renaissance Italy</td>
<td>3</td>
</tr>
<tr>
<td>HIST 371</td>
<td>Ancient Greece</td>
<td>3</td>
</tr>
<tr>
<td>HIST 397</td>
<td>Introduction to Public History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 424</td>
<td>History of Art, Thought and Literature</td>
<td>3</td>
</tr>
<tr>
<td>HIST 438</td>
<td>Antiquity and Modernity</td>
<td>3</td>
</tr>
<tr>
<td>HIST 481</td>
<td>Time Traveling Through New Mexico’s Past</td>
<td>3</td>
</tr>
<tr>
<td>HIST 483</td>
<td>Historic Preservation</td>
<td>3</td>
</tr>
<tr>
<td>HIST 486</td>
<td>Interpreting Historic Places for the Public</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits**: 9

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**Astronomy**

**Undergraduate Program Information**

The department offers an undergraduate astronomy minor degree, which requires 18-20 credits. The department does not offer a BS degree but encourages interested students to enroll in the physics program as a first step toward a career in astronomy. Our 100- and 300-level courses meet various university general education requirements. All students are invited to share with us this exciting area of study, through our basic and advanced undergraduate courses.

**Course List**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR 105G</td>
<td>The Planets</td>
<td>4</td>
</tr>
<tr>
<td>ASTR 110G</td>
<td>Introduction to Astronomy</td>
<td>4</td>
</tr>
<tr>
<td>ASTR 301V</td>
<td>Revolutionary Ideas in Astronomy</td>
<td>3</td>
</tr>
<tr>
<td>ASTR 305V</td>
<td>The Search for Life in the Universe</td>
<td>3</td>
</tr>
<tr>
<td>ASTR 308V</td>
<td>Into the Final Frontier</td>
<td>3</td>
</tr>
<tr>
<td>ASTR 330V</td>
<td>Planetary Exploration</td>
<td>3</td>
</tr>
<tr>
<td>ASTR 400</td>
<td>Undergraduate Research</td>
<td>1-3</td>
</tr>
<tr>
<td>ASTR 401</td>
<td>Topics in Modern Astrophysics</td>
<td>3</td>
</tr>
<tr>
<td>ASTR 402</td>
<td>Introduction to Astronomical Observations and Techniques</td>
<td>3</td>
</tr>
<tr>
<td>ASTR 406</td>
<td>Stellar Dynamics and Hydrodynamics</td>
<td>3</td>
</tr>
<tr>
<td>ASTR 435</td>
<td>Observational Techniques I</td>
<td>3</td>
</tr>
</tbody>
</table>

1 Other courses at the 300 and 400-levels are offered on an occasional basis. Consult the "Course Descriptions" section in this catalog.

2 ASTR 405 Astronomy and Astrophysics I, ASTR 406 Stellar Dynamics and Hydrodynamics and ASTR 435 Observational Techniques I are cross-listed with graduate classes and require special permission.

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**Graduate Program Information**

The Department of Astronomy offers graduate work leading to the Doctor of Philosophy and Master of Science degrees. To be admitted as a regular student to the NMSU Graduate School as a major in astronomy, a student must present a suitable undergraduate background with emphasis (12-16 credits) on junior-senior level physics, and mathematics. The prospective student is also required to take aptitude and physics (or approved specialized field) sections of the Graduate Record Examination (GRE).

Information on assistantships and fellowships in teaching and research can be obtained from the department.

Each entering graduate student will be assigned a committee that will guide the student in choice of courses, suggest training needed to remedy deficiencies and determine specific degree requirements in accord with the student’s needs and objectives, and in agreement with departmental policies. The program requires 33 traditional course credit hours (11 classes), 4 seminar class credit hours, plus research in astronomy. Each student must demonstrate no later than during the second year sufficient academic and research ability to qualify for continuation in doctoral studies.

It is possible, through arrangement with the Department of Physics, to obtain a Master of Science degree in physics during progress toward the Ph.D. in astronomy. See the Department of Physics (p. 387) section in this catalog for details of that program.

The MS degree in astronomy is closely connected with the astronomy Ph.D. program, and questions concerning requirements should be directed to the department.

Qualifying, Comprehensive and Final examinations are described elsewhere in this catalog. Questions concerning styles of the examinations should be directed to the department head.

The department has access to several different observing facilities. NMSU operates the Apache Point Observatory on behalf of the Astrophysical Research Corporation and the observatory is home to several telescopes:

- the ARC 3.5m telescope,
- a 1m telescope fully owned by NMSU
- the ARCSAT 0.5m telescope, and
- the Sloan Digital Sky Survey (SDSS) 2.5m telescope.

The Department is a full partner in the SDSS project. The Department also operates a 24-inch telescope on Tortugas Mountain, near the NMSU campus.

The department is home to NASA’s Planetary Data System’s Planetary Atmosphere Node, where solar system exploration data are archived.

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**Degrees for the Department**

- Astronomy - Master of Science (p. 209)
- Astronomy - Doctor of Philosophy (p. 209)

**Minors for the Department**

- Astronomy - Undergraduate Minor (p. 209)

**Professor, Jon Holtzman, Department Head**

*Professors* Chanover, Churchill, Murphy, Klypin, Walterbos; *Associate Professors* Jackiewicz, McAteer; *Assistant Professors* Finlator, Prescott; *College Professors* Beebe, Webber; *Observatory Specialist* Harrison

J. Holtzman, Department Head, Ph.D. (California-Santa Cruz) – stellar populations in galaxies; R. F. Beebe, Ph.D. (Indiana-Bloomington) – planetary astronomy and stellar spectra; N. Chanover, Ph.D. (New Mexico State) – planetary astronomy; C. Churchill, Ph.D. (California-Santa Cruz) – galaxies and intergalactic medium; K. Finlator, Ph.D. (University of Arizona) – Galaxy Evolution, the Intergalactic Medium, Cosmological Reionization; Harrison,
Ph.D. (Minnesota) – cataclysmic variables and gamma-ray burst sources; J. Jackiewicz, Ph.D. (Boston College) – Helioseismology, theoretical condensed matter physics; A. Klypin, Ph.D. (Moscow) – cosmology; R. T. J. McAteer, Ph.D. (Queen's University, Belfast) – solar physics, Sun-Earth connection; J. Murphy, Ph.D. (U. Washington) – planetary atmospheres and exploration; M. Prescott, Ph.D. (University of Arizona) – Lyman-alpha nebulae, kinematics of gas within cosmic web; R. Walterbos, Ph.D. (Leiden) – interstellar medium, star formation, and structure and evolution of galaxies; W. Webber, Ph.D. (Iowa) – high energy astrophysics

**ASTR 105G. The Planets**  
4 Credits (3+2P)  
Comparative study of the planets, moons, comets, and asteroids which comprise the solar system. Emphasis on geological and physical processes which shape the surfaces and atmospheres of the planets. Laboratory exercises include analysis of images returned by spacecraft. Intended for non-science majors, but some basic math required. This lecture/lab course satisfies the New Mexico Common Core Area III: Lab Sciences requirement.

**ASTR 110G. Introduction to Astronomy**  
4 Credits (3+2P)  
A survey of the universe. Observations, theories, and methods of modern astronomy. Topics include planets, stars and stellar systems, black holes and neutron stars, supernovas and gaseous nebulae, galaxies and quasars, and cosmology. Emphasis on physical principles involving gravity, light and optics (telescopes). Generally non-mathematical. Laboratory involves use of the campus observatory and exercises designed to experimentally illustrate principles of astronomy. This lecture/lab course satisfies the New Mexico Common Core Area III: Lab Sciences requirement.

**ASTR 199. Introduction to Astronomy Lab, Special**  
1 Credit  
This lab-only listing exists only for students who may have transferred to NMSU having taken a lecture-only introductory astronomy class, to allow them to complete the lab requirement to fulfill the general education requirement. Consent of Instructor required. Restricted to Las Cruces campus only.  
Prerequisite(s): Must have passed Introduction to Astronomy lecture-only (e.g. ASTR 105, ASTR 110, or ASTR 401).

**ASTR 301V. Revolutionary Ideas in Astronomy**  
3 Credits  
Examines recent fundamental scientific revolutions that have shaped our view of Earth and the universe. Topics in astronomy range from exoplanets to black holes to dark energy and raise questions about the very nature of how we use the scientific method to see the unseen, and how this shapes science research today.  
Prerequisite(s): Any general education science course.

**ASTR 305V. The Search for Life in the Universe**  
3 Credits  
Use of information from several of the sciences to explore the likelihood that life exists elsewhere in the universe. Subjects include an overview of historical ideas about the possibility of life elsewhere in the universe, the chemistry and biology of life on Earth, recent explorations for life within our solar system, and current search strategies for life in the universe and their scientific basis.

**ASTR 308V. Into the Final Frontier**  
3 Credits  
Exploration of space: a brief review of the history of space flight, the Apollo program, joint U.S.-Soviet space missions, and unstaffed exploration of the planets. Emphasis on knowledge gained through these efforts. Includes new space initiatives. Same as HON 308V.

**ASTR 330V. Planetary Exploration**  
3 Credits  
A current planetary exploration mission is studied within the context of the solar system. The data acquired and principles involved in executing the mission, as well as political and economic implications of planetary exploration, are examined. Same as HON 330V. Main campus only.

**ASTR 400. Undergraduate Research**  
1-3 Credits  
Supervised individual study or research. May be repeated for a maximum of 6 credits.  
Prerequisite: consent of instructor.

**ASTR 401. Topics in Modern Astrophysics**  
3 Credits  
This course is designed for students interested in astrophysics who have some background in math and physics and want to learn about basic astrophysical and interesting current topics. The course will cover basic astrophysical concepts such as orbital mechanics, light, and radiative processes and transfer. These concepts will be applied to the discussion of exciting modern topics involving planets, exoplanets, stars, galaxies, and/or cosmology, with topical emphasis determined by the instructor.  
Prerequisite(s): MATH 192G and (PHYS 213 or PHYS 215G).

**ASTR 402. Introduction to Astronomical Observations and Techniques**  
3 Credits  
Designed for students interested in astrophysics who have some background in math and astronomy and want to learn about techniques for obtaining and analyzing astronomical data. This course will review the properties of light and discuss the process of experimental design. The course will describe basic observational tools such as telescopes and detectors. It will discuss how data is obtained, and how features of the detector and the Earth's atmosphere can be corrected for. Some topics in basic astronomical data analysis will be discussed, with topical emphasis determined by the instructor. Some simple data analysis projects will be assigned.  
Prerequisite(s): MATH 191G and (PHYS 214 or PHYS 216G) and (ASTR 105, ASTR 110, or ASTR 401).

**ASTR 405. Astronomy and Astrophysics I**  
3 Credits  
Application of physical principles to problems in modern astronomy. Emphasis on radiation mechanisms and radiation transfer in astronomical systems. No S/U grading. Same as ASTR 505 with less advanced work.  
Prerequisite: consent of instructor.

**ASTR 406. Stellar Dynamics and Hydrodynamics**  
3 Credits  
Undergraduate cross-listing of graduate class on basic stellar dynamics and principles of hydrodynamics. Consent of Instructor required.  
Prerequisite(s): Consent of instructor.
ASTR 435. Observational Techniques I
3 Credits
Up-to-date introduction to modern observational astronomy. Includes computers, data analysis, optical telescopes, optical and infrared photometry, image processing, and detection. No S/U grading. Same as ASTR 535 with less advanced work.
Prerequisite: consent of instructor.

ASTR 500. Seminar
1 Credit
Organized group study treating selected topics.

ASTR 505. Astronomy and Astrophysics I (f)
3 Credits
Application of physical principles to problems in modern astronomy. Emphasis will be on radiation mechanisms and radiation transfer in astronomical systems.
Prerequisite: consent of instructor.

ASTR 506. Stellar Dynamics and Hydrodynamics
3 Credits
Graduate level course on basic stellar dynamics and fundamentals of hydrodynamics.

ASTR 535. Observational Techniques I (f)
3 Credits
Up-to-date introduction to modern observational astronomy in a two-semester sequence. Topics include: introduction to computers, error analysis in data, the different types of optical telescopes, and optical and infrared photometry, image processing, and detectors.

ASTR 536. Observational Techniques in Astronomy II (s)
3 Credits
Sequel to ASTR 535. The second half of the course emphasizes observational techniques in spectroscopy, radio astronomy, and high energy astrophysics.
Prerequisite: ASTR 535.

ASTR 545. Stellar Spectroscopy
3 Credits
This course covers the physics of stellar atmospheres with emphasis on using spectra as a diagnostic tool for understanding the properties of stars. Topics include spectral classification, radiative transfer, gas equilibrium physics, line and continuum opacities, adiabatic and superadiabatic convection, and extraction of observed quantities from spectra for deducing physical conditions of the source.

ASTR 555. Galaxies I
3 Credits
Fundamentals of the properties of galaxies and the components that they are made of stars and stellar populations, gas and dust, central black holes, and dark matter. Introduction to basic concepts of galaxy formation.

ASTR 565. Stellar Interiors
3 Credits
Internal constitutions of stars, computation of stellar models, and stellar evolution.

ASTR 575. Computational Astrophysics
3 Credits
Scientific programming for astronomical applications. Explore key algorithms and standard techniques for astronomical data analysis. Topics may include pointers, data structures, dynamic memory allocation, least squares fitting, grid and iterative search methods, LCG random number generators, Monte Carlo simulations, numerical integration, and astronomical image and spectrum manipulation. Applications to real astronomical datasets are emphasized.

ASTR 598. Special Research Programs
1-6 Credits
Individual investigations, either analytical or experimental.

ASTR 599. Master's Thesis
15 Credits
Master's level research in astrophysics or observational astronomy.

ASTR 600. Pre-dissertation Research
1-15 Credits
Research.

ASTR 605. Interstellar Medium
3 Credits
Problems associated with gas and dust in the galaxy and with diffuse and planetary nebulae.

ASTR 610. Radio Astronomy
3 Credits
Techniques and observations stressing the operational approach to measurement and how the observations are intimately interwoven throughout modern astrophysics.

ASTR 616. Galaxies II
3 Credits
Advanced topics in galaxies. Includes a detailed description and understanding of the Milky Way and topics in galaxy formation and evolution.

ASTR 620. Planetary Science I
3 Credits
Evaluation and analysis of observational data on solar system objects to determine their nature and physical conditions, with emphasis upon atmospheres (composition, structure, thermodynamics, evolution, etc.)

ASTR 621. Planetary Science II
3 Credits
The physical processes involved in planetary system formation are addressed. Specific foci include molecular cloud collapse, disk processes, and competing theories of planet formation within disks. Additional topics to be discussed may include: the solar wind, planetary magnetic fields, planetary ring processes, and mineralogy.

ASTR 625. Cosmology
3 Credits
Discussion of our current knowledge of the structure of the universe and current research methods. Topics include the distance scale, clustering of galaxies, large-scale structure, metrics, dark matter, and cosmological probes such as distant quasars, radio galaxies, and gravitational lenses.
**ASTR 630. Methods of Statistical Analysis for Modern Astronomy**  
3 Credits  
Graduate class for students interested in applying statistical techniques to modern astrophysical data sets. Topics include a review of probability and probability distribution functions, implications of techniques for statistical inference, regression and multivariate analysis, data smoothing, data mining, survival analysis and time domain analysis. Applications to real astronomical data sets will be emphasized with all topics.

**ASTR 670. Heliophysics**  
3 Credits  
Explore the Sun and its processes, the heliopause, and its interactions with the planets. Topics include: An introductory description of space weather and its physics; energy interaction with the space environment; the quiet Sun and its interactions with planetary atmospheres (with an emphasis on Earth); Magnetohydrodynamics; frozen-in flux; the solar wind; magnetized fluid dynamics; the active Sun (flares and coronal mass ejections); the effects of Space Weather.

**ASTR 698. Special Topics.**  
1-9 Credits  
Special topics.

**ASTR 700. Doctoral Dissertation**  
15 Credits  
Dissertation.

**Astronomy - Doctor of Philosophy**

The Astronomy Department at NMSU offers programs leading to the Master of Science and the Doctor of Philosophy degrees. Graduate courses (http://astronomy.nmsu.edu/?page_id=2503) cover topics in astrophysics, stellar atmospheres, observational techniques, the interstellar medium, galactic structure, star formation and evolution, extragalactic objects, cosmology, and solar system studies. Students also take courses in other relevant fields to broaden their knowledge and capabilities.

**Astronomy - Master of Science**

The Astronomy Department at NMSU offers programs leading to the Master of Science and the Doctor of Philosophy degrees. Graduate courses (http://astronomy.nmsu.edu/?page_id=2503) cover topics in astrophysics, stellar atmospheres, observational techniques, the interstellar medium, galactic structure, star formation and evolution, extragalactic objects, cosmology, and solar system studies. Students also take courses in other relevant fields to broaden their knowledge and capabilities.

**Astronomy - Undergraduate Minor**

The department offers a minor created for majors in a variety of scientific fields, and two minor emphases specifically designed to address the needs and interests of students from the Colleges of Education and Engineering. Any undergraduate, however, may pursue any of the three minor tracks.

### Requirements

The requirements for the regular minor requires 19 credits, from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR 105G</td>
<td>The Planets</td>
<td>4</td>
</tr>
<tr>
<td>or ASTR 110G</td>
<td>Introduction to Astronomy</td>
<td>4</td>
</tr>
<tr>
<td>ASTR 301V</td>
<td>Revolutionary Ideas in Astronomy</td>
<td>6</td>
</tr>
<tr>
<td>ASTR 305V</td>
<td>The Search for Life in the Universe</td>
<td>6</td>
</tr>
<tr>
<td>ASTR 308V</td>
<td>Into the Final Frontier</td>
<td>6</td>
</tr>
<tr>
<td>ASTR 330V</td>
<td>Planetary Exploration</td>
<td>6</td>
</tr>
</tbody>
</table>

Select 9 credits between the following groups:

<table>
<thead>
<tr>
<th>Group</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>ASTR 401</td>
<td>Topics in Modern Astrophysics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ASTR 402</td>
<td>Introduction to Astronomical Observations and Techniques</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ASTR 406</td>
<td>Stellar Dynamics and Hydrodynamics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ASTR 435</td>
<td>Observational Techniques</td>
<td>3</td>
</tr>
</tbody>
</table>

**Group B**  
Select 3-9 credits from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A E 424</td>
<td>Aerospace Systems Engineering</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 451</td>
<td>Physiology of Microorganisms</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 467</td>
<td>Evolution</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 473</td>
<td>Ecology of Microorganisms</td>
<td>3</td>
</tr>
<tr>
<td>C S 475</td>
<td>Artificial Intelligence I</td>
<td>3</td>
</tr>
<tr>
<td>C S 482</td>
<td>Database Management Systems I</td>
<td>3</td>
</tr>
<tr>
<td>C S 483</td>
<td>Introduction to Robotics</td>
<td>3</td>
</tr>
<tr>
<td>C S 491</td>
<td>Parallel Programming</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 360</td>
<td>General Geochemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 431</td>
<td>Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 433</td>
<td>Physical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>E E 454</td>
<td>Antennas and Radiation</td>
<td>3</td>
</tr>
<tr>
<td>E E 460</td>
<td>Space System Mission Design and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>E E 473</td>
<td>Introduction to Optics</td>
<td>3</td>
</tr>
<tr>
<td>E E 478</td>
<td>Fundamentals of Photonics</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 465</td>
<td>Isotope Geochemistry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 471</td>
<td>Complex Variables</td>
<td>3</td>
</tr>
<tr>
<td>MATH 472</td>
<td>Fourier Series and Boundary Value Problems</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 451</td>
<td>Intermediate Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 461</td>
<td>Intermediate Electricity and Magnetism I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 480</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>STAT 371</td>
<td>Statistics for Engineers and Scientists I</td>
<td>3</td>
</tr>
<tr>
<td>STAT 470</td>
<td>Probability: Theory and Applications</td>
<td>3</td>
</tr>
<tr>
<td>STAT 480</td>
<td>Statistics: Theory and Applications</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 19
Three credits of ASTR 400 Undergraduate Research may replace one of these courses.

ASTR 401 Topics in Modern Astrophysics and ASTR 402 Introduction to Astronomical Observations and Techniques are the preferred classes but are generally offered only in alternate years. Three credits of ASTR 400 Undergraduate Research may replace one of these courses, but not the same three if used above.

Cross-listed with graduate classes and require special permission.

Alternative 400-level courses in the physical sciences, engineering, or related fields, including one-time seminars, may be proposed on a case-by-case basis to fulfill this requirement, drawn from the fields of astronomy, biochemistry, biology, chemistry, computer science, geology, geophysics, mathematics, physics, statistics or from engineering. Proposals should include a clear justification that connects the course materials to a particular topic in astronomy or astrophysics.

**Emphasis: Education**

The requirements for the education track minor requires 18-20 credits from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR 105G</td>
<td>The Planets</td>
<td>4</td>
</tr>
<tr>
<td>ASTR 110G</td>
<td>Introduction to Astronomy</td>
<td>4</td>
</tr>
<tr>
<td>Select two from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASTR 301V</td>
<td>Revolutionary Ideas in Astronomy</td>
<td></td>
</tr>
<tr>
<td>ASTR 305V</td>
<td>The Search for Life in the Universe</td>
<td></td>
</tr>
<tr>
<td>ASTR 308V</td>
<td>Into the Final Frontier</td>
<td></td>
</tr>
<tr>
<td>ASTR 330V</td>
<td>Planetary Exploration</td>
<td></td>
</tr>
<tr>
<td>Select 4-6 credits from the following:</td>
<td>4-6</td>
<td></td>
</tr>
<tr>
<td>ASTR 400</td>
<td>Undergraduate Research</td>
<td></td>
</tr>
<tr>
<td>ASTR 401</td>
<td>Topics in Modern Astrophysics</td>
<td></td>
</tr>
<tr>
<td>ASTR 402</td>
<td>Introduction to Astronomical Observations and Techniques</td>
<td></td>
</tr>
<tr>
<td>EDUC 451</td>
<td>Methods of Teaching Elementary School Science</td>
<td></td>
</tr>
<tr>
<td>EDUC 463</td>
<td>Teaching Science at the Middle and High School Level</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits** 18-20

This requirement will generally be fulfilled by two 3-credit courses. Students may request the 4 credit option instead, if an appropriate topic and instructor for 1 credit of ASTR 400 Undergraduate Research are available. ASTR 401 Topics in Modern Astrophysics and ASTR 402 Introduction to Astronomical Observations and Techniques are generally offered only in alternate years, and have prerequisites.

**Emphasis: Engineering**

The requirements for the engineering track minor requires 18-19 credits from the following:

**Required Courses**

Select 3-4 credits from the following: 3-4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR 105G</td>
<td>The Planets</td>
</tr>
<tr>
<td>ASTR 110G</td>
<td>Introduction to Astronomy</td>
</tr>
<tr>
<td>PHYS 215G</td>
<td>Engineering Physics I</td>
</tr>
<tr>
<td>PHYS 216G</td>
<td>Engineering Physics II</td>
</tr>
</tbody>
</table>

Select one from the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ASTR 301V</td>
<td>Revolutionary Ideas in Astronomy</td>
</tr>
<tr>
<td>ASTR 305V</td>
<td>The Search for Life in the Universe</td>
</tr>
<tr>
<td>ASTR 308V</td>
<td>Into the Final Frontier</td>
</tr>
<tr>
<td>ASTR 330V</td>
<td>Planetary Exploration</td>
</tr>
</tbody>
</table>

Select 12 credits from the following two groups: 12

**Group A**

Select 6-9 credits from the following: 6

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>A E 428</td>
<td>Aerospace Capstone Design</td>
</tr>
<tr>
<td>ASTR 400</td>
<td>Undergraduate Research</td>
</tr>
<tr>
<td>ASTR 401</td>
<td>Topics in Modern Astrophysics</td>
</tr>
<tr>
<td>ASTR 402</td>
<td>Introduction to Astronomical Observations and Techniques</td>
</tr>
<tr>
<td>ASTR 406</td>
<td>Stellar Dynamics and Hydrodynamics</td>
</tr>
<tr>
<td>ASTR 435</td>
<td>Observational Techniques</td>
</tr>
<tr>
<td>E E 400</td>
<td>Undergraduate Research</td>
</tr>
<tr>
<td>E E 418</td>
<td>Capstone Design I</td>
</tr>
<tr>
<td>E E 419</td>
<td>Capstone Design II</td>
</tr>
<tr>
<td>M E 400</td>
<td>Undergraduate Research</td>
</tr>
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</table>

**Group B**

Select 3-6 credits from the following: 9

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>A E 424</td>
<td>Aerospace Systems Engineering</td>
</tr>
<tr>
<td>BIOL 451</td>
<td>Physiology of Microorganisms</td>
</tr>
<tr>
<td>BIOL 467</td>
<td>Evolution</td>
</tr>
<tr>
<td>BIOL 473</td>
<td>Ecology of Microorganisms</td>
</tr>
<tr>
<td>C S 475</td>
<td>Artificial Intelligence I</td>
</tr>
<tr>
<td>C S 482</td>
<td>Database Management Systems I</td>
</tr>
<tr>
<td>C S 483</td>
<td>Introduction to Robotics</td>
</tr>
<tr>
<td>C S 491</td>
<td>Parallel Programming</td>
</tr>
<tr>
<td>CHEM 360</td>
<td>General Geochemistry</td>
</tr>
<tr>
<td>CHEM 431</td>
<td>Physical Chemistry</td>
</tr>
<tr>
<td>CHEM 433</td>
<td>Physical Chemistry I</td>
</tr>
<tr>
<td>E E 454</td>
<td>Antennas and Radiation</td>
</tr>
<tr>
<td>E E 460</td>
<td>Space System Mission Design and Analysis</td>
</tr>
<tr>
<td>E E 473</td>
<td>Introduction to Optics</td>
</tr>
<tr>
<td>E E 478</td>
<td>Fundamentals of Photonics</td>
</tr>
<tr>
<td>GEOL 465</td>
<td>Isotope Geochemistry</td>
</tr>
<tr>
<td>MATH 471</td>
<td>Complex Variables</td>
</tr>
<tr>
<td>MATH 472</td>
<td>Fourier Series and Boundary Value Problems</td>
</tr>
<tr>
<td>PHYS 451</td>
<td>Intermediate Mechanics I</td>
</tr>
<tr>
<td>PHYS 461</td>
<td>Intermediate Electricity and Magnetism I</td>
</tr>
<tr>
<td>PHYS 480</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>STAT 371</td>
<td>Statistics for Engineers and Scientists I</td>
</tr>
<tr>
<td>STAT 470</td>
<td>Probability: Theory and Applications</td>
</tr>
<tr>
<td>STAT 480</td>
<td>Statistics: Theory and Applications</td>
</tr>
</tbody>
</table>

**Total Credits** 18-19

6. Taking any of the non-astronomy classes for this requirement requires prior approval from the head of astronomy on a case-by-case basis, with a clear connection being established between the proposed research or design project and a particular topic in astronomy or astrophysics (astronomy instrumentation or observational projects are particularly encouraged); no more than 3 non-ASTR credits can be counted toward the minor.

7. Generally offered in alternate years.

8. Cross-listed with graduate classes and require special permission.

9. Alternative 400-level courses in the physical sciences, engineering, or related fields, including one-time seminars, may be proposed on a case-by-case basis to fulfill this requirement, drawn from the fields of astronomy, biochemistry, biology, chemistry, computer science, geology, geophysics, mathematics, physics, statistics, or from engineering. Proposals should include a clear justification that connects the course materials to a particular topic in astronomy or astrophysics.

**Biology**

**Undergraduate Program Information**

A student may earn the Bachelor of Arts in biology or the Bachelor of Science in biology, genetics, microbiology or conservation ecology through major studies in the Department of Biology. The Bachelor of Science in biology or microbiology is recommended for premedical and prepharmacy students, for those preparing to teach biology and other sciences at the secondary and college levels, for those interested in the numerous fields of biological research and applied biology, and for those planning on obtaining an advanced degree in biology.

Freshmen should begin taking required biology and chemistry courses in their first year. Students are required to speak with an advisor as soon as they declare a major within the department. The department welcomes students considering a biology major who wish preliminary advising. More information on the Department of Biology is available on our web site, http://bio.nmsu.edu.

A student must earn a grade of C- or better to receive credit for any nondepartmental or departmental requirement for any major or minor offered by the Department of Biology.

It is strongly recommended that students include a minor or supplementary course work in a specific discipline to enhance their academic experience. See the "General Information" section of this catalog for specific requirements for minors and departments which offer them. Selection of a minor or a supplementary coursework area should be done in consultation with an advisor.

The department offers a minors in biology, microbiology, human biology and conservation ecology. A student may not earn a major and a minor in the same discipline.

A student must fulfill a second language requirement to receive a Bachelor of Arts or Bachelor of Science degree in the Biology and Microbiology majors. This requirement does not apply to the Conservation Ecology major, offered jointly with the Department of Fisheries, Wildlife and Conservation Ecology, or the Genetics major, offered jointly with the Department of Plant and Environmental Science. To meet the second language requirement, the student must do one of the following:

- Complete two semesters of second language courses numbered 111 and 112 with a grade of C- or better. Spanish speakers should enter and complete SPAN 113 Spanish for Heritage Learners I with a C- or better to fulfill the requirement.
- Challenge the 112 level of French, German, Japanese, Latin, Portuguese, Russian or Spanish, or the 113 level for the Spanish-speaking student.
- Obtain college certification of completion of two years of a second language at the high school level with a grade of C- or higher in the second-year level. (i.e. equivalent to FREN 112 Elementary French II, GER 112 Elementary German II, SPAN 112 Elementary Spanish II, etc.)
- Complete two semesters of American Sign Language, courses C D 374 or C D 375 American Sign Language I and C D 375 American Sign Language II, with a grade of C- or better.
- Additional mechanisms for fulfilling the language requirement are listed under the College of Arts and Science language requirement.

**Graduate Program Information**

The Department of Biology offers graduate study leading to the Doctor of Philosophy and Master of Science degrees. Our goal is to prepare students for careers in the various fields in biology through formal coursework and research experiences as well as through seminars and discussion groups.

All prospective applicants must submit the materials specified in the current Department Graduate Application Packet that is available at the Graduate Student section of the Biology website http://bio.nmsu.edu/grads/. The Departmental Graduate Application Packet also describes how to apply for Graduate Assistantships. These assistantships are awarded based on departmental needs and student merit; in general they are reserved for Ph.D. and thesis Master of Science students, and are not available to non-thesis Master of Science students.

There are three formal course requirements for all Biology Graduate students, with the exception of students in the accelerated non-thesis MS Biotechnology option. These core courses are:

- BIOL 510 Current Topics in Biology 3
- BIOL 540 Science and Ethics 1-3
- BIOL 610 Seminar 1-3

Students are required to successfully complete the Seminar course once each year that they are in the program.

For research toward the Master of Science or the Ph.D., students can choose among the Department’s three areas of emphasis:

1. Behavioral, Ecological and Evolutionary Biology
2. Cell and Organismal Biology
3. Microbiology

All graduate students should develop their curriculum plan in consultation with their faculty advisor and graduate committee. Details of sample course sequences within the different emphases are described in the Biology Graduate Handbook available for download from the Graduate Student section of the Biology website http://bio.nmsu.edu/grads/. Graduate students may also take a minor in other graduate departments and programs.
Degrees for the Department

Biology - Bachelor of Science (p. 219)
Biology - Bachelor of Arts (p. 219)
Microbiology - Bachelor of Science (p. 226)
Conservation Ecology - Bachelor in Conservation Ecology (p. 221)
Genetics and Biotechnology - Bachelor of Science in Genetics (p. 223)
Biology - Master of Science (p. 220)
Biology - Doctor of Philosophy (p. 220)

Minors for the Department

Biology - Undergraduate Minor (p. 221)
Microbiology - Undergraduate Minor (p. 226)
Conservation Ecology - Undergraduate Minor (p. 223)
Genetics and Biotechnology - Undergraduate Minor (p. 225)
Human Biology - Undergraduate Minor (p. 225)

Michelle Nishiguchi, Professor, Department Head
Jennifer Curtiss, Associate Professor, Associate Department Head

Professors: Boecklen, Hanley, Houde, Milligan, Nishiguchi, C. Shuster, Serrano, Smith, Unquez, Wright; Associate Professors: Bailey, Curtiss, Hansen, Mabry, M. Shuster, Xu; Assistant Professors: Castillo, Indriolo, Ferrenberg, James, Lodato, Lopez


BIOL 101G. Human Biology

3 Credits
Introduction to modern biological concepts. Emphasis on relevance to humans and their relationships with their environment. Cannot be taken for credit after successful completion of BIOL 111G or BIOL 211G. Appropriate for non-science majors. Requires successful completion of BIOL 101GL in order to meet the NM Common Core Area III Laboratory Science requirements.

BIOL 101GL. Human Biology Laboratory

1 Credit
Laboratory for BIOL 101G. Laboratory experiences and activities exploring biological concepts and their relevance to humans and their relationship with their environment.
Prerequisite(s)/Corequisite(s): BIOL 101G.

BIOL 110G. Contemporary Problems in Biology

4 Credits (3+3P)
Fundamental concepts of biology will be presented using examples from relevant problems in ecology, medicine and genetics. For nonscience majors only. Community Colleges only.

BIOL 111G. Natural History of Life

3 Credits (3)
Survey of major processes and events in the genetics, evolution, and ecology of microbes, plants and animals, and their interactions with the environment. Appropriate for science and nonscience majors. Must be taken with BIOL 111L to meet general education requirements. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): Currently enrolled in MATH 120, grade of C- or better in MATH 120, or a Math Placement Exam score adequate to enroll in mathematics courses beyond MATH 120.

BIOL 111GL. Natural History of Life Laboratory

1 Credit
Laboratory experiments, demonstrations and exercises on interrelationships among organisms, biodiversity, processes of evolution, and interaction of organisms and their environment. Appropriate for science and nonscience majors. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): BIOL 111G, Currently enrolled in MATH 120, grade of C- or better in MATH 120, or a Math Placement Exam score adequate to enroll in mathematics courses beyond MATH 120.

BIOL 150. Topics in Biology

1-3 Credits (1-3)
Introductory level coverage of biological topics. May be repeated up to 9 credits.

BIOL 154. Introductory Anatomy and Physiology

4 Credits (3+3P)
Survey of human structure and function (does not replace BIOL 190, BIOL 111G, or BIOL 211G as a prerequisite for advanced courses in biology). Restricted to: Community Colleges only.

BIOL 211G. Cellular and Organismal Biology

3 Credits
Principles of cellular structure and function, genetics, and organismal physiology. This course prepares the student for continuation in science or allied health fields. Suitable for all majors. Must be taken with BIOL 211L to meet general education requirements. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): a C- or better in MATH 120 or higher and a C- or better in CHEM 110G or CHEM 111G or CHEM 115.

BIOL 211GL. Cellular and Organismal Biology Laboratory

1 Credit
Laboratory demonstrations, experiments and exercises on molecular and cellular biology and organismal physiology. Must have passed BIOL 211G or be concurrently enrolled in BIOL 211G and BIOL 211L. Pre/ May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): a C- or better in BIOL 211G, MATH 120 or higher, and a C- or better in CHEM 110G or CHEM 111G or CHEM 115.
BIOL 219. Public Health Microbiology
3 Credits
The characteristics of pathogenic microorganisms and the diseases that they cause. Will not meet the microbiology requirements for biology or medical technology majors.
Prerequisite: BIOL 211G and BIOL 211GL.

BIOL 221. Introductory Microbiology
3 Credits
Principles of isolation, taxonomy, and physiology of microorganisms. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEM 110G or CHEM 111G or CHEM 112G.
Corequisite(s): BIOL 221 L.

BIOL 221 L. Introductory Microbiology Laboratory
1 Credit
A laboratory course to accompany BIOL 221 or BIOL 219.
Prerequisite: BIOL 221 or BIOL 219 or concurrent enrollment.

BIOL 225. Human Anatomy and Physiology I
4 Credits (3+3P)
The first in a two-course sequence that covers the structure and function of the human body, including terminology of the human gross anatomy, chemistry overview, cell structure, cell physiology (including DNA, protein synthesis and cell division). The organization of cells and tissues and their metabolic and homeostatic processes and regulation are also covered. Physical and chemical operation of organs and systems of the human body include the integumentary, skeletal, muscular, and nervous systems. Pre/ Restricted to: Community Colleges only.
Corequisite(s): CHEM 110G or CHEM 111G.

BIOL 226. Human Anatomy and Physiology II
4 Credits (3+3P)
The second in a two-course sequence that covers the structure and function of the human body. Includes the physical and chemical operation of the organs and systems of the human body, including endocrine, cardiovascular, lymphatic, immune, respiratory, digestive, urinary and reproduction system. Concepts of nutrition, metabolism, energy, fluid and electrolyte balance, heredity pregnancy and human embryonic and fetal development are also covered. Restricted to: Community Colleges only.
Prerequisite(s): BIOL 225, CHEM 110G or CHEM 111G.

BIOL 227. Pathophysiology
3 Credits
A study of the structure and function of the human body with specialized emphasis on disease processes.
Prerequisite(s): AHS 153 or BIOL 225 Corequisite/Prerequisites(s): AHS 154 or BIOL 226 Restricted to: Community Colleges only.

BIOL 250. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 6 credits. Community Colleges only.

BIOL 253. Human Anatomy
4 Credits (3+3P)
Detailed presentations of human anatomy, with laboratory. For nursing, prenursing, and human nutrition and food science majors only. Restricted to: HNFS, PNUR majors.
Prerequisite(s): Grade of C- in BIOL 211G and either CHEM 111G or CHEM 110G.

BIOL 254. Human Physiology
3 Credits
Physical and chemical operation of the organs and systems of the human body. Not open to students who have passed BIOL 354 or BIOL 381.
Prerequisite(s): Grade of at least C- in BIOL 211G; BIOL 211GL; CHEM 111G or CHEM 110G.

BIOL 262. Human Pathophysiology I
3 Credits
The first in a two-course sequence that covers changes in body physiology that result from disease or injury. Includes a general introduction to pathophysiology as well as an overview of altered cellular and tissue biology, injury, inflammation, and neoplasia. Students will also explore deviation from fluid, hemodynamic, and endocrinologic balance. Topics related to the science of pathophysiology, including pathology, pathogenesis, etiology, epidemiology, and clinical manifestations, are also discussed throughout the course where relevant. Grade of C- or higher in microbiology is recommended. Restricted to Community Colleges campuses only.
Prerequisite(s): Grade of C- or higher in BIOL 225 and BIOL 226.

BIOL 263. Pathophysiology II
3 Credits
The second in a two-course sequence that covers changes in body physiology that result from disease or injury. This course focuses on the pathophysiology of the nervous, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems. Topics related to the science of pathophysiology, including pathology, pathogenesis, etiology, epidemiology, and clinical manifestations, are also discussed throughout the course where relevant. Grade of C- or higher in microbiology is recommended. Restricted to Community Colleges campuses only.
Prerequisite(s): Grade of C- or higher in BIOL 225, BIOL 226, and BIOL 262.

BIOL 301. Principles of Ecology
3 Credits
A survey of ecology including general theory, the adaptations of organisms, population dynamics, species interactions, and the structure and function of natural communities and ecosystems. MATH 191G and A ST 311 recommended. Same as E S 301. Crosslisted with: E S 301.
Prerequisite(s): BIOL 111G, MATH 121G.

BIOL 302. Molecular Biology Techniques Laboratory
3 Credits
This combined lecture and laboratory course emphasizes molecular biology laboratory practices through the hands-on application of commonly applied techniques, protocols, and equipment. The topics covered include both the fundamental development of empirical data as well as data analysis using stand-alone and web-based resources. Consent of instructor required.
Prerequisite(s): BIOL 211G or equivalent, and MATH 121G.

BIOL 305. Principles of Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals. Crosslisted with: HORT 305 and AGRO 305.
Prerequisite(s): BIOL 111G and BIOL 211G, or BIOL 211G and BCHE 140, either CHEM 111G or CHEM 115, and MATH 121G.

BIOL 309. Guided Biological Research Lab
3 Credits
This laboratory course provides a guided experience to hands-on research in biology. It is intended for early-career undergraduates who have finished the introductory sequence of biology courses. Topics will vary with instructor.
Prerequisite(s): BIOL 111G, BIOL 211G, and MATH 121G.
BIOL 311. General Microbiology
3 Credits
Principles of physiology, molecular biology, ecology, and taxonomy of microorganisms.
Prerequisite(s): BIOL 211G and MATH 121G.

BIOL 311 L. General Microbiology Laboratory
2 Credits
Microbiology techniques and procedures, including isolation and identification of microorganisms and biotechnology procedures that employ microorganisms.
Prerequisite(s)/Corequisite(s): BIOL 219 or BIOL 311. Prerequisite(s): BIOL 211G and MATH 121G.

BIOL 312. Plant Taxonomy
3 Credits (2+3P)
Classification and identification of representative plant families and local plants. Emphasis on ability to use technical sources. Saturday field trips may be recommended.
Prerequisite(s): BIOL 111G and MATH 121G.

BIOL 313. Structure and Function of Plants
3 Credits (2+3P)
Structure, function, and survey of plants. BIOL 211G recommended.
Prerequisite(s): BIOL 111G, MATH 121G, and sophomore-level standing.

BIOL 314. Plant Physiology
3 Credits
Photosynthesis, respiration, water relation of plants, minerals and organic nutrition, growth and development.
Prerequisite(s): BIOL 211G and CHEM 112G.

BIOL 322. Zoology
3 Credits (2+3P)
Structure, function, and survey of animals. BIOL 211G recommended.
Prerequisite(s): BIOL 111G, MATH 121G, and at least sophomore-level standing.

BIOL 330. Comparative Anatomy and Embryology
4 Credits (3+3P)
The developmental and evolutionary basis for the diversity and homology of body plans within the classes of vertebrate organisms. Laboratories will emphasize comparative dissection. BIOL 322 recommended.
Prerequisite(s): BIOL 111G, BIOL 211G, and MATH 121G.

BIOL 350. Special Topics
1-4 Credits
Specific subjects announced in Schedule of Classes and offered as scheduled courses. May be repeated for unlimited credit.

BIOL 351. Biology Internship
1-6 Credits
Substantial off-campus experience in biology selected by student in consultation with regular biology faculty member. Internship must be approved by faculty member. Student will supply mutually agreed upon documentation of internship activities after the internship is completed. May be repeated up to 6 credits. Restricted to: BIOL, M BIO, CEC, GEBT majors. S/U Grading (S/U, Audit).
Prerequisite(s): 45 college credits, 2.5 or better GPA, consent of instructor.

BIOL 353. Pre-Professional Human Anatomy
4 Credits
Pre-professional clinically-oriented survey of human anatomy. Designed primarily for pre-nursing majors. Provides comprehensive anatomical training for students planning careers in health and allied health sciences, such as medicine, dentistry, nursing, physical therapy, physicians aid, human nutrition, and food science. Suitable as a biology elective. Concurrent enrollment in BIOL 354L is recommended but not required.
Prerequisite(s): BIOL 211G and either CHEM 110G, CHEM 111G, or CHEM 115.

BIOL 353 L. Pre-Professional Human Anatomy Laboratory
1 Credit
Laboratory experience in human anatomy using anatomical models and cadaver dissections. Designed as a learning aid to support and augment BIOL 353 pre-professional Human Anatomy. For students planning careers in health and allied health sciences such as medicine, dentistry, nursing, physical therapy, physicians aid, human nutrition, and food science.
Prerequisite(s)/Corequisite(s): BIOL 253 or BIOL 353. Prerequisite(s): BIOL 211G and either CHEM 110G, CHEM 111G, or CHEM 115.

BIOL 354. Physiology of Humans
3 Credits
Principles of integrative functions in humans. A systems approach emphasizing tissues, organs, and their regulation.
Prerequisite(s): BIOL 211G and MATH 121G.

BIOL 354 L. Laboratory of Human Physiology
1 Credit
Laboratory to accompany BIOL 354.
Prerequisite(s): MATH 121G, BIOL 351, or BIOL 354, or concurrent enrollment in BIOL 354.

BIOL 373. Fungal Biology
3 Credits (3+2P)
Same as EPWS 372.
Prerequisite: EPWS 310 or BIOL 311 or consent of instructor.

BIOL 377. Cell Biology
3 Credits
Prerequisite(s): BIOL 211G, BIOL 305, and MATH 121G.

BIOL 381. Animal Physiology
3 Credits
Principles of integrative function in animals, emphasizing tissues, organs, organ systems, and regulation. Includes adaptations of animals to their environments. BIOL 111G and BIOL 377 recommended.
Prerequisite(s): BIOL 211G and junior-level standing, MATH 121G.

BIOL 382. Plant Signalling and Development
3 Credits
This is a course that introduces plant signalling pathways and their role in development to students. The lectures are structured to facilitate in-class discussions on the current state and future directions in this field. Topics will cover a wide range of biological questions and the methods used to study them.
Prerequisite(s): BIOL 305 or GENE 315, and MATH 121G.
BIOL 385. An Introduction to Cancer
3 Credits
This course will cover 3 areas of cancer research and their interdisciplinary connections: clinical cancer research, epidemiology and public health, and basic cancer research. May be repeated up to 3 credits.
Prerequisite(s): BIOL 305 or GENE 315 or equivalent and MATH 121G.

BIOL 398. Biology Research Programs
1-3 Credits
Directed studies and research experiences, by arrangement with instructor. May be repeated for a maximum of 6 credits.

BIOL 402. Biology Honors Thesis
1-3 Credits (1-3)
Provides guidance in how to write a scientific paper in the sciences. Students will produce an honors thesis based on previous independent research. Consent of instructor required.
Prerequisite(s): MATH 121G and consent of instructor.

BIOL 408. Ecology of Plants
3 Credits
Controlling factors, succession, community dynamics, and the classification of vegetation.
Prerequisite(s): BIOL 301 and MATH 121G.

BIOL 412. Seminar in Microbiology
1 Credit
Seminar to aid students in assessment and presentation of current topics in microbiology. Graded: S/U.
Prerequisite(s): BIOL 311, BIOL 311L, and MATH 121G.

BIOL 417. Topics in Environmental Microbiology
3 Credits
This is an advanced undergraduate course based on current literature in Environmental Microbiology, and is a seminar-style, discussion-based class. Topics typically include marine microbiology, ancient DNA, and the human microbiome. Crosslisted with: BIOL 577.
Prerequisite(s): MATH 121G, BIOL 477 or consent of instructor.

BIOL 423. Primate Adaption and Evolution
3 Credits
Prerequisite(s): ANTH 355 or consent of instructor.
Corequisite(s): BIOL 423L when offered.

BIOL 423 L. Primate Evolution Laboratory
1 Credit
Laboratory with exercises on non-human primate adaptation and evolution. Crosslisted with: ANTH 473 L.
Prerequisite(s): ANTH 355 or consent of instructor.
Corequisite(s): BIOL 423L.

BIOL 424. Human Osteology
3 Credits
Corequisite(s): BIOL 424L when offered.
Prerequisite(s)/Corequisite(s): Recommend ANTH 355 or equivalent.

BIOL 424 L. Human Osteology Lab
1 Credit
Laboratory for ANTH 474. Experiences and activities related to identifying teeth and bones of the human skeleton. Crosslisted with: ANTH 474 L.
Prerequisite(s): Recommend ANTH 355 or equivalent.

BIOL 427. Symbiosis
3 Credits
In-depth treatment of the ecology, evolution, and mechanisms that are found in symbiotic systems.
Prerequisite(s): BIOL 111G, BIOL 211G, and MATH 121G.

BIOL 434. Human Evolution
3 Credits
Overview of human biological evolution from the emergence of Miocene apes to the modern human diaspora. Crosslisted with: ANTH 434.
Prerequisite(s): ANTH 355 or consent of instructor.
Corequisite(s): BIOL 434L when offered.

BIOL 434 L. Human Evolution Laboratory
1 Credit
Laboratory in human evolution, includes exercises and activities to learn the human fossil record. Crosslisted with: ANTH 434 L.
Prerequisite(s): ANTH 355 or consent of instructor.
Corequisite(s): BIOL 434.

BIOL 436. Disease Vector Biology
3 Credits
Fundamentals of disease vector biology with emphasis on molecular biology. Explores an overview of vector borne diseases, insect endocrinology, insect immunity, olfaction, vector genome projects and transgenic insect techniques. Includes student presentations and literature discussions. Crosslisted with: BIOL 536
Prerequisite(s): BIOL 211G, BIOL 305, and MATH 121G.

BIOL 442. Genomics Technology
3 Credits
The course introduces current genomic techniques in genome sequencing, transcriptome analysis, detection of genetic variation, and metagenomics.
Prerequisite(s): BIOL 211G, BIOL 305 or BIOL 478 or GENE 315, and MATH 121G.

BIOL 446. Bioinformatics and NCBI Database
3 Credits
The course discusses how to use NCBI database and bioinformatic tools for research with genomics approaches. The topics include nucleotide and protein sequence analysis, similarity search with blast algorithms, gene/genome annotation, protein structure analysis, gene expression analysis, and metagenomic study.
Prerequisite(s): BIOL 211G, BIOL 305 or BIOL 478 or GENE 315, and MATH 121G.

BIOL 447. Ornithology
4 Credits (3+3P)
Morphology, life histories, systematics, ecology, and behavior of birds.
Prerequisite(s): MATH 121G.

BIOL 450. Special Topics
1-3 Credits
Specific subjects announced in the Schedule of Classes and offered as scheduled courses. May be repeated for unlimited credit.
Biol 451. Physiology of Microorganisms
3 Credits
Aspects of cellular physiology unique to prokaryotes. BCH 395 recommended.
Prerequisite(s): C- or better in BIOL 311, MATH 121G.

Biol 455. Biometry
3 Credits
Biometry is the analysis of biological data using mathematical and statistical models. The course will cover basic theories of probability and statistics and will introduce principles of sampling, estimation, experimental design, and hypothesis testing. Students will analyze biological data using computer programs and will perform tests for goodness-of-fit, independence, analysis of variance, correlation, and regression.
Prerequisite(s): BIOL 111G or BIOL 211G, and MATH 121G.

Biol 459. Darwinism Versus Creationism
3 Credits
This course examines the debate regarding Creationism versus Darwinism as explanations for the origin and diversification of life on Earth. Topics covered include the nature and philosophy of science, new-world creationism, old-world creationism, intelligent design, history of evolutionary thought, modern evolutionary theory, and the Creationism-Darwinism debate at the societal, political, and educational interfaces. The course structure will include formal lectures and in-class discussion of assigned readings.
Prerequisite(s): BIOL 111G or BIOL 211G, and MATH 121G.

Biol 462. Conservation Biology
3 Credits
Examination of the value of biological diversity, the natural processes that control biological diversity, and the ways in which human activities have resulted in the loss of biological diversity, both regionally and globally.
Prerequisite(s): BIOL 301 and either MATH 142G or MATH 191G.

Biol 465. Invertebrate Zoology
4 Credits (3+3P)
Survey, ecology, behavior and physiology. BIOL 322 recommended.
Prerequisite(s): MATH 121G, BIOL 111G, and junior-level standing.

Biol 466. Invertebrate Zoology Field Trip
1 Credit
A one-week field trip for the study of marine invertebrates. Registrants must provide own camping gear. Graded: S/U.
Prerequisite(s): MATH 121G, BIOL 465 or equivalent (or concurrent enrollment) or consent of instructor.

Biol 467. Evolution
3 Credits
Covers theory, historical background, population variation, natural selection, adaptation, speciation.
Prerequisite(s): BIOL 111G, BIOL 305 or GENE 320, and MATH 121G.

Biol 469. Biology of Emerging Infectious Diseases
3 Credits
This class will investigate the evolutionary and ecological drivers of disease emergence. The effect of emerging diseases on human health will be addressed throughout the class, but the class will also consider the consequences of disease emergence for the health of wildlife and plant populations. Additionally, the class will consider the mechanisms used to control disease emergence and why they succeed or fail.
Prerequisite(s): MATH 121G, Introductory Genetics (BIOL 305 or equivalent) or consent of the instructor.

Biol 470. Developmental Biology
3 Credits
The purpose of this course is to introduces students to the principles that govern the development of a single fertilized egg cell into a complex multicellular organism. These principles, and often the molecular mechanisms by which they are accomplished, appear to be universal for all multicellular organisms including both plants and animals. We will explore issues such as: how cells become committed to particular cell fates and how this commitment is maintained; how organs acquire particular shapes, sizes and positions; the developmental causes of some human diseases; how the environment affects development; and, how changes in development provide the material basis for evolutionary change.
Prerequisite(s): BIOL 211G, BIOL 305, and MATH 121G.

Biol 471. Molecular and Cellular Mycology
3 Credits
Exploration of the world of fungi with emphasis on fungal molecular biology and development. Including discussion of fungal taxonomy and genomics.
Prerequisite(s): MATH 121G and BIOL 311 required, BCHE 341 or BCHE 395 recommended, or consent of instructor.

Biol 472. Primate Behavior and Ecology
3 Credits
Survey of the social behavior and ecology of nonhuman primates. Crosslisted with: ANTH 472.

Biol 473. Ecology of Microorganisms
3 Credits (2+3P)
The metabolic interactions of microorganisms in the environment, with emphasis on their roles in ecological processes.
Prerequisite(s): MATH 121G, BIOL 311 or consent of instructor.

Biol 474. Immunology
3 Credits
Basic concepts of the immune response.
Prerequisite(s): MATH 121G, BIOL 305, and CHEM 211 or CHEM 313.

Biol 475. Virology
3 Credits
Mechanisms of viral infections of animals and man. BCHE 395 or BIOL 305 are recommended.
Prerequisite(s): BIOL 311 and MATH 121G.

Biol 476. Soil Microbiology
3 Credits
Nature and physiology of soil microorganisms, how they affect plant growth and recycle nutrients. Land framing, bioremediation, and other environmental problems as influenced by soil microorganisms. SOIL 252 and BIOL 311 recommended. Same as SOIL 476.

Biol 476L. Soil Microbiology Laboratory
1 Credit
Enumeration of soil microorganisms, their activities, and transformations they mediate. Same as SOIL 476L.
Prerequisite(s)/Corequisite(s): BIOL 476.
BIOL 477. Applied and Environmental Microbiology  
4 Credits  
A lecture-laboratory course on the microorganisms and the reactions they mediate which either impact the environment or have industrial applications. Reading of current literature will be emphasized. Topics include bioremediation, water quality, and aspects of industrial and food microbiology.  
Prerequisite(s): MATH 121G, BIOL 311, and 311 L, or consent of instructor.  

BIOL 478. Molecular Biology of Microorganisms  
3 Credits  
The biochemical basis for gene mutation, recombination, and expression with emphasis on prokaryotes. Includes fundamentals of recombinant DNA technology. BIOL 305 and BCHE 395 recommended.  
Prerequisite(s): BIOL 311 and MATH 121G.  

BIOL 479. Medical Microbiology  
3 Credits  
An in-depth overview of microbial pathogens associated with human infectious disease. Etiological agents, pathogenesis, and processes leading to the disease state and the therapies of infectious disease.  
Prerequisite(s): MATH 121G and BIOL 311 required, BIOL 474 recommended.  

BIOL 479 L. Medical Microbiology Laboratory  
1 Credit  
Overview of common procedures used by medical microbiologists to identify agents of disease or microbial pathogen traits. May be repeated up to 1 credits.  
Prerequisite(s)/Corequisite(s): BIOL 479. Prerequisite(s): MATH 121G, BIOL 311, BIOL 311L.  

BIOL 480. Animal Behavior  
3 Credits  
A survey of the field of animal behavior. BIOL 322 recommended.  
Prerequisite(s): MATH 121G, BIOL 111G, and junior-level standing.  

BIOL 480 L. Animal Behavior Laboratory  
1 Credit  
Laboratory and field experiences in animal behavior BIOL 322 recommended.  
Prerequisite(s): BIOL 111G, MATH 121G, and junior-level standing.  
Corequisite(s): BIOL 480.  

BIOL 484. Animal Communication  
3 Credits  
An examination of how animals produce and perceive signals, what factors influence the form of signals in different sensory modalities, and how conflicts between senders and receivers affect signaling strategies. Weekly discussion from the primary literature and group research products.  
Prerequisite(s): BIOL 111G or consent of instructor, and MATH 121G.  

BIOL 485. Comparative Stress Physiology  
3 Credits  
This course explores the biochemical, hormonal, and molecular aspects of stress physiology in all organisms from bacteria to humans. Focus area include hormesis, temperature, radiation, oxygen, infection, and dehydration.  
Prerequisite(s): MATH 121 and BIOL 211G.  

BIOL 488. Principles of Conservation Genetics  
3 Credits  
Fundamentals of the genetics of small populations. Genetic technologies used in studying small populations. Application of genetics and evolution to the conservation of biological populations.  
Prerequisite(s): MATH 121G and BIOL 305.  

BIOL 489. Genetic Aspects of Population Biology  
3 Credits  
Basic theory of population genetics and how that theory has guided, and been influenced by, studies of natural populations.  
Prerequisite(s): MATH 121G and BIOL 305 or equivalent.  

BIOL 490. Neurobiology  
3 Credits  
Fundamentals of neurobiology with an emphasis on properties of neurons and glia, principles of synaptic transmission, development of nervous system and organization of motor and sensory systems.  
Prerequisite: BIOL 211, BIOL 305, MATH 142G, or MATH 191G, and CHEM 211 or CHEM 313.  

BIOL 498. Biology Research Programs  
1-3 Credits  
Directed studies and research experiences, by arrangement with instructor. May be repeated for a maximum of 6 credits.  

BIOL 503. Advanced Primate Adaptation and Evolution  
3 Credits  
Corequisite(s): BIOL 503L when offered.  

BIOL 503 L. Advanced Primate Adaptation and Evolution Laboratory  
1 Credit  
Laboratory with exercises on non-human primate adaptation and evolution. Crosslisted with: ANTH 573 L.  
Corequisite(s): BIOL 503.  

BIOL 506. Biological Electron Microscopy (f)  
5 Credits  
Principles and use of light microscope, transmission and scanning electron microscope; specimen preparation, thick and ultrathin sectioning, analysis of micrographs.  

BIOL 510. Current Topics in Biology  
3 Credits  
Introduction to diverse topics in modern biology, including dynamic areas of current research.  

BIOL 514. Plant Physiology  
2 Credits  
Same as EPWS 514.  
Prerequisites: BIOL 211G and CHEM 112G.  

BIOL 520. Molecular Cell Biology  
3 Credits  
An in-depth look at cellular processes and structures at the molecular level. Emphasis is placed on formal student presentations and discussions of current literature.  
Prerequisite: BIOL 377 or equivalent.  

BIOL 527. Symbiosis  
3 Credits  
In-depth treatment of the ecology, evolution, and mechanisms that are found in symbiotic systems.  
Prerequisite: graduate status.
BIOL 533. Environmental Physiology of Plants
3 Credits
Integral responses of plants and crop productivity to naturally occurring and modified environmental factors such as radiation, temperatures, water vapor, carbon dioxide, and air flow. Same as AGRO 533 and HORT 533.
Prerequisite: BIOL 314 or consent of instructor.

BIOL 534. Advanced Human Evolution
3 Credits
Advanced overview of human biological evolution from the emergence of Miocene apes to the modern human diaspora. Crosslisted with: ANTH 534.
Prerequisite(s): ANTH 355 or consent of instructor.
Corequisite(s): ANTH 534L when offered.

BIOL 534 L. Advanced Human Evolution Laboratory
1 Credit
Advanced laboratory in human evolution, includes exercises and activities to learn the human fossil record. Crosslisted with: ANTH 534 L.
Corequisite(s): BIOL 534.

BIOL 536. Advanced Disease Vector Biology
3 Credits
Prerequisite(s): BIOL 211G and BIOL 305.

BIOL 540. Science and Ethics
1-3 Credits (1-3)
Ethical concerns facing researchers in the basic and applied biological sciences. Coverage of responsible conduct in research including scientific integrity and research misconduct, mentor/trainee responsibilities, data management, authorship, publication practices, human subjects, animal welfare, intellectual property, conflicts of interest and effort and collaborative science. Emphasis on ethical reasoning skills. Discussion of ethical and societal implications of issues selected from a broad range of contemporary research areas (genetics, reproductive biology, environmental sciences, nanoscience, drug discovery, bioengineering, neuroscience). Subtitled. May be repeated up to 4 credits. Crosslisted with: PHIL 540.

BIOL 541. Professional Development Seminar
1-3 Credits
Practical aspects of career enhancement including job seeking, professional presentations, grant proposals, etc.
Prerequisite: consent of instructor.

BIOL 545. Molecular and Biochemical Genetics
3 Credits
Same as BCHE 545.

BIOL 550. Special Topics
1-3 Credits
Readings, discussions, and/or field and laboratory investigation of selected problems. Possible topics: human genetics, systematic entomology, or parasitism in animals. May be repeated for unlimited credit.
Prerequisite: consent of instructor, and designation of a specific topic before registration.

BIOL 560. Seminar in Cell and Organismal Biology
1-3 Credits
Oral presentation and discussion of journal articles and ongoing research project. May be repeated for a maximum of 6 credits.

BIOL 562. Advanced Genomics Technology
3 Credits
This course covers current genomics techniques in genome sequencing, transcriptome analysis, detection of genetic variation, and metagenomics. Consent of Instructor required.

BIOL 566. Advanced Bioinformatics and NCBI Database
3 Credits
The course discusses how to use NCBI database and bioinformatic tools for research with genomics approaches. The topics include nucleotide and protein sequence analysis, similarity search with blast algorithms, gene/genome annotation, protein structure analysis, gene expression analysis, and metagenomic study. Consent of Instructor required.

BIOL 568. Communities and Ecosystems
3 Credits
Study of ecological systems at the levels of the community and ecosystem. Topics include species interactions, community structure and dynamics, and flow of material and energy through ecosystems.

BIOL 570. Ecological Biogeography
3 Credits
Survey of modern theory incorporating ecological mechanisms governing distribution and abundance of species over space and time.

BIOL 571. Advanced Molecular and Cellular Mycology
3 Credits
Exploration of the world of fungi with emphasis on fungal molecular biology and development, including discussion of fungal taxonomy and genomics, using current literature. Consent of instructor required.

BIOL 572. Advanced Primate Behavior and Ecology
3 Credits

BIOL 573. Fungal Biology
3 Credits (3+2P)
Same as EPWS 572.
Prerequisites: EPWS 310 or BIOL 311, or consent of instructor.

BIOL 574. Advanced Human Osteology
3 Credits
Advanced human osteology surveying the functional, developmental and evolutionary biology of the human skeleton. Identifying bones and teeth from hands-on experience with skeletal and dental material. Provides a foundation for human evolutionary studies, bioarchaeology and forensic anthropology. Crosslisted with: ANTH 574.
Corequisite(s): BIOL 574L when offered.

BIOL 574 L. Human Osteology Laboratory
1 Credit
Laboratory for BIOL 574. Experiences and activities related to identifying teeth and bones of the human skeleton. Crosslisted with: ANTH 574 L.
Corequisite(s): BIOL 574.

BIOL 577. Advanced Topics in Environmental Microbiology
3 Credits
This course is based on current literature in Environmental Microbiology, and is a seminar-style, discussion-based class. Topics typically include marine microbiology, ancient DNA and the human microbiome.
Prerequisite(s): Consent of instructor.
BIOL 581. Physiology of Animals
3 Credits
Comprehensive treatment of integrative physiology of animals, emphasizing tissues, organ systems, and regulatory control, including neuroendocrine function, circulation, respiration, and excretion. Term paper required. BIOL 111G, BIOL 377 recommended.
Prerequisite: BIOL 211G.

BIOL 582. Advanced Plant Signalling and Development
3 Credits
This is a course that introduces plant signalling pathways and their role in development to students. The lectures are structured to facilitate in-class discussions on the current state and future directions in this field. Topics will cover a wide range of biological questions and the methods used to study them.
Prerequisite(s): BIOL 305 or GENE 315, and MATH 121G.

BIOL 587. Behavioral and Evolutionary Ecology
3 Credits
This course will investigate the causes and consequences of phenotypic variation and the adaptive value of phenotypic traits.

BIOL 590. Advanced Neurobiology
1-3 Credits
Detailed examination of the principles underlying nervous system organization and function. Emphasis on recent advances in multidisciplinary, integrated approaches to study the nervous system. May be repeated under different subtitles for a maximum of 9 credits.
Prerequisites: either BIOL 490, BIOL 520, or equivalent, and consent of instructor.

BIOL 598. Special Research Programs
1-9 Credits
Individual investigations either analytical or experimental.

BIOL 599. Master's Thesis
15 Credits
Thesis.

BIOL 600. Doctoral Research
1-15 Credits
Research.

BIOL 610. Seminar
1-3 Credits (1-3)
Oral presentation and discussion of journal articles and ongoing research projects. May be repeated up to 6 credits. S/U Grading (S/U, Audit).

BIOL 612. Microbiology Seminar
1 Credit
Seminar to aid graduate students in assessment and presentation of classical and current topics in microbiology.

BIOL 697. University Teaching Experience
1-3 Credits
Certain graduate students will be permitted to teach up to one-third of one of the biology courses. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures.

BIOL 698. Selected Topics
1-3 Credits
Selected topics for doctoral students.

BIOL 700. Doctoral Dissertation
15 Credits
Dissertation.
areas of interest within biology can be obtained from the Biology Success Center (http://bio.nmsu.edu/success).

**Requirements**

**Nondepartmental Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td><strong>Organic Chemistry Requirement</strong></td>
<td></td>
<td><strong>4-8</strong></td>
</tr>
<tr>
<td>CHEM 211</td>
<td>Organic Chemistry</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 313</td>
<td>Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 314</td>
<td>and Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 315</td>
<td>and Organic Chemistry Laboratory</td>
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</tr>
<tr>
<td>BCHE 341</td>
<td>Survey of Biochemistry</td>
<td>3-4</td>
</tr>
<tr>
<td>or BCHE 395</td>
<td>Biochemistry I</td>
<td></td>
</tr>
<tr>
<td>BIOL 455</td>
<td>Biometry (preferred)</td>
<td>3</td>
</tr>
<tr>
<td>or A ST 311</td>
<td>Statistical Applications</td>
<td></td>
</tr>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 221G</td>
<td>General Physics for Life Sciences I</td>
<td></td>
</tr>
<tr>
<td>PHYS 212G</td>
<td>General Physics II</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 222G</td>
<td>General Physics for Life Sciences II</td>
<td></td>
</tr>
<tr>
<td>PHYS 211GL</td>
<td>General Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>or PHYS 221GL</td>
<td>Laboratory to General Physics for Life Science I</td>
<td></td>
</tr>
<tr>
<td>PHYS 212GL</td>
<td>General Physics II Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>or PHYS 222GL</td>
<td>Laboratory to General Physics for Life Sciences II</td>
<td></td>
</tr>
</tbody>
</table>

**Departmental Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 111GL</td>
<td>Natural History of Life Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 301</td>
<td>Principles of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 305</td>
<td>Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 377</td>
<td>Cell Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 467</td>
<td>Evolution</td>
<td>3</td>
</tr>
<tr>
<td>Select sufficient upper-division biology electives to bring total upper-division credits to 28.</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

**General Education Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viewing a Wider World</td>
<td>6</td>
</tr>
</tbody>
</table>

**Electives**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select sufficient electives to bring the total to 120 credits, including at least 48 upper-division credits.</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits** 120-125

1 At least one upper-division course must include laboratory and/or field experience. The laboratory/field requirement can be satisfied by any BIOL course above the 300 level that includes a laboratory or a field trip—including BIOL 350 Special Topics or BIOL 450 Special Topics.

**Biology - Doctor of Philosophy**

The Department of Biology offers graduate study leading to the Doctor of Philosophy degree. Our goal is to prepare students for careers in the various fields in biology through formal coursework and research experiences as well as through seminars and discussion groups.

There are three formal course requirements for all Biology Graduate students, with the exception of students in the accelerated non-thesis MS Biotechnology option. These core courses are:

**Course Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 510</td>
<td>Current Topics in Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 540</td>
<td>Science and Ethics</td>
<td>1-3</td>
</tr>
<tr>
<td>or PHIL 540</td>
<td>Science and Ethics</td>
<td></td>
</tr>
<tr>
<td>BIOL 610</td>
<td>Seminar</td>
<td>1-3</td>
</tr>
</tbody>
</table>

Students are required to successfully complete the Seminar course once each year that they are in the program.

Doctor of Philosophy students can choose among the Department's three areas of emphasis:

1. **Behavioral, Ecological and Evolutionary Biology**

   The Behavioral, Ecological and Evolutionary Biology program is appropriate for graduate students who wish to specialize in areas of biology that study the various processes that encompass the behavior, ecology, and evolution of living and extinct taxa.

2. **Cell and Organismal Biology**

   The Cell and Organismal Biology program is appropriate for all Graduate students who wish to emphasize those areas of biology that integrate function and structure in cells, tissues, and organisms.

3. **Microbiology**

   The Microbiology curriculum is appropriate for graduate students who wish to specialize in areas of biology that study the various processes that occur in microbes (bacteria, viruses, fungi, and protists) such as their physiology, ecology, development or evolution.

All graduate students should develop their curriculum plan in consultation with their faculty advisor and graduate committee. Details of sample course sequences within the different emphases are described in the Biology Graduate Handbook available for download from the Graduate Student section of the Biology website http://bio.nmsu.edu/grads/.

Graduate students may also earn a minor in other graduate departments and programs.

**Biology - Master of Science**

The Master of Science degree can be obtained through either a thesis option or a non-thesis option. Both options require 30 credits of coursework. The non-thesis option can be completed as an accelerated (one-year) program concentrating in biotechnology or through an individual degree plan in consultation with the student's Master of Science committee.

There are three formal course requirements for all Biology Graduate students, with the exception of students in the accelerated non-thesis MS Biotechnology option. These core courses are:

**Course Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 510</td>
<td>Current Topics in Biology</td>
<td>3</td>
</tr>
</tbody>
</table>
New Mexico State University

BIOL 540 Science and Ethics 1-3
or PHIL 540 Science and Ethics

BIOL 610 Seminar 1-3

Students are required to successfully complete the Seminar course once each year that they are in the program.

For research toward the Master of Science degree, students can choose among the Department’s three areas of emphasis:

1. **Behavioral, Ecological and Evolutionary Biology**
The Behavioral, Ecological and Evolutionary Biology program is appropriate for graduate students who wish to specialize in areas of biology that study the various processes that encompass the behavior, ecology, and evolution of living and extinct taxa.

2. **Cell and Organismal Biology**
The Cell and Organismal Biology program is appropriate for all Graduate students who wish to emphasize those areas of biology that integrate function and structure in cells, tissues, and organisms.

3. **Microbiology**
The Microbiology curriculum is appropriate for graduate students who wish to specialize in areas of biology that study the various processes that occur in microbes (bacteria, viruses, fungi, and protists) such as their physiology, ecology, development or evolution.

All graduate students should develop their curriculum plan in consultation with the faculty advisor and graduate committee. Details of sample course sequences within the different emphases are described in the Biology Graduate Handbook available for download from the Graduate Student section of the Biology website http://bio.nmsu.edu/grads/.

Graduate students may also earn a minor in other graduate departments and programs.

**Biotechnology Program**

This is an accelerated (one year) non-thesis Master of Science degree in Biology that focuses on biotechnology. The program requires 30 hours of course work. The courses in this program are designed to prepare students for biotechnology-related careers in basic and applied research; in product development and testing; and in policy-making, regulation and law enforcement. The program of study includes practical training in molecular biology, genomics and bioinformatics, statistical analysis, business, bioethics and professional development skills. Additional graduate course work will provide students with further expertise in their individual areas of interest, including cell, molecular, and microbial biology; environmental, ecological and evolutionary biology; and general and integrative biology. Students who complete this training will be prepared for successful employment in academic, corporate, and government settings.

**Skills** 9-10

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 450</td>
<td>Special Topics (Molecular Biology Techniques Lab)</td>
</tr>
<tr>
<td>BIOL 566</td>
<td>Advanced Bioinformatics and NCBI Database</td>
</tr>
<tr>
<td>or GENE 452</td>
<td>Applied Bioinformatics</td>
</tr>
<tr>
<td>BIOL 562</td>
<td>Advanced Genomics Technology</td>
</tr>
</tbody>
</table>

**A ST 505** Statistical Inference I

**Professional Development** 5-7

<table>
<thead>
<tr>
<th>Course</th>
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</tr>
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<tbody>
<tr>
<td>BIOL 540</td>
<td>Science and Ethics</td>
</tr>
<tr>
<td>or PHIL 540</td>
<td>Science and Ethics</td>
</tr>
</tbody>
</table>

**Biological Knowledge Electives** 14-16

**Optional Internship** 3-6

1. Students are expected to choose 5 or more courses numbered 450 or above in microbiology, organismal and cellular biology, genetics, or ecology.
2. This may include a research internship in a biotechnology company or in a Biology Department laboratory. Credits earned during an internship count towards the required elective credits.

**Biology - Undergraduate Minor**

The courses of the Biology minor represent core biological content, critical for a general view of biology. A student cannot earn a bachelor’s degree in Biology and also earn a minor in Biology.

**Requirements**

A minor in Biology must include 20 credits in Biology, of which at least 9 credits must be numbered 300 and above.

No more than 3 credits of special topics or individual study courses may be applied to the minor. A grade of C- or better must be earned in all courses.

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
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<td>Natural History of Life Laboratory</td>
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<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
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<td>BIOL 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
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</tr>
<tr>
<td>BIOL 301</td>
<td>Principles of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>or BIOL 377</td>
<td>Cell Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 305</td>
<td>Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 467</td>
<td>Evolution</td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective** 3

Select any Biology courses to bring the total credits to 20.

**Total Credits** 20

**Conservation Ecology - Bachelor in Conservation Ecology**

Co-directors of the Program:

Professor, Michelle Nishiguchi, Department Head, Biology
Professor, Kathryn Stoner, Department Head, Fish, Wildlife and Conservation Ecology

Professors: Boeing, Boecklen, Caldwell, Cowley, Desmond, Hanley, Houde, Milligan, Nishiguchi, Roemer, G. Smith, Wright; Associate Professors: Bailey, Cain, Mabry; Assistant Professors: Ferrenberg, James
New Mexico State University offers an interdisciplinary, undergraduate program in Conservation Ecology. The goal of this program is to train biologists for the current and future challenges that we face in the conservation and wise use of our Earth's natural resources. An overriding principle of the program is to provide a solid foundation in basic science coupled with a practical approach towards sustainability and stewardship. The curriculum encompasses several disciplines and includes a wide variety of courses from the Biology; Fish, Wildlife and Conservation Ecology; Geography; and Range Science departments.

The educational experience will provide students with an overview of global biodiversity and an understanding of the ecological and evolutionary processes that have created and sustained it. Courses in population and community ecology coupled with population viability analysis and risk assessment will give students the necessary background to understand the theory and development of these fields as well as the tools to tackle real-world problems. Courses in basic genetics, evolution, and conservation genetics will expose students to the importance of conserving genetic variation in order to maintain adaptive potential within populations, thereby sustaining the evolutionary process. Students will also receive background on wildlife law and environmental policy, information vital for assisting governing bodies in making decisions regarding the protection and wise use of our natural resources. Skills obtained in the application of geographic information systems, molecular genetics, and professional communication can also be acquired through various electives. In sum, we seek to provide undergraduate students with an education that will allow them the opportunity to contribute to the conservation of all life on Earth.

The requirements are listed below. In addition, each required course must be passed with a grade of C- or better.

**Core Curriculum**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td>4</td>
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<tr>
<td>CHEM 211</td>
<td>Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 218G</td>
<td>Technical and Scientific Communication</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
<td></td>
</tr>
</tbody>
</table>

Select one from the following: 3 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXED 201G</td>
<td>Effective Leadership and Communication in Agricultural Organizations</td>
<td></td>
</tr>
<tr>
<td>COMM 253G</td>
<td>Public Speaking</td>
<td></td>
</tr>
<tr>
<td>COMM 265G</td>
<td>Principles of Human Communication</td>
<td></td>
</tr>
<tr>
<td>HON 265G</td>
<td>Principles of Human Communication Honors</td>
<td></td>
</tr>
</tbody>
</table>

Select one from the following: 3 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 201G</td>
<td>Introduction to Economics</td>
<td></td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
<td></td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
<td></td>
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</tbody>
</table>

Select one from the following: 6-12 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 121G &amp; MATH 142G</td>
<td>College Algebra and Calculus for the Biological and Management Sciences</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
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</tbody>
</table>

**Major Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 111GL</td>
<td>Natural History of Life Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 301</td>
<td>Principles of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>or FWCE 301</td>
<td>Wildlife Ecology</td>
<td></td>
</tr>
<tr>
<td>BIOL 305</td>
<td>Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>or AGRO 305</td>
<td>Principles of Genetics</td>
<td></td>
</tr>
<tr>
<td>BIOL 312</td>
<td>Plant Taxonomy</td>
<td>3</td>
</tr>
<tr>
<td>or RGSC 316</td>
<td>Rangeland Plants</td>
<td></td>
</tr>
<tr>
<td>BIOL 313</td>
<td>Structure and Function of Plants</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 322</td>
<td>Zoology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 462</td>
<td>Conservation Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 467</td>
<td>Evolution</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 488</td>
<td>Principles of Conservation Genetics</td>
<td>3</td>
</tr>
<tr>
<td>FWCE 110</td>
<td>Introduction to Natural Resources Management</td>
<td>4</td>
</tr>
<tr>
<td>FWCE 255</td>
<td>Principles of Fish and Wildlife Management</td>
<td>3</td>
</tr>
<tr>
<td>FWCE 330</td>
<td>Natural History of the Vertebrates</td>
<td>4</td>
</tr>
<tr>
<td>FWCE 402</td>
<td>Seminar in Natural Resource Management</td>
<td>1</td>
</tr>
<tr>
<td>FWCE 409</td>
<td>Introduction to Population Ecology</td>
<td>3</td>
</tr>
<tr>
<td>FWCE 447</td>
<td>Wildlife Law and Policy</td>
<td>3</td>
</tr>
<tr>
<td>FWCE 464</td>
<td>Management of Aquatic and Terrestrial Ecosystems</td>
<td>4</td>
</tr>
</tbody>
</table>

**Physiology**

Select 3-4 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 370</td>
<td>Anatomy and Physiology of Farm Animals</td>
<td></td>
</tr>
<tr>
<td>BIOL 314</td>
<td>Plant Physiology</td>
<td></td>
</tr>
<tr>
<td>BIOL 381</td>
<td>Animal Physiology</td>
<td></td>
</tr>
<tr>
<td>BIOL 354</td>
<td>Physiology of Humans</td>
<td></td>
</tr>
<tr>
<td>or 354 L</td>
<td>and Laboratory of Human Physiology</td>
<td></td>
</tr>
<tr>
<td>FWCE 432</td>
<td>Environmental Biology of Fishes</td>
<td></td>
</tr>
</tbody>
</table>

**Requirements in Diversity of Life**

Select 6-8 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 408</td>
<td>Ecology of Plants</td>
<td></td>
</tr>
<tr>
<td>BIOL 447</td>
<td>Ornithology</td>
<td></td>
</tr>
</tbody>
</table>
or FWCE 430  Avian Field Ecology
BIOL 465  Invertebrate Zoology
BIOL 480  Animal Behavior
EPWS 303  Economic Entomology
EPWS 462  Parasitology
FWCE 431  Mammalogy
FWCE 467  Herpetology
FWCE 482  Ichthyology

Additional Courses
Select additional electives to bring total to 120 credits including 48 upper division credits.

Other Related Courses
BCHE 341  Survey of Biochemistry
BIOL 436  Disease Vector Biology
BIOL 442  Genomics Technology
BIOL 446  Bioinformatics and NCBI Database
BIOL 469  Biology of Emerging Infectious Diseases
BIOL 489  Genetic Aspects of Population Biology
GEOG 381  Cartography and Geographic Information Systems
GEOG 481  Fundamentals of Geographic Information Science and Technology (GIS & T)
GEOL 111G  Introductory to Geology
GEOL 295  Environmental Geology
GEOL 424  Soil Chemistry
GOVT 378  U.S.-Mexico Border Politics
HIST 401  Environmental History
RGSC 316  Rangeland Plants
RGSC 325  Rangeland Restoration Ecology
RGSC 452  Vegetation Measurements for Rangeland Assessment

Total Credits 120-129

1 Includes University and College Requirements 67-68 credits
2 One VWW course will be satisfied using the 9-hour rule: students with Biology as home department use FWCE courses and students with Fish, Wildlife and Conservation Ecology as home department use BIOL courses.

Genetics and Biotechnology - Bachelor of Science in Genetics

Codirectors of the Program:

Professor, Michelle Nishiguchi, Department Head, Biology
Associate Professor, Rolston St. Hilaire, Interim Department Head, Plant and Environmental Sciences

Professors Bosland, Cramer, Houde, Milligan, Nishiguchi, O’Connell, Ray, Sengupta-Gopalan, C. Shuster, St. Hilaire; Associate Professors Bailey, Curtiss, M. Shuster, Zhang

Have you ever wondered why your hair or eye color, facial features, or the build of your body resembles that of your parents, grandparents, or other close relatives? What factors are responsible for generating all the variety of colors and shapes of flowers, trees, and different types of animals? If these questions have crossed your mind, then you have been thinking about Genetics; the science of heredity. Genetics is studied at the DNA/gene/genome level (molecular genetics, biotechnology, genomics and bioinformatics), the level of organisms (classical or Mendelian genetics), and within/among populations of individuals (population and quantitative genetics).

One of the most significant scientific accomplishments in history has been the use of genomic technologies to recently identify most human genes, as well as, most genes for a number of other animals, plants, fungi, and bacteria. Geneticists now have tremendous opportunities to use molecular, biochemical, mathematical, and computer science-based (bioinformatics) approaches to investigate how these genes determine observable traits. This information can be used to significantly advance...
human health and well being, and to meet the food and fiber needs of the world.

A degree in Genetics can provide excellent preparation for careers in academic research and technical support, teaching, agriculture, the biotechnology industry, medicine and health sciences, forensic science, technical writing, and sales or marketing. It is also an excellent background for students wishing to enter a graduate program, medical school, and veterinary school.

Undergraduates in the Genetics program must earn a grade of C- or better to receive credit for required Basic Science Background and Genetics Core courses. Within the Genetics Core curriculum, Tier I courses must be taken by all majors, for a total of 28 credit hours. To accommodate differing interests among students, a series of Tier II courses comprising 11 to 13 credits are provided. Ethical considerations of genetic based technologies will be infused throughout the curriculum, with a focused course on Science and Ethics in the Tier III portion of the core curriculum.

**Requirements**

**General Education Requirements**

**Area I: Communications**

English Composition-Level 1. Select one from the following: 4

- ENGL 111G Rhetoric and Composition
- ENGL 111GH Rhetoric and Composition Honors
- SPCD 111G Advanced ESL Composition
- ENGL 111 M Rhetoric and Composition for International and Multilingual Students

English Composition-Level 2:

- ENGL 218G Technical and Scientific Communication 3
  or ENGL 318G Advanced Technical and Professional Communication

Oral Communication. Select one from the following: 3

- AXED 201G Effective Leadership and Communication in Agricultural Organizations
- COMM 253G Public Speaking
- COMM 265G Principles of Human Communication
- HON 265G Principles of Human Communication Honors

**Area II: Mathematics/Algebra**

- MATH 191G Calculus and Analytic Geometry I 4

**Area III: Laboratory Science**

- CHEM 111G General Chemistry I 4
- CHEM 112G General Chemistry II 4

**Area IV & V: Social/Behavioral Sciences and Humanities and Fine Arts**

Select a total of 15 credits combined from Areas IV and V, with 6 credits in one area and 9 credits in the other area: 15

- **Area IV: Social/Behavioral Sciences:** Select 6-9 credits
- **Area V: Humanities and Fine Arts:** Select 6-9 credits

**Viewing a Wider World**

Select one Viewing a Wider World course 2

**Basic Science Background Requirements**

- A ST 311 Statistical Applications 3
  or BIOL 455 Biometry
- BCHE 395 Biochemistry I 3
- BCHE 396 Biochemistry II 3
- BIOL 111G Natural History of Life 3
- CHEM 111G General Chemistry I 4
  or CHEM 115 Principles of Chemistry I
- CHEM 112G General Chemistry II 4
  or CHEM 116 Principles of Chemistry II
- CHEM 313 Organic Chemistry I 3
- CHEM 314 Organic Chemistry II 3
- CHEM 315 Organic Chemistry Laboratory 2
- MATH 191G Calculus and Analytic Geometry I 4
- MATH 192G Calculus and Analytic Geometry II 4
- PHYS 211G General Physics I 3
  or PHYS 221G General Physics for Life Sciences I
- PHYS 212G General Physics II 3
  or PHYS 222G General Physics for Life Sciences II

**Core Requirements**

**Tier I Courses**

- GENE 110 Experimental Systems in Genetics 1
- BIOL 211G Cellular and Organismal Biology 3
- BIOL 211GL Cellular and Organismal Biology Laboratory 1
- BIOL 311 General Microbiology 3
- BIOL 311 L General Microbiology Laboratory 2
- GENE 305 L Genetic Techniques 1
- GENE 315 Molecular Genetics 3
- GENE 320 Hereditary and Population Genetics 3
- BIOL 377 Cell Biology 3
- GENE 440 Genetics Seminar 1
- GENE 452 Applied Bioinformatics 3
  or BIOL 446 Bioinformatics and NCBI Database
- BCHE 494 Biochemical Genetics Laboratory 3
  or BIOL 302 Molecular Biology Techniques Laboratory

**Tier II Courses**

Select one course from each of the following four areas: 12-14

Selection response:

- AGRO 462 Plant Breeding
- ANSC 423 Animal Breeding
- BIOL 467 Evolution

**Physiology:**

- ANSC 421 Physiology of Reproduction
- BIOL 354 Physiology of Humans
- BIOL 381 Animal Physiology
- BIOL 385 An Introduction to Cancer
- BIOL 451 Physiology of Microorganisms
- BIOL 474 Immunology
- EPWS 314 Plant Physiology
- HORT 471 Plant Mineral Nutrition

**Organism Structure:**

- ANSC 370 Anatomy and Physiology of Farm Animals
- BIOL 313 Structure and Function of Plants
- BIOL 322 Zoology
### Human Biology - Undergraduate Minor

The Human Biology minor is intended to provide academic recognition for students who wish to focus a significant amount of attention on courses that deal with human beings from a wide variety of biological standpoints. Thus, course work may encompass topics representing a range of viewpoints such as biological function, human ecology, human origins, and psychology. Successful completion of this minor will provide students with a valuable interdisciplinary perspective on the human condition. This program consists of a minimum of 18 hours, that includes a minimum of 12 from within the Biology Department and a minimum of 6 outside the department. Successful completion of the minor will be certified by the Biology Department. A grade of C- or better is required of all minor courses.

### Requirements

**Required Departmental Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

Select 3-4 credits from the following:

- BIOL 254 Human Physiology
- BIOL 353 Pre-Professional Human Anatomy
- BIOL 354 Physiology of Humans

### Additional Courses

Select sufficient credits to total 18 credits from within and outside Biology department:

**Within Department**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 101G</td>
<td>Human Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 305</td>
<td>Principles of Genetics</td>
<td></td>
</tr>
<tr>
<td>BIOL 330</td>
<td>Comparative Anatomy and Embryology</td>
<td></td>
</tr>
<tr>
<td>BIOL 353 L</td>
<td>Pre-Professional Human Anatomy Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIOL 354 L</td>
<td>Laboratory of Human Physiology</td>
<td></td>
</tr>
<tr>
<td>BIOL 385</td>
<td>An Introduction to Cancer</td>
<td></td>
</tr>
<tr>
<td>BIOL 424</td>
<td>Human Osteology</td>
<td></td>
</tr>
<tr>
<td>BIOL 424 L</td>
<td>Human Osteology Lab</td>
<td></td>
</tr>
<tr>
<td>BIOL 434</td>
<td>Human Evolution</td>
<td></td>
</tr>
<tr>
<td>BIOL 434 L</td>
<td>Human Evolution Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIOL 469</td>
<td>Biology of Emerging Infectious Diseases</td>
<td></td>
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<tr>
<td>BIOL 470</td>
<td>Developmental Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 474</td>
<td>Immunology</td>
<td></td>
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<tr>
<td>BIOL 490</td>
<td>Neurobiology</td>
<td></td>
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</table>

**Outside Department**

Select a minimum of 3 credits; maximum 6 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 130G</td>
<td>Human’s Place in Nature: Introduction to Biological Anthropology</td>
<td></td>
</tr>
<tr>
<td>ANTH 130GL</td>
<td>Human’s Place in Nature Laboratory</td>
<td></td>
</tr>
<tr>
<td>ANTH 355</td>
<td>Physical Anthropology</td>
<td></td>
</tr>
</tbody>
</table>
Microbiology - Bachelor of Science

The major in microbiology provides a solid academic base for those planning to enter any of the various fields of microbiology.

Requirements

Nondepartmental Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 313</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 314</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 315</td>
<td>Organic Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BCHE 395</td>
<td>Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 455</td>
<td>Biometry (preferred)</td>
<td>3</td>
</tr>
<tr>
<td>or A ST 311</td>
<td>Statistical Applications</td>
<td></td>
</tr>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 221G</td>
<td>General Physics for Life Sciences I</td>
<td></td>
</tr>
<tr>
<td>PHYS 212G</td>
<td>General Physics II</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 222G</td>
<td>General Physics for Life Sciences II</td>
<td></td>
</tr>
<tr>
<td>PHYS 211GL</td>
<td>General Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>or PHYS 221GL</td>
<td>Laboratory to General Physics for Science</td>
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<tr>
<td>PHYS 212GL</td>
<td>General Physics II Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>or PHYS 222GL</td>
<td>Laboratory to General Physics for Sciences</td>
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Departmental Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
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<tr>
<td>BIOL 111GL</td>
<td>Natural History of Life Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
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<tr>
<td>BIOL 305</td>
<td>Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 311</td>
<td>General Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 311 L</td>
<td>General Microbiology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 451</td>
<td>Physiology of Microorganisms</td>
<td>3</td>
</tr>
<tr>
<td>or BIOL 475</td>
<td>Virology</td>
<td></td>
</tr>
<tr>
<td>BIOL 474</td>
<td>Immunology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 478</td>
<td>Molecular Biology of Microorganisms</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 479</td>
<td>Medical Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 479 L</td>
<td>Medical Microbiology Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

Select six additional credits related to microbiology numbered 300 or above to bring total upper-division credits in microbiology to 24 from the following:

- BIOL 412 Seminar in Microbiology
- BIOL 427 Symbiosis
- BIOL 451 Physiology of Microorganisms
- BIOL 469 Biology of Emerging Infectious Diseases
- BIOL 471 Molecular and Cellular Mycology
- BIOL 473 Ecology of Microorganisms
- BIOL 475 Virology
- BIOL 476 Soil Microbiology
- BIOL 477 Applied and Environmental Microbiology

General Education Requirements 35

Viewing a Wider World 6

Electives 10

Select sufficient electives to bring total credits to 120 including 48 upper-division credits.

Total Credits 120

Microbiology - Undergraduate Minor

A student cannot earn a bachelor’s degree in Microbiology and also earn a minor in Microbiology.

Requirements

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 311</td>
<td>General Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 311 L</td>
<td>General Microbiology Laboratory</td>
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<tr>
<td>BCHE 341</td>
<td>Survey of Biochemistry</td>
<td>4</td>
</tr>
<tr>
<td>or BCHE 395</td>
<td>Biochemistry I</td>
<td></td>
</tr>
</tbody>
</table>

Select at least 11 credits from the following:

- BIOL 412 Seminar in Microbiology
- BIOL 451 Physiology of Microorganisms
- BIOL 473 Ecology of Microorganisms
- BIOL 474 Immunology
- BIOL 475 Virology
- BIOL 477 Applied and Environmental Microbiology
- BIOL 478 Molecular Biology of Microorganisms
- BIOL 479 Medical Microbiology
- BIOL 479 L Medical Microbiology Laboratory

Total Credits 20

Chemistry and Biochemistry

Undergraduate Program Information

A degree in chemistry or biochemistry enables a student to pursue a wide variety of careers in: research, production, sales, management and teaching. These degrees are also an excellent preparation for professional studies in medicine, dentistry, forensics, veterinary science, optometry, pharmacology, pharmacy and law.

Chemistry majors who have completed the requirements for the Bachelor of Science degree may receive American Chemical Society certification if they take one additional one-semester course which includes 1 credit of laboratory.

Students who complete a Bachelor of Science in Biochemistry and wish to complete the Bachelor of Arts in Chemistry must complete 3 additional
upper division chemistry credits that are not counted in the Bachelor of Science in Biochemistry.

All departmental and nondepartmental requirements may not be taken S/U and must earn a C- or better final grade.

This department does not have a foreign language requirement for any of its degrees.

Graduate Program Information
The Department of Chemistry and Biochemistry offers programs leading to the MS and Ph.D. degrees in the areas of physical, organic, inorganic, biological, and analytical chemistry. Admission to these programs without deficiency is based on an undergraduate program essentially equivalent to that pursued by a chemistry or biochemistry major at this university. An entering student is encouraged to take the Graduate Record Examination (aptitude) to increase his or her chances for financial support. All foreign students must take GRE and TOEFL and must demonstrate adequate English speaking and writing skills.

Students who wish may take a minor in chemical toxicology or molecular biology. The core course work required of students entering with no previous graduate study in chemistry or biochemistry consists of basic core courses completed in one of the following options:

1. two courses chosen respectively from two of the five major areas represented in the department apart from a student’s elected field of thesis research; or
2. one course chosen from the five major areas apart from the student’s elected field of thesis research plus one graduate-level course in a discipline outside the Department of Chemistry and Biochemistry.

A master’s candidate will plan an appropriate program of further study with his or her advisor and is also required to prepare a thesis. The thesis requirement may be waived upon application to the department head, after completion of the doctoral comprehensive examination requirements. A chemistry student who successfully completes the Ph.D. qualifying examination will begin writing the cumulative examinations, which constitute the written portion of the comprehensive examination. A biochemistry student who successfully completes the Ph.D. qualifying examination will begin preparation of a research proposal which will be orally defended for completion of the comprehensive examination. After completion of the qualifying exam, a doctoral committee is formed to assist the student in planning a program appropriate to his or her background and goals. Since research is central in both the master’s and doctoral programs, the early selection of a research advisor is encouraged. The student is expected to participate in the colloquia and seminar programs. Financial support is available to graduate students in chemistry and biochemistry through numerous teaching and research assistantships as well as federally supported traineeships and fellowships. Inquiries regarding these opportunities should be directed to the head of the department.

Degrees for the Department
Chemistry - Bachelor of Arts (p. 233)
Biochemistry - Bachelor of Science (p. 232)
Chemistry - Bachelor of Science (p. 233)
Chemistry - Master of Science (p. 234)

Minors for the Department
Environmental Chemistry - Undergraduate Minor (p. 234)
Biochemistry - Undergraduate Minor (p. 233)
Chemistry - Undergraduate Minor (p. 234)

Professor William Quintana, Department Head

Professors Arterburn, Gopalan, Herndon, Johnson, Quintana, Rayson, Smirnov, Zoski; Associate Professors Houston, Lara, Lusetti, Lyons, Maio; Assistant Professors Ashley, Li, Mera, Talipov, Yukl; Adjunct Professors Wollnik, College Professors Chinnasamy, Dunlavy, Potenza; Emeritus Professor Eiceman, Kuehn

W. Quintana, Department Head, Ph.D. (Pennsylvania) – inorganic chemistry, boron chemistry, chemical education; J.B. Arterburn, Ph.D. (Arizona) – organic chemistry, synthetic medicinal and chemical biology; A. Ashley, Ph. D. (Colorado State University) – biochemistry, toxicology, cell culture, DNA/ RNA isolation, genotyping; A. Gopalan, Ph.D. (Ohio State University) – organic chemistry: synthetic methods, applications of enzymes in asymmetric synthesis; J. W. Herndon, Ph.D. (Princeton) – organic chemistry; organo-transition metal complexes, synthesis of biologically important cyclic compounds; K. Houston, Ph.D. (University of Texas-MD Anderson) – biochemistry, molecular mechanisms of hormone action in tumorigenesis; M. D. Johnson, Ph.D. (New Mexico State University) – inorganic chemistry; kinetics, reaction mechanisms of transition metal complexes; A. S. Lara, Ph.D. (New Mexico State University) – analytical chemistry: exploitation of clays for remediation of environmental pollutants; F. Li, Ph.D. (Minnesota) – inorganic chemistry, bioinorganic chemistry, small molecule activation; S. L. Lusetti, Ph.D. (Wisconsin-Madison) – biochemistry: cell metabolism, disease etiology; B. A. Lyons, Ph.D. (Cornell University) – biochemistry: nmr spectroscopic studies of signal transduction pathways in breast cancer; W. A. Maio, Ph.D. (Johns Hopkins University) – organic chemistry, total synthesis of marine natural products and explorations of new chemical methods; synthesis of lactones and lactams, artemisinin-based antimalarial dimers, and total synthesis of (+)-riometolide 1a; P. E. Mera, Ph. D. (Wisconsin-Madison) – Microbiology, cell - division cycle of bacteria, drug - resistant bacteria, DNA replication; G. D. Rayson, Ph.D. (Texas-Austin) – analytical chemistry: spectroscopy; S. N. Smirnov, Ph.D. (Novosibirsk State University) – physical chemistry: photo-induced charge separation; M. R. Talipov, Ph. D. (Bashkir State University) – Theoretical Physical Chemistry, electronic structure calculations, ab initio calculations, density functional theory calculations; E. T. Yukl, Ph.D. (Oregon Health and Science University) – biochemistry: x-ray crystallography and spectroscopy of bacterial metalloproteins; C. G. Zoski, Ph.D. (Queens University, Canada) – analytical chemistry: theoretical and experimental electrochemistry

BCHE 140. Introduction to Biochemistry
1 Credit
A description of the nature of inquiry in biochemistry, especially with respect to the interaction of chemistry and biology. Both historical development and topics of current interest will be discussed. Graded S/U.

BCHE 241. Introduction to Research in Biochemistry
1-3 Credits
Techniques and procedures of biochemical research. May be repeated for a maximum of 3 credits.
Prerequisites: 8 credits of chemistry and 3.0 GPA in chemistry.
BCHE 341. Survey of Biochemistry
4 Credits (3+3P)
Basic principles of biochemical processes and the structure/function of the major classes of biomolecules, with introductions to metabolism and the central dogma of biochemistry. The chemical and biological properties of major biomolecules (DNA, proteins, Prerequisite(s): C or better in CHEM 211 or CHEM 313.

BCHE 395. Biochemistry I
3 Credits
Prerequisite(s): CHEM 431, or CHEM 433.

BCHE 396. Biochemistry II
3 Credits
Introduction to anabolic metabolism and hormonal regulation. Biochemical principles of the mechanism and regulation of replication, transcription, recombination and translation in prokaryotes and eukaryotes. Introduction to DNA-based information technology. Taught with BCHE 396 H.
Prerequisite(s): C or better in BCHE 395.

BCHE 396 H. Biochemistry II Honors
3 Credits
Taught with BCHE 396 with additional work required.

BCHE 397. Experimental Biochemistry Laboratory
3 Credits
Introduction to fundamental techniques used to explore structure and function of biological macromolecules such as proteins, carbohydrates, lipids, and nucleic acid. Course covers analyzing and reporting experimental data; enzymology; quantitative methods to determine biological molecules; basic principles of electrophoresis, chromatography, and spectroscopic immunochemistry.
Prerequisite: C or better in BCHE 395.

Corequisite: BCHE 396.

BCHE 429. Physical Biochemistry
3 Credits
This course focuses on modern Biophysical techniques used in protein and nucleic acid research. Topics are covered in some detail at the theoretical level. The course content is delivered entirely by podcast. Podcast contributions are from several different faculty from within their particular area(s) of expertise. Topics covered include (but are not limited to): biomolecular NMR, atomic force microscopy, light scattering, circular dichroism, ultracentrifugation, isothermal titration calorimetry, positron emission tomography, computerized tomography, ultrasound, functional MRI, protein fluorescence, mass spec/ proteomics, protein molecular dynamics simulations, and X-ray diffraction. Course credit qualifies for minor degree in chemistry as a physical-analytical chemistry emphasis.

CHEM 431, or CHEM 433.

Prerequisite: One semester of undergraduate physical chemistry, e.g.

BCHE 440. Biochemistry Seminar
1 Credit
Introduction to current literature in biochemistry and molecular biology. Selected topics in the field will be presented by the faculty. Students will present written and oral reports from literature searches. Restricted to: BCHE majors.
Prerequisite(s): BCHE 395.

BCHE 441. Advanced Research in Biochemistry
1-3 Credits
Investigation of biochemical problems and the development of special techniques. May be repeated for a maximum of 3 credits.
Prerequisite: consent of instructor, 16 credits of chemistry and 3.0 GPA in chemistry for nonmajors.

BCHE 446. Biochemistry III
3 Credits
Intermediary metabolism of carbohydrates, lipids, amino acids, and nucleic acids. Metabolic pathways discussed with emphasis on biochemical regulation and mechanistic, structural, functional, and evolutionary basis for existence.
Prerequisite(s): BCHE 395 and either BCHE 396 or consent of instructor.

BCHE 450. Special Topics
1-3 Credits
Same as CHEM 451. May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.

BCHE 455. Independent Studies
1-3 Credits
Independent studies directed by consulting faculty.
Prerequisite: consent of instructor.

BCHE 494. Biochemical Genetics Laboratory
3 Credits (1.25+6P)
Laboratory techniques required for experimentation with recombinant DNA such as nucleic acid isolation and purification, polymerase chain reaction (PCR), sequence analysis, and directed mutagenesis using genetic material from both prokaryotic and eukaryotic organisms. Consent of Instructor required.
Prerequisite(s): C or better in BCHE 395 and either BCHE 396 or consent of instructor.

BCHE 540. Seminar in Biochemistry
1 Credit
Formal seminar presentation in current topics in biochemical research. May be repeated for a maximum of 3 credits.

BCHE 542. Biochemistry I
3 Credits
Relationship between macromolecular structure and function. Basic enzymology. Energy metabolism.
Prerequisite(s): CHEM 314 and CHEM 431 or CHEM 433; or BCHE 395 or equivalent.

BCHE 545. Molecular and Biochemical Genetics
3 Credits
An accelerated treatment of the molecular basis of gene expression. Discussion of chemical, enzymological, and genetic techniques of molecular biology. Same as BIOL 545.
Prerequisite: BCHE 542 or equivalent.

BCHE 546. Biochemistry II
3 Credits
Intermediary metabolism: catabolic and anabolic pathways of carbohydrates, lipids, amino acids, and nucleic acids, including their regulation.
Prerequisite(s): BCHE 542 or BCHE 395 with consent of instructor.

BCHE 590. Discussions in Biochemistry
1 Credit
Current research problems in biochemistry. May be repeated for a maximum of 6 credits. S/U Grading (S/U, Audit).
BCHE 598. Special Research Programs
1-3 Credits
May be repeated for a maximum of 6 credits. Same as CHEM 598. Graded S/U.

BCHE 599. Master's Thesis
15 Credits
May be repeated for a maximum of 6 credits. Same as CHEM 599.

BCHE 600. Research
1-15 Credits
May be repeated for a maximum of 20 credits. PR/U grading. Same as CHEM 600.

BCHE 645. Nucleic Acid Metabolism
3 Credits
Study of the enzymology of proteins that act on nucleic acids as well as the effect of DNA and RNA structure on metabolic processes. Taught with BCHE 451.
Prerequisite(s): 'C' or better in BCHE 395 or BCHE 542.

BCHE 647. Physical Biochemistry
3 Credits
Fundamental applications of physical chemistry to the investigation of biological metabolites and biological macromolecules, including proteins, oligo-nucleotides, and molecular arrays with an emphasis on understanding biological functions based on chemical structures. Taught with BCHE 451.
Prerequisite(s): 'C' or better in CHEM 431 or CHEM 433 or BCHE 542.

BCHE 649. Topics in Biochemistry
1-3 Credits
Selected topics of current interest designated by title and credit. May be repeated for a maximum of 3 credits.

BCHE 650. Advanced Seminar
1 Credit
Discussion of biochemical research in progress that relates to a doctoral candidate's thesis research. Intended for students who have earned a master's degree or the equivalent and have made significant research progress for preparation of the doctoral dissertation. May be repeated for a maximum of 3 credits.

BCHE 700. Doctoral Dissertation
20 Credits
May be repeated for a maximum of 20 credits. Graded PR/U. Same as CHEM 700.

CHEM 100. Basic Chemistry
3 Credits
For students whose preparatory science or math training has been deficient. Does not meet the chemistry requirement in any curriculum.
Prerequisite: Enhanced ACT composite score of at least 18 or a grade of C or better in CCDM 114N.

CHEM 101. General Supplemental Instruction I
1 Credit
Collaborative workshop for students in General Chemistry I. Course does not count toward departmental degree requirements. May be repeated for a maximum of 2 credits.
Corequisite: CHEM 111G.

CHEM 102. General Supplemental Instruction II
1 Credit
Collaborative workshop for students in General Chemistry II. Course does not count toward departmental degree requirements. May be repeated for a maximum of 2 credits.
Corequisite: CHEM 112G.

CHEM 103. Principles of Supplemental Instruction III
1 Credit
Collaborative workshop for students in CHEM 110G, Principles and Applications of Chemistry. Course does not count toward departmental degree requirements. May be repeated for maximum of 2 credits.
Co-requisite: CHEM 110G.

CHEM 110G. Principles and Applications of Chemistry
4 Credits (3+3P)
A survey of the properties and uses of the elements and their compounds. In addition to classical chemistry, attention is paid to the materials from which consumer products are made, to the production of energy, and to environmental considerations.
Prerequisite: 3 years of high school math or CCDM 114N.

CHEM 111G. General Chemistry I
4 Credits (3+3P)
Descriptive and theoretical chemistry. CHEM 111G/112G are General Education alternative to CHEM 110G.
Prerequisite: (1) grade of C or better in MATH 120 or a Mathematics Placement Exam Score adequate to enroll in mathematics courses beyond MATH 120; and (2) one of the following: B or better in a second semester high school chemistry course, or grade of at least C in CHEM 100, or an enhanced ACT score of at least 22.

CHEM 112G. General Chemistry II
4 Credits (3+3P)
Descriptive and theoretical chemistry. CHEM 111G/112G are General Education alternative to CHEM 110G.
Prerequisite(s): CHEM 111G.

CHEM 115. Principles of Chemistry I
4 Credits (3+3P)
Detailed introduction to analytical, inorganic and physical aspects of chemistry; both descriptive and theoretical explanations. Structured for chemistry and biochemistry majors but appropriate for other physical and life science students. CHEM 115/116 are General Education alternatives to CHEM 110G.
Prerequisite: Eligible to take MATH 190G and an ACT composite score of 22 or higher.

CHEM 116. Principles of Chemistry II
4 Credits (3+3P)
Recommended for chemistry majors and other qualified students. CHEM 115/116 are General Education alternatives to CHEM 110G.
Prerequisites: grade of C or better in CHEM 115.

CHEM 210. Chemistry for the Allied Health Sciences
3 Credits
Discussion and application of the established facts and concepts of general organic chemistry and biochemistry to acquire a molecular understanding of a variety of health related issues, from atmospheric ozone holes to human nutrition.
Prerequisite: CHEM 110G or CHEM 111G.

CHEM 211. Organic Chemistry
4 Credits (3+3P)
A one-semester survey for students requiring a brief coverage of important classes of organic compounds.
Prerequisite: CHEM 112G or CHEM 114.
CHEM 217. General Chemistry III
3 Credits (2+3P)
Quantitative aspects of general chemistry: solid state structure, equilibrium, thermodynamics, and kinetics. Required of chemical science majors who have taken CHEM 111G/112.
Prerequisite: CHEM 112G.

CHEM 241. Introduction to Research
1-3 Credits (3+9P)
Techniques and procedures of chemical research. May be repeated for a maximum of 3 credits.
Prerequisites: 8 credits of chemistry and a 3.0 GPA in chemistry.

CHEM 242. Explorations in Chemistry
1 Credit
Historical and current developments, careers in chemistry, computer applications and use of the library by chemists. To be completed before the end of the sophomore year. Graded S/U.

CHEM 251. Special Topics in Chemistry
1-6 Credits (1-6)
Specific subjects in Chemistry. These subjects will be announced in the 'Schedule of Classes'. It may be repeated under different topics for a maximum of 12 credits.

CHEM 303. Organic Supplemental Instruction I
1 Credit
Collaborative workshop for students in Organic Chemistry I. Course does not count toward departmental degree requirements. May be repeated for a maximum of 2 credits.
Corequisite: CHEM 313.

CHEM 304. Organic Supplemental Instruction II
1 Credit
Collaborative workshop for students in Organic Chemistry II. Course does not count toward departmental degree requirements. May be repeated for a maximum of 2 credits.
Corequisite: CHEM 314.

CHEM 313. Organic Chemistry I
3 Credits
Nomenclature, uses, basic reactions, and preparation methods of the most important classes of aliphatic and aromatic compounds.
Prerequisite: CHEM 112G or CHEM 116.

CHEM 314. Organic Chemistry II
3 Credits
Nomenclature, uses, basic reactions, and preparation methods of the most important classes of aliphatic and aromatic compounds.
Prerequisite: C or better in CHEM 313.

CHEM 315. Organic Chemistry Laboratory
2 Credits
Techniques, preparative and analytical methods in organic chemistry.
Prerequisite: C or better in CHEM 313 or consent of instructor.
Corequisite: CHEM 314.

CHEM 351. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.

CHEM 356. Descriptive Inorganic Chemistry
3 Credits
Occurrence and properties of the elements and the chemistry of their compounds.
Prerequisites: CHEM 112G and CHEM 116; and CHEM 211 or CHEM 313.

CHEM 357. Synthetic Inorganic Laboratory
2 Credits
Explores synthesis and analysis of main group and transition metal inorganic compounds. Inorganic laboratory and spectroscopic techniques will be used.
Prerequisites: CHEM 356.

CHEM 360. General Geochemistry
3 Credits
Same as GEOL 360.

CHEM 371. Analytical Chemistry
4 Credits (2+6P)
The fundamentals of quantitative chemical analysis.
Prerequisite: CHEM 112G.

CHEM 422. Environmental Chemistry
3 Credits
Chemistry of organic and metal ion pollutants in the environment and principles important to their remediation including bioremediation. Restricted to: Main campus only. Crosslisted with: E S 422
Prerequisite(s): CHEM 112G and either CHEM 211 or CHEM 313.

CHEM 424. Soil Chemistry
3 Credits
Same as SOIL/GEOL 424.

CHEM 431. Physical Chemistry
3 Credits
Principles that govern the physical and chemical behavior of matter. May not be counted toward Bachelor of Science degree in Chemistry.
Prerequisite(s): CHEM 116 or CHEM 217; MATH 192G; PHYS 212 or PHYS 222G or PHYS 214 or PHYS 216G.

CHEM 431 H. Physical Chemistry Honors
3 Credits
Same as CHEM 431. Additional work to be arranged.
Prerequisite(s): CHEM 116 or CHEM 217; MATH 192G; PHYS 212G or PHYS 222G or PHYS 214 or PHYS 216G.

CHEM 433. Physical Chemistry I
3 Credits
Laws and theories underlying chemical phenomena.
Prerequisite(s): CHEM 116 or CHEM 217; MATH 192G; PHYS 214 or PHYS 216G, or consent of instructor.

CHEM 433 H. Physical Chemistry I Honors
3 Credits
Same as CHEM 433. Additional work to be arranged.
Prerequisite(s): CHEM 116 or CHEM 217; MATH 192G; PHYS 214 or PHYS 216G, or consent of instructor.

CHEM 434. Physical Chemistry II
3 Credits
Laws and theories underlying chemical phenomena.
Prerequisite: CH E 302 or CHEM 433.

CHEM 435. Physical Chemistry Laboratory
2 Credits
Prerequisite: concurrent registration in CHEM 434.

CHEM 441. Advanced Research
1-3 Credits (3+9P)
Investigation of chemical problems and the development of special techniques. May be repeated for a maximum of 3 credits.
Prerequisites: consent of instructor, 16 credits of chemistry and 3.0 GPA in chemistry for nonmajors.
CHEM 443. Senior Seminar
1 Credit
Discussions of current chemical research, impact of chemistry on society and/or ethics as applied to chemists. Each student will present a written and an oral report on an approved topic.
Prerequisite: CHEM 431 or CHEM 433.

CHEM 451. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.

CHEM 455. Independent Studies
1-3 Credits
Independent studies directed by consulting faculty.
Prerequisite: consent of instructor.

CHEM 456. Inorganic Structure and Bonding
3 Credits
Theoretical principles and a systematic study of the periodic table.
Prerequisite: CHEM 356 or CHEM 431 or CHEM 433.

CHEM 466. Advanced Organic Chemistry
3 Credits
Recent developments in synthesis and theoretical principles of organic chemistry.
Prerequisite: CHEM 314.

CHEM 466 H. Advanced Organic Chemistry Honors
3 Credits
Same as CHEM 466. Additional work to be arranged.

CHEM 471. Instrumental Methods of Analysis
4 Credits (3+3P)
Analytical techniques, including optical and procedures.
Prerequisites: CHEM 371 and either PHYS 212G or PHYS 216G.

CHEM 500. Seminar in Inorganic Chemistry
1 Credit
Current topics. May be repeated.

CHEM 506. Atomic and Molecular Structure in Inorganic Chemistry
3 Credits
Theories of ionic and molecular bonding.

CHEM 507. Chemistry of the Elements
3 Credits
Discussion of the reactions and structures of inorganic compounds.

CHEM 508. Main Group Chemistry
3 Credits
Chemistry, structure and bonding of main group elements are covered along with some spectroscopy.

CHEM 509. Transition Metal Chemistry
3 Credits
The chemistry, bonding theory, spectroscopy and industrial applications of the transition metals will be covered.

CHEM 510. Seminar in Organic Chemistry
1 Credit
Current topics. May be repeated.

CHEM 514. Organic Structure Determination
3 Credits
Modern spectroscopic techniques for characterization of organic compounds.

CHEM 515. Modern Organic Chemistry
3 Credits
Recent developments in synthesis and theoretical principles of organic chemistry.

CHEM 516. Physical Organic Chemistry
3 Credits
Physical organic chemistry.

CHEM 517. Synthetic Organic Chemistry
3 Credits
Synthetic methods in organic chemistry.

CHEM 520. Seminar in Analytical Chemistry
1 Credit
Current topics. May be repeated.

CHEM 521. Chemical Instrumentation
3 Credits (2+3P)
Theory and application of electronic devices to chemical analysis.

CHEM 525. Advanced Analytical Chemistry
3 Credits
Equilibria, and the theories of gravimetric, volumetric, and instrumental analysis.

CHEM 526. Physical Organic Chemistry
3 Credits
Physical organic chemistry.

CHEM 527. Separations
3 Credits
Covers the fundamentals of separation methods and relationships to modern analytical techniques such as gas chromatography and liquid chromatography.

CHEM 528. Electroanalytical Techniques
3 Credits
Theory and application of modern electrochemical methods of analysis including voltammetry, amperometry, modern cyclic and pulse methods, and stripping analysis.

CHEM 529. Spectrochemical Analysis
3 Credits
Fundamentals, instrumentation, and applications of spectrochemical analysis.

CHEM 530. Seminar in Physical Chemistry
1 Credit
Current topics. May be repeated.

CHEM 535. Chemical Thermodynamics
3 Credits
First, second, and third laws of thermodynamics, and the concepts, interrelations, and applications of thermodynamic state functions.

CHEM 537. Quantum Chemistry
3 Credits
Fundamentals of quantum mechanics.
Prerequisite: consent of instructor.

CHEM 538. Chemical Kinetics
3 Credits
Empirical analysis of rate measurements, collision theory, transition state theory, and chain reactions.

CHEM 539. Spectroscopy
3 Credits
Molecular spectroscopy for physical chemistry. Quantum mechanics applied to spectroscopy of polyatomic molecules: UV-VIs, IR, magnetic resonance. CHEM 537 desired but not required. Prerequisite: consent of instructor.
Prerequisite: consent of instructor.
CHEM 550. Discussions in Inorganic Chemistry  
1 Credit  
Current research problems in inorganic chemistry. May be repeated. Graded S/U.

CHEM 560. Discussions in Organic Chemistry  
1 Credit  
Current research problems in organic chemistry. May be repeated. Graded S/U.

CHEM 570. Discussions in Analytical Chemistry  
1 Credit  
Current research problems in analytical chemistry. May be repeated. Graded S/U.

CHEM 580. Discussions in Physical Chemistry  
1 Credit  
Current research problems in physical chemistry. May be repeated. Graded S/U.

CHEM 598. Special Research Programs  
1-3 Credits  
Individual investigations, either analytical or experimental. Graded S/U.

CHEM 599. Master's Thesis  
15 Credits  
Thesis preparation.

CHEM 600. Research  
1-15 Credits  
Course used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination.

CHEM 609. Topics in Inorganic Chemistry  
1-3 Credits  
Selected topics of current interest designated by subtitle.

CHEM 619. Topics in Organic Chemistry  
1-3 Credits  
Selected topics of current interest designated by subtitle.

CHEM 629. Advanced Topics in Analytical Chemistry  
3 Credits  
Discussion of advanced topics in the field of analytical chemistry. May be repeated with different subtitles. Consent of instructor required.

CHEM 639. Topics in Physical Chemistry  
1-3 Credits  
Selected topics of current interest designated by subtitle.

CHEM 650. Advanced Seminar  
1 Credit  
Intended for students who have earned a master's degree or the equivalent. A discussion of current topics of interest in chemistry. May be repeated.

CHEM 700. Doctoral Dissertation  
17 Credits  
Dissertation preparation.

Name:

Office Location:

Phone: (575) 646-2505

Website: http://www.chemistry.nmsu.edu/

Biochemistry - Bachelor of Science
BCHE 432 | Physical Biochemistry  
BCHE 446 | Biochemistry III  
BCHE 451 | Special Topics (by petition only)  

**Electives**  
Select sufficient electives to bring total credits to 120, including 48 upper division.  
Total Credits 115-120

## Biochemistry - Undergraduate Minor

**Required Courses**  
BCHE 395 | Biochemistry I  
CHEM 111G | General Chemistry I  
or CHEM 115 | Principles of Chemistry I  
CHEM 112G | General Chemistry II  
or CHEM 116 | Principles of Chemistry II  
CHEM 313 | Organic Chemistry I  
CHEM 314 | Organic Chemistry II  
One additional Biochemistry (BCHE) course 1-3  
Total Credits 18-20  

The following (BCHE) courses do not count towards minor:  
BCHE 341 | Survey of Biochemistry  
BCHE 440 | Biochemistry Seminar  
Toxicology and Supplemental Instruction (SI) courses are not accepted.  

Courses provisionally allowed:  
BCHE 441 | Advanced Research in Biochemistry (3 credits maximum)  
BCHE 451 | Special Topics (by petition only)  
Total Credits 18-20

## Chemistry - Bachelor of Science

### Nondepartmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 291G</td>
<td>Calculus and Analytic Geometry III</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 213</td>
<td>Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 213 L</td>
<td>Experimental Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 214</td>
<td>Electricity and Magnetism</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 214 L</td>
<td>Electricity and Magnetism Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 315</td>
<td>Modern Physics</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 3-4 credits from the following:  
MATH 391 | Vector Analysis  
MATH 392 | Introduction to Ordinary Differential Equations  
C S 172 | Computer Science I  
STAT 371 | Statistics for Engineers and Scientists I  

### Departmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCHE 395</td>
<td>Biochemistry I</td>
<td>3-4</td>
</tr>
<tr>
<td>or BCHE 341</td>
<td>Survey of Biochemistry</td>
<td></td>
</tr>
</tbody>
</table>

Select one from the following:  
CHEM 115 & CHEM 116 | Principles of Chemistry I and Principles of Chemistry II  
CHEM 111G & CHEM 112G & CHEM 217 | General Chemistry I and General Chemistry II and General Chemistry III  
CHEM 313 | Organic Chemistry Laboratory        | 2       |
| CHEM 356    | Descriptive Inorganic Chemistry     | 3       |
| CHEM 357    | Synthetic Inorganic Laboratory      | 2       |
| CHEM 371    | Analytical Chemistry                | 4       |
| CHEM 431    | Physical Chemistry                  | 3       |
| CHEM 443    | Senior Seminar                      | 1       |

1. Nine credits must be upper-division. See advisor for approval.  
2. BCHE 341 Survey of Biochemistry or BCHE 395 Biochemistry I can be used for electives.
CHEM 356  Descriptive Inorganic Chemistry  3
CHEM 357  Synthetic Inorganic Laboratory  2
CHEM 371  Analytical Chemistry  4
CHEM 433  Physical Chemistry I  3
CHEM 434  Physical Chemistry II  3
CHEM 435  Physical Chemistry Laboratory  2
CHEM 443  Senior Seminar  1
CHEM 456  Inorganic Structure and Bonding  3
CHEM 471  Instrumental Methods of Analysis  4
Electives
Select sufficient electives to bring total credits to 120, including 48 upper-division.  45
Total Credits  115-120

Note: Students should work closely with their advisors and review carefully the prerequisites for and the sequential nature of courses required for the Bachelor of Science. There is no foreign language requirement for any baccalaureate degree from this department.

Chemistry - Doctor of Philosophy

A chemistry student who successfully completes the Ph.D. qualifying examination will begin writing the cumulative examinations, which constitute the written portion of the comprehensive examination. After completion of the qualifying exam, a doctoral committee is formed to assist the student in planning a program appropriate to his or her background and goals.

Chemistry - Master of Science

The core course work required of students entering with no previous graduate study in chemistry or biochemistry consists of basic core courses completed in one of the following options:

1. two courses chosen respectively from two of the five major areas represented in the department apart from a student’s elected field of thesis research; or
2. one course chosen from the five major areas apart from the student’s elected field of thesis research plus one graduate-level course in a discipline outside the Department of Chemistry and Biochemistry.

A master’s candidate will plan an appropriate program of further study with his or her advisor and is also required to prepare a thesis. The thesis requirement may be waived upon application to the department head, after completion of the doctoral comprehensive examination requirements.

Chemistry - Undergraduate Minor

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 115</td>
<td>Principles of Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 116</td>
<td>Principles of Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 211</td>
<td>Organic Chemistry</td>
<td>3-4</td>
</tr>
<tr>
<td>or CHEM 313</td>
<td>Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 314</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
</tbody>
</table>

Additional Courses

Select sufficient additional upper division CHEM/BCHE credits to bring total upper division CHEM/BCHE credits to at least 9 from the following:

**Physical/Analytical Chemistry Emphases**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 356</td>
<td>Descriptive Inorganic Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 371</td>
<td>Analytical Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 431</td>
<td>Physical Chemistry</td>
<td></td>
</tr>
</tbody>
</table>

**Biochemical Emphasis**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 313</td>
<td>Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 314</td>
<td>Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>BCHE 341</td>
<td>Survey of Biochemistry</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits  17-18

The following courses do not count towards a minor in Chemistry:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 100</td>
<td>Basic Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 110G</td>
<td>Principles and Applications of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 217</td>
<td>General Chemistry III</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 241</td>
<td>Introduction to Research</td>
<td>1-3</td>
</tr>
<tr>
<td>CHEM 351</td>
<td>Special Topics</td>
<td>1-3</td>
</tr>
<tr>
<td>CHEM 443</td>
<td>Senior Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

No BCHE courses except BCHE 341

Supplemental instruction (SI) courses are not accepted.

Courses provisionally allowed:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 441</td>
<td>Advanced Research (3 credits maximum)</td>
<td>1-3</td>
</tr>
<tr>
<td>CHEM 451</td>
<td>Special Topics (by petition only)</td>
<td>1-3</td>
</tr>
</tbody>
</table>

Environmental Chemistry - Undergraduate Minor

Students must pass the courses listed below. Check the undergraduate catalog for prerequisites.

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 477</td>
<td>Applied and Environmental Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>CE 256</td>
<td>Environmental Engineering and Science</td>
<td>3</td>
</tr>
<tr>
<td>CE 355V</td>
<td>Technology and the Global Environment</td>
<td>3</td>
</tr>
<tr>
<td>CE 356</td>
<td>Fundamentals of Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>or CHEM 115</td>
<td>Principles of Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>or CHEM 116</td>
<td>Principles of Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 211</td>
<td>Organic Chemistry</td>
<td>3-4</td>
</tr>
<tr>
<td>or CHEM 313</td>
<td>Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 314</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 315</td>
<td>Organic Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 371</td>
<td>Analytical Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 471</td>
<td>Instrumental Methods of Analysis</td>
<td></td>
</tr>
<tr>
<td>CHEM 422</td>
<td>Environmental Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 424</td>
<td>Soil Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 451</td>
<td>Special Topics</td>
<td>1-3</td>
</tr>
<tr>
<td>IE 411</td>
<td>Occupational Safety</td>
<td>3</td>
</tr>
</tbody>
</table>
Communication Studies

Undergraduate Program Information

The communication studies program is designed to enhance students’ interpersonal skills, presentation skills and critical thinking skills. Thus the successful graduate should be able to work effectively with people, assimilate, organize and analyze information, solve problems, make effective presentations and show potential for leadership. The program prepares students for careers in several professions, such as training and development, public relations, law, advertising and sales, government service, mediation, customer relations, human resources, international service, fundraising and the ministry.

Graduate Program Information

The Master of Arts in Communication Studies provides students with a social scientific approach to the study of human interaction, using quantitative and qualitative methods. Our curriculum is designed to explore how oral communication takes place interpersonally, within organizations, within our political system, and between and within cultures. Students take courses in interpersonal communication, organizational communication, political communication and/or cultural communication. All graduate students take courses in communication theory and research methods. In addition, students can take courses in topic areas such as conflict management, small group communication, organizational communication, political communication and/or cultural communication. All graduate students take courses in communication theory and research methods. In addition, students can take courses in topic areas such as conflict management, small group communication, interpersonal skills, presentation skills and critical thinking skills. Thus the successful graduate should be able to work effectively with people, assimilate, organize and analyze information, solve problems, make effective presentations and show potential for leadership. The program prepares students for careers in several professions, such as training and development, public relations, law, advertising and sales, government service, mediation, customer relations, human resources, international service, fundraising and the ministry.

The program offers a wide variety of courses allowing students an opportunity to select topics pursuant to their special interests. In addition to courses, students have the opportunity to obtain practical experience by participating in professional activities offered by the department; for example, graduate teaching assistantships, research and colloquia.

Degrees for the Department

Communication Studies - Bachelor of Arts (p. 239)

Communication Studies - Master of Arts (p. 239)

Minors for the Department

Communication and National Security - Undergraduate Minor (p. 239)

Communication Studies - Undergraduate Minor (p. 240)

Communication and National Security - Graduate Minor (p. 238)

Communication Studies - Graduate Minor (p. 239)

Supplemental instruction (SI) courses are not accepted.

Communication and National Security - Undergraduate Minor (p. 240)

Communication Studies - Bachelor of Arts

Degrees for the Department

example, graduate teaching assistantships, research and colloquia. by participating in professional activities offered by the department; for
to courses, students have the opportunity to obtain practical experience
opportunity to select topics pursuant to their special interests. In addition

Exploration of major theories, concepts and methods of research in the
communication and culture, environmental communication; D. Halliwell, Ph.D. (University of Missouri)- interpersonal communication, communication and technology.

COMM 253G. Public Speaking
Principles of effective public speaking, with emphasis on preparing and delivering well-organized, logical, and persuasive arguments adapted to different audiences.

COMM 265G. Principles of Human Communication
Study and practice of interpersonal, small group, and presentational skills essential to effective social, business, and professional interaction.

COMM 285. Survey of Communication Theory
Exploration of major theories, concepts and methods of research in the study of human communication. Primarily for majors.

COMM 290. Independent Study
1-3 Credits
Individualized, self-paced projects for students with a special interest in communication topics. May be repeated for a maximum of 6 credits. Prerequisites: COMM 265G and sophomore standing.

COMM 291. Special Topics
1-3 Credits
Specific subjects and credits to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

COMM 305. Communication Research Methods
3 Credits
Introductory course in communication research. Emphasis on how to be an effective consumer of research.

COMM 351. Persuasion Theory and Practice
3 Credits
Training in understanding and applying the principles and techniques of argumentation and persuasion.

COMM 370. Organizational Communication
3 Credits
Communication strategies and patterns of private and governmental organizations, including research on the communication process.

COMM 376. Communication and Culture
3 Credits
Cultural and intercultural communication theory and behavior, with a concentration on the development of specific communication skills which should facilitate effective intercultural communication.

COMM 384. Interpersonal Communication
3 Credits
Theories of interpersonal communication and relational communication including study of relevant models, contexts and constructs.
COMM 425. Small Group Communication
3 Credits
Principles and methods of modern group discussion with emphasis on the role of the group in problem solving.

COMM 440. Political Communication
3 Credits
Presidential and congressional campaigns, political persuasion techniques, political advertising, power in language, and media aspects of political information. Ideology, resistance to political manipulation, and dependence of democracies on communication.

COMM 450. Technologies of Human Communication
3 Credits
Development and evolution of human communication technologies from prehistory through the future of computer-mediated communication networks. Examines behavioral, cognitive, social, cultural, and political issues of new communication technologies and their use and management.
Prerequisite: junior or senior standing.

COMM 455. Fundamentals of Communication and National Security
3 Credits
This course addresses communication perspectives informing national security, strategic intelligence, and the intelligence process. Students will examine U.S. national security history, policy, the development of the Intelligence Community, and intelligence as processes of communication. This course serves as an introduction to national security studies.

COMM 456. Communication and the Intelligence Cycle
3 Credits
The course addresses communication requirements and the technical, cognitive, and cultural complexity of the collaborative research environment. Students participate in novel, team-based problem scenarios that provide the foundation for acquiring advanced cognitive analytic methods and strategies. Students will engage in interdisciplinary information science processes and will develop and present analytic products responding to national security requirements.

COMM 457. Strategic Communication and Public Diplomacy
3 Credits
This course covers history, theory, and research related to the use of communication to change attitudes in favor of U.S. national security interests. Students will examine the use of strategic communication and influence in diplomacy, intelligence, and military communities in terms of specific strategies, effects, and issues. Students will learn to distinguish public diplomacy, information operations, public affairs, and other forms of political communication that are used by the U.S. government to persuade target populations about American interests and goals. Topics include soft power, intelligence-based negotiation processes, and research methods used to identify influence techniques or groups that threaten U.S. national security.

COMM 458. Intercultural Communication and National Security
3 Credits
This course provides a concentration on cultural factors in international affairs and conflicts, how culture affects perceptions of national interests, and the relationship of U.S. national security to understand the general and political cultures of other nations. Students will integrate cultural and intercultural communication theory and behavior, with an emphasis on the development of specific communication skills to facilitate developing cultural knowledge in government and political contexts. Students will learn how to study the cultural factors that affect international conflicts and how strategic communication should address such cultural factors.

COMM 460. Deception and Communication
3 Credits
Deceptive communication including nonverbal indicators of lies, types of lies, and influence of relationships on lying behavior and interpretation.

COMM 462. Family Communication
3 Credits
A communication perspective on traditional and nontraditional family configurations, roles, interaction patterns, and conflict. Includes an examination of media depictions of families and family interaction, as well as current social and political issues related to the family.

COMM 465. Nonverbal Communication
3 Credits
Study of and experimentation with nonverbal aspects of human communication as vital components of the total communication process.

COMM 470. Leadership Communication
3 Credits
Examination of traditional theories and concepts of leader-follower dynamics; presentation of cognitive, systems, and symbolic interpretative views of leadership with an emphasis on persuasion and motivation in leader-follower interactions.

COMM 471. Sports Communication
3 Credits
This course provides a senior-level exploration of the role sports and sports communication plays in contemporary culture. Readings will examine the interrelationship between sports and media in society, the identities that fans assume when engaging in fanship and sports viewership, the pervasiveness of sports communication practices in the sports industry, the role of media in story telling, and the way cultural identifiers of class, ethnicity, and gender play out in the media. This is taught with COMM 571.

COMM 475. International Communication
3 Credits
Exploration of the forms and channels of communication substantially influenced by international cultural and political factors. Covers: global communication technology; news, information and entertainment flows; international diplomacy and negotiation, communication in war and peace.

COMM 477. Environmental Communication
3 Credits
Examines the link between communication and environment within the context of communication scholarship. Topics include sense of place, cultural approaches to interacting with environment as well as exploring current themes surrounding environment.
COMM 480. Health Communication
3 Credits
Examination of central issues in communication theory and practice as applied to health care. Includes communication in health care organizations, media dissemination of health information, role of communication in disease prevention and health promotion, and symbolic meaning of illness within cultures.

COMM 484. Verbal Communication
3 Credits
Examination of rules governing conversational structures such as speech acts, action sequences, topics and topic shifts. Also covers humor in conversation and conversational control.

COMM 485. International Teaching Assistant Development
3 Credits
International teaching assistants will receive instruction in communicative skills to enable them to meet their responsibilities at NMSU. Course includes lectures, seminars, video-taped presentations, and tutorial sessions emphasizing pedagogic and presentation skills and styles.
Prerequisite: consent of instructor.

COMM 490. Independent Study
1-3 Credits
Individualized, self-paced projects for advanced students. May be repeated for a maximum of 6 credits.
Prerequisites: COMM 265G and junior standing with consent of participating instructor.

COMM 491. Selected Topics
1-6 Credits
Individual and/or group study of selected topics. To be identified by subtitle. May be repeated for a maximum of 12 credits.
Prerequisite: prior arrangement with faculty supervisor(s).

COMM 495. Communication Internship
3 Credits
Internship opportunity to apply what has been learned to a real-world situation. May be repeated for a maximum of 6 credits. Restricted to majors.
Prerequisite: junior standing and 3.0 GPA in major.

COMM 505. Research Methods
3 Credits
Seminar in the quantitative study of human communication phenomena, research design, and statistical analysis.

COMM 506. Qualitative Research Methods in Communication
3 Credits
Survey of qualitative research methods in the study of human communication, including historical and critical approaches, interviewing, participant-observation, and communication ethnography. Students apply methods to their own research.

COMM 540. Seminar in Political Communication
3 Credits
Political communication theory, research, and issues. Empirical studies of campaigns, movements, news media, voter decision-making, political participation, socialization, and knowledge. Political theory, field research, communication science findings and research methods.

COMM 545. Seminar in Ethicism, Racism, and Communication
3 Credits
Course focuses on theories and research concerning the social, cognitive, and communication aspects of ethnic and racial prejudice. Specific psychological and communication processes of person and group categorization are explored along with findings about the effects of ethnic prejudice on everyday communication (and vice versa).

COMM 550. Seminar in Communication Technologies
3 Credits
Seminar on design, usage, and social impact of electronic mail, communication through computer networks, and new technologies of organizational communication such as group decision support systems (GDSS). Each student will study an actual application of a major communication technology in an organization.

COMM 551. Seminar in Persuasion
3 Credits
Work with an actual persuasion campaign, such as public information, political, or commercial marketing campaigns. Includes case studies of large-scale persuasion efforts, current theoretical models of persuasion processes, and methods for studying, evaluating, and refining messages for optimal effects.
Prerequisite: COMM 351 or consent of instructor.

COMM 555. Seminar Fundamentals of Communication and National Security
3 Credits
This seminar course addresses communication perspectives informing national security, strategic intelligence, and the intelligence process. Students will examine U.S. national security history, policy, the development of the Intelligence Community, and intelligence as processes of communication. This course serves as an introduction to national security studies. Graduate students are required to fulfill advanced research and presentation requirements.

COMM 556. Seminar Communication and the Intelligence Cycle
3 Credits
This seminar course addresses communication requirements and the technical, cognitive, and cultural complexity of the collaborative research environment. Students participate in novel, team-based problem scenarios that provide the foundation for acquiring advanced cognitive analytic methods and strategies. Students will engage in interdisciplinary information science processes and will develop and present analytic products responding to national security requirements. Graduate students will be required to fulfill advanced research and presentation requirements.

COMM 557. Seminar Strategic Communication and Public Diplomacy
3 Credits
The seminar course covers history, theory, and research related to the use of communication to change attitudes in favor of U.S. security interests. Students will examine the use of strategic communication and influence in diplomacy, intelligence, and military communities in terms of specific strategies, effects, and issues. Students will learn to distinguish public diplomacy, information operations, public affairs, and other forms of political communication that are by the U.S. government to persuade target populations about American interests and goals. Topics include soft power, intelligence-based negotiation processes, and research methods used to identify influence techniques of groups that threaten U.S. national security. Graduate students will be required to fulfill advanced research and presentation requirements.
COMM 558. Seminar Intercultural Communication and National Security
3 Credits
The seminar course provides a concentration on cultural factors in international affairs and conflicts, how culture affects perceptions of national interests, and the relationship of U.S. national security to understand the general and political cultures of other nations. Students will integrate cultural and intercultural communication theory and behavior, with an emphasis on the development of specific communication skills to facilitate developing cultural knowledge in government and political contexts. Students will learn how to study the cultural factors that affect international conflicts and how strategic communication should address such cultural factors. Graduate students will be required to fulfill advanced research and presentation requirements.

COMM 562. Seminar in Family Communication
3 Credits
This course examines cutting edge research on family communication, as well as classic theories and research findings that have influenced and revolutionized the way scholars conceptualize family interaction. Topics include basic family communication processes, communication in family subsystems, communication during family stress, and the role of family interaction in health and well-being. Students will explore how family relationships are built, maintained, and destroyed by communication as well as the potentially important and long lasting effects of family relationships on individuals.

COMM 565. Seminar in Nonverbal Communication
3 Credits
This course focuses on human physical behaviors as the basis of communication between persons. This physical behavior includes such variables as the voice, face, eyes, posture, gesture, space, territory, clothing, and touch. The content of the course considers the individual and social factors affecting the production of such behaviors, and the effects of such behaviors on others' attitudes, perceptions, cognitions, and relationships. Applications of research and theory in nonverbal communication to infant development, personality, sex differences, marital satisfaction, relationship development, culture, aging, and brain functioning are also studied throughout the course.

COMM 570. Seminar in Organizational Communication
3 Credits
Communication strategies and patterns of private and governmental organizations, including research on communication systems.

COMM 571. Seminar in Sports Communication
3 Credits
This seminar provides a graduate-level exploration of the role sports and sports communication plays in contemporary culture. Readings will examine the interrelationship between sports and media in society, the identities that fans assume when engaging in fanship and sports viewership, the pervasiveness of sports communication practices in the sports industry, the role of media in story telling, and the way cultural identifiers of class, ethnicity, and gender play out in the media. This is taught with COMM 471.

COMM 576. Seminar on Communication and Culture
3 Credits
Cultural and intercultural communication theory and research. Focuses on discovering and describing distinctive ways of speaking within and between cultures.

COMM 583. Seminar in Theories of Communication
3 Credits
Communication systems, symbolic processes, analysis of messages.

COMM 584. Seminar in Interpersonal Communication
3 Credits
Theories of interpersonal communication and communication within a relationship, including study of relevant models, contexts, and constructs.

COMM 590. Independent Study
1-6 Credits
Individualized, self-paced projects.
Prerequisite: consent of instructor.

COMM 591. Special Topics
1-9 Credits
Individual and/or group study of special topics. To be identified by subtitle.
Prerequisite: prior arrangement with faculty supervisor(s).

COMM 595. Communication Internship for Graduate Students
3 Credits
Internship opportunity to apply what students have learned to the real world. Restricted to majors.
Prerequisite: 9 credits of M.A. degree.

COMM 599. Master's Thesis
15 Credits
Thesis.

Name:

Office Location:

Phone: (575) 646-2801

Website: https://commstudies.nmsu.edu/

Communication and National Security - Graduate Minor

This minor is aimed at graduate students who seek employment in national security, intelligence, international business, military affairs in other nations, and other positions which require knowledge of how communication affects the national image of the United States and how Americans communicate with members of other cultures about political matters. Graduate students will be required to write a special analysis for each course that is not required of the undergraduate students. Each graduate student will also be required to present a one-hour lecture on an area of research specialization.

Requirements

Students will take three of four courses below plus one outside course approved by the department. The list below is our expected course rotation.

Requirements

Select three from the following: 9

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 555</td>
<td>Seminar Fundamentals of Communication and National Security</td>
</tr>
<tr>
<td>COMM 556</td>
<td>Seminar Communication and the Intelligence Cycle</td>
</tr>
<tr>
<td>COMM 557</td>
<td>Seminar Strategic Communication and Public Diplomacy</td>
</tr>
<tr>
<td>COMM 558</td>
<td>Seminar Intercultural Communication and National Security</td>
</tr>
</tbody>
</table>

Other Departments
Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 501</td>
<td>Research Design and History of Geographic Thought</td>
</tr>
<tr>
<td>GOVT 562</td>
<td>Advanced Issues in Security and Intelligence Studies</td>
</tr>
<tr>
<td>HIST 561</td>
<td>Islam and the West: Cultural Contacts, Conflicts and Exchanges</td>
</tr>
<tr>
<td>SOC 489</td>
<td>Globalization</td>
</tr>
</tbody>
</table>

Total Credits 12

1. The courses from other departments can include special topics courses or related courses relevant to this minor, as well as regular courses such as the ones listed.
2. Should focus research project on national security.
3. Pre-requisites or co-requisites include HIST 221G Islamic Civilizations to 1800 or HIST 222G Islamic Civilizations since 1800.

Communication and National Security - Undergraduate Minor

A minor in Communication and National Security consists of 18 credits, 12 credits of required courses and 6 credits of electives. All courses must be completed with grades of "C-" or better.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 455</td>
<td>Fundamentals of Communication and National Security</td>
</tr>
<tr>
<td>COMM 456</td>
<td>Communication and the Intelligence Cycle</td>
</tr>
<tr>
<td>COMM 457</td>
<td>Strategic Communication and Public Diplomacy</td>
</tr>
<tr>
<td>COMM 458</td>
<td>Intercultural Communication and National Security</td>
</tr>
</tbody>
</table>

Additional Courses
Select two from the following: 6

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 281</td>
<td>Map Use: Reading, Analysis and Interpretation</td>
</tr>
<tr>
<td>GEOG 363V</td>
<td>Cultural Geography</td>
</tr>
<tr>
<td>GOVT 364</td>
<td>National Security Policy</td>
</tr>
<tr>
<td>SOC 362</td>
<td>Urban Society in a Global World: Problems, Prospects, and Promises</td>
</tr>
<tr>
<td>SOC 489</td>
<td>Globalization</td>
</tr>
</tbody>
</table>

Total Credits 18

Note: If any of the above courses are not available the department will consider course substitutions.

Communication Studies - Bachelor of Arts

In addition to completing the general education requirements of the university and the college, students majoring in communication studies are required to complete 21 credits of core COMM courses and 15 credits of COMM electives for a total of 36 credits. Any exception to these policies requires department head approval.

All COMM courses must be completed with a grade of C- or better.

Requirements

General Education Requirements 1 36
Viewing a Wider World Requirements 2 6
Core Courses 21

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 265G</td>
<td>Principles of Human Communication</td>
</tr>
<tr>
<td>COMM 285</td>
<td>Survey of Communication Theory</td>
</tr>
<tr>
<td>COMM 305</td>
<td>Communication Research Methods</td>
</tr>
<tr>
<td>COMM 351</td>
<td>Persuasion Theory and Practice</td>
</tr>
<tr>
<td>COMM 370</td>
<td>Organizational Communication</td>
</tr>
<tr>
<td>COMM 376</td>
<td>Communication and Culture</td>
</tr>
<tr>
<td>COMM 384</td>
<td>Interpersonal Communication</td>
</tr>
</tbody>
</table>

Second Language Requirement 3

Departmental Elective Courses
Select an additional 15 credits from COMM to reach a total of 36 credits.

General Electives to bring total to 120 42

Total Credits 120

1. For Information regarding the General Education Course Requirements see the General Education Courses (p. 47) section of the catalog.
2. For information on the Viewing a Wider World Requirements, see the General Education Courses (p. 47) section of the catalog.
3. Students seeking the BA in Communication Studies must meet the second language requirement. Take two years of a second language or complete the second language through the 212 or 214 level as indicated in Section III of the College Degree Requirement (p. 176) section.

Communication Studies - Graduate Minor

Students who wish to take a minor in Communication Studies will need to accumulate a minimum of 9 graduate credits in Communication Studies courses. Students are encouraged to contact the Communication Studies Department Chair for directions in the selection of courses.

Communication Studies - Master of Arts

The department offers both thesis and non-thesis options in its Masters of Arts program. Both options require a minimum of 36 credits, which includes not only Communication courses but courses from outside the department. The thesis option requires at least 30 credits of coursework, 3-6 credits of thesis (COMM 599 Master’s Thesis), and an oral defense of the thesis and coursework. The non-thesis option requires 36 credits of coursework, plus a comprehensive written examination, followed by an oral defense. Both options require a minimum of 30 credit hours of Communication courses.

Select 15 credits from Communication Studies Electives for the Thesis Option. Take 15 credits plus 6 credits from related disciplines for the Non-Thesis Option. Two courses (6 credits) for courses that have numbers
450+ can be counted. For either the Thesis or the Non-Thesis option, a total of 36 credits is required.

**Degree Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 505</td>
<td>Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>COMM 583</td>
<td>Seminar in Theories of Communication</td>
<td>3</td>
</tr>
<tr>
<td>Select three from the following:</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>COMM 540</td>
<td>Seminar in Political communication</td>
<td></td>
</tr>
<tr>
<td>COMM 570</td>
<td>Seminar in Organizational Communication</td>
<td></td>
</tr>
<tr>
<td>COMM 576</td>
<td>Seminar on Communication and Culture</td>
<td></td>
</tr>
<tr>
<td>COMM 584</td>
<td>Seminar in Interpersonal Communication</td>
<td></td>
</tr>
</tbody>
</table>

**COMM Electives**

Select 15 credits from Electives in Related Fields, 3-6 credits from (graduate levels; numbered 450+).

**Thesis or Non-Thesis Options**

Select one from the following: 3-6

- **Thesis Option**: Select 3-6 credits from COMM 599.
- **Non-thesis Option**: Select 3-6 credits from Additional Graduate COMM Electives.

**Total Credits**: 33-36

A GPA of 3.0 or better must be maintained overall and grades in each course must be a B- or better.

**Entrance Requirements for Graduate Study in Communication Studies**

The Graduate Record Exam (GRE) General Test is not required for admission; however, high GRE scores will strengthen a candidate's application and are highly regarded in the awarding of Graduate Assistantships. Students wishing to enroll in the Master program in Communication Studies must meet the following criteria:

1. Hold a BA or BS degree, from an accredited institution of higher learning; Social Science disciplines are preferred
2. Hold a minimum grade point average of 3.25

To apply for an undergraduate study in our department, please submit the following application materials:

- Three very positive letters of recommendation
- Current Vitae/Resume
- 750 word statement of intent
- A sample of scholarly writing

If you seek to have a graduate teaching assistantship, please indicate so with your application letter. Such positions are competitive.

**Communication Studies - Undergraduate Minor**

A minor in Communication Studies consists of 18 credits; at least 9 of those credits must be in courses numbered 300 or above. All courses must be completed with grades of C- or better.

**Required Course**

- COMM 265G Principles of Human Communication 3

**Additional Courses**

Select two from the following: 6

- COMM 370 Organizational Communication
- COMM 376 Communication and Culture
- COMM 384 Interpersonal Communication

Select 9 credits from the following: 9

- COMM 253G Public Speaking
- COMM 285 Survey of Communication Theory
- COMM 305 Communication Research Methods
- COMM 351 Persuasion Theory and Practice
- COMM 425 Small Group Communication
- COMM 440 Political Communication
- COMM 450 Technologies of Human Communication
- COMM 465 Nonverbal Communication
- COMM 470 Leadership Communication
- COMM 475 International Communication
- COMM 480 Health Communication
- COMM 490 Independent Study
- COMM 491 Selected Topics

**Total Credits**: 18

**Computer Science**

Computer Science is the area of study that encompasses all of the theory and practice of computing. The mission of the Department of Computer Science at New Mexico State University is to provide formal education in the core disciplines of computer science, as well as to prepare our graduates for research, development and academic careers. For more information on the Department of Computer Science, please visit the website [www.cs.nmsu.edu](https://www.cs.nmsu.edu). (https://www.cs.nmsu.edu/wp13).

**Undergraduate Program Information**

The undergraduate computer science programs prepare students for graduate study in computer science and for employment in positions involving the design, construction and application of computer systems. Undergraduate degree programs include a Bachelor of Science (ABET accredited), Bachelor of Arts, and four minor degree tracks. The B.S. degree is the traditional computer science degree program, while the B.A. degree offers a more open, flexible degree plan that is easier to combine with studies in other disciplines. The minors offer specialized tracks in algorithm theory, bioinformatics, computer systems and software development. With technology underpinning almost every area of human endeavor today, students across NMSU should consider pursuing a minor or at least taking some computer science courses. Computer science majors should review their programs of study in consultation with their advisors each semester, preferably using the most recent Undergraduate Catalog.

**Graduate Program Information**

The department offers both Master of Science and Doctor of Philosophy graduate degrees in computer science, along with a Master of Science in Bioinformatics. We also encourage students in other disciplines to do a graduate minor in computer science. Graduate students typically work closely with a faculty member in a specific area of research. The department offers expertise in several research areas, such as: artificial intelligence and knowledge representation; computer and wireless networks; data mining and machine learning; game design and human-computer interaction; bioinformatics; high performance computing;
software engineering and programming languages; theory of computing; and assistive technologies.

A number of laboratories have been established to coordinate research activities, including

- the Knowledge representation, Logic and Advanced Programming (KLAB) lab,
- the Play and Interactive Experiences for Learning (PiXL) lab,
- the Knowledge Discovery and Data Mining (KDD) lab,
- the Data Storage Lab (DLS),
- the Programming Languages, Environments, and Automated Software Engineering (PLEASE) lab,
- the Bioinformatics Research lab; and
- the Network and Systems Optimization Lab (NSOL).

Department members are also directing the iCREDITS interdisciplinary Center of Research Excellence in Design of Intelligent Technologies for Smartgrids, offering educational and research opportunities in smartgrids.

Entrance Requirements for Graduate Study in Computer Science

The Graduate Record Exam (GRE) General Test is not required for admission; however, high GRE scores will strengthen a candidate's application and are highly regarded in the awarding of Graduate Assistantships. To be admitted without undergraduate deficiencies, an entering student must have completed undergraduate preparation substantially equivalent to that required for the Bachelor of Science degree in Computer Science at New Mexico State University; in particular, this includes courses equivalent to

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C S 172</td>
<td>Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>C S 271</td>
<td>Object Oriented Programming</td>
<td>4</td>
</tr>
<tr>
<td>C S 272</td>
<td>Introduction to Data Structures</td>
<td>4</td>
</tr>
<tr>
<td>C S 273</td>
<td>Machine Programming and Organization</td>
<td>4</td>
</tr>
<tr>
<td>C S 278</td>
<td>Discrete Mathematics for Computer Science</td>
<td>4</td>
</tr>
<tr>
<td>C S 370</td>
<td>Compilers and Automata Theory</td>
<td>4</td>
</tr>
<tr>
<td>C S 371</td>
<td>Software Development</td>
<td>4</td>
</tr>
<tr>
<td>C S 372</td>
<td>Data Structures and Algorithms</td>
<td>4</td>
</tr>
<tr>
<td>C S 471</td>
<td>Programming Language Structure I</td>
<td>3</td>
</tr>
<tr>
<td>C S 473</td>
<td>Architectural Concepts I</td>
<td>3</td>
</tr>
<tr>
<td>C S 474</td>
<td>Operating Systems I</td>
<td>3</td>
</tr>
</tbody>
</table>

Deficiencies should be satisfied as early in the student graduate program as possible, through the regular undergraduate courses, the C S 460 - C S 469 transition courses, or through tests administered by faculty members in the relevant areas. Students should consult with their Graduate Advisor to address issues related to deficiencies. Deficiencies are also assigned to applicants whose transcripts denote low grades in selected areas. Admission is often denied to candidates with little background in Computer Science. Instructions for prospective applicants can be found at http://www.cs.nmsu.edu.

Entrance Requirements for Graduate Study in Bioinformatics

The Graduate Record Exam (GRE) General Test is not required for admission; however, high GRE scores will strengthen a candidate's application and are highly regarded in the awarding of Graduate Assistantships. Students wishing to enroll in the Master program in Bioinformatics must meet the following criteria:

1. Hold a BS degree, from an accredited institution of higher learning, in either a computational field (e.g., Computer Science) or in life sciences (preferably Biology, Biochemistry, or Environmental Sciences)
2. Hold a minimum grade point average of 3.2

Applicants will be expected to provide a Career statement, motivating the interest in bioinformatics and a minimum of three letters of reference.

Graduate Assistantships

Graduate assistantships (in the form of Teaching and Research assistantships) are expected to be available during the academic year. Inquiries should be addressed to the departmental Graduate Committee. Research assistantships are available at the discretion of individual research project leaders in the Department or elsewhere on campus. Submitting detailed vitae, letters of reference, and GRE test scores are encouraged when applying for any assistantship.

Degrees for the Department

- Computer Science - Bachelor of Arts (p. 249)
- Computer Science - Bachelor of Science (p. 251)
- Computer Science - Bachelor of Science/Master of Science (p. 253)
- Bioinformatics - Master of Science (p. 248)
- Computer Science - Master of Science (p. 255)
- Computer Science - Doctor of Philosophy (p. 254)

Minors for the Department

A student cannot earn more than one of the undergraduate minors unless they pass at least 6 credits in the second minor beyond the requirements of the first minor. The maximum number of undergraduate minors that a student may earn is two. Most courses for the minors listed below have prerequisites. Please check the undergraduate catalog for individual course prerequisites. Students interested in pursuing a computer science minor are encouraged to pick up more information at the departmental office.

- Algorithm Theory - Undergraduate Minor (p. 248)
- Bioinformatics - Undergraduate Minor (p. 249)
- Computer Systems - Undergraduate Minor (p. 256)
- Software Development - Undergraduate Minor (p. 256)
- Computer Science - Graduate Minor (p. 255)

Faculty

Professor Jonathan Cook, Interim Department Head

Professors: Cook, Leung, Pontelli, Tran; Associate Professors: Misra, Pivkina, Song; Assistant Professors: Cao, Toups, Yeoh, Zheng; College Professors: Cooper, Steiner

J. Cook, Interim Department Head. Ph.D. (Colorado) – software engineering, component-based systems; H. Cao, Ph.D. (Hong-Kong) – data mining.
databases, data integration; H. Leung, Ph.D. (Penn State)– automata theory; S. Misra, Ph.D. (Arizona State)– communication networks, social networks, high performance computing, security and privacy; I. Pivkina, Ph.D. (Kentucky)– artificial intelligence, computer science education, data mining; E. Pontelli, Ph.D. (New Mexico State)– parallel processing, logic programming, knowledge representation, bioinformatics, assistive technologies; M. Song, Ph.D. (Washington)– statistical computing, systems biology, bioinformatics, computer vision; Z. Toups, Ph.D. (Texas A&M)– digital games, human-computer interaction, mixed reality; C. Tran, Ph.D. (Texas-El Paso)– artificial intelligence, knowledge representation, planning, logic programming, non-monotonic reasoning; W. Yeoh, Ph.D. (Southern California)– artificial intelligence, heuristic search, distributed constraint reasoning; M. Zheng, Ph.D. (Ohio State)– computer systems, storage and file systems, parallel and distributed systems

Support Faculty:

S. Cooper, Ph.D. (New Mexico State)– computer networks; E. Steiner, Ph.D. (Oklahoma State)– computer science education

Courses

C S 110. Computer Literacy
3 Credits
This course provides a broad introduction to computing, including computer and information technology concepts; economic and social implications of technology; database management, spreadsheet, word processing, and presentation applications.

C S 111. Computer Science Principles
4 Credits (3+2P)
This course provides a broad and exciting introduction to the field of computer science and the impact that computation has today on every aspect of life. It focuses on exploring computing as a creative activity and investigates the key foundations of computing: abstraction, data, algorithms, and programming. It looks into how connectivity and the Internet have revolutionized computing and demonstrates the global impact that computing has achieved, and it reveals how a new student in computer science might become part of the computing future.
Prerequisite(s): MATH 120 or higher.

C S 117. Introduction to Computer Animation
3 Credits
Introductory course for learning to program with computer animation as well as learning basic concepts in computer science. Students create interactive animation projects such as computer games and learn to use software packages for creating animations in small virtual worlds using 3D models. Recommended for students considering a minor/major in computer science or simply interested in beginning computer animation or programming.

C S 150. C Programming
3 Credits (2+2P)
Programming in the C language. May be repeated up to 3 credits.
Prerequisite(s): MATH 120 or higher.

C S 151. C++ Programming
3 Credits (2+2P)
Introduction to object-oriented programming in the C++ language. May be repeated up to 3 credits.
Prerequisite(s): MATH 120 or higher.

C S 152. Java Programming
3 Credits (2+2P)
Programming in the Java language. May be repeated up to 3 credits.
Prerequisite(s): MATH 120 or higher.

C S 153. Python Programming I
3 Credits
This course is an introduction to programming in the Python language, covering fundamental scripts, data types and variables, functions, and simple object creation and usage. The focus will be on preparing students to use Python in their own areas. No prior programming experience is required.
Prerequisite(s): MATH 120 or higher.

C S 154. Python Programming II
3 Credits
This course covers advanced Python programming, including classes, objects, and inheritance, embedded programming in domain applications, database interaction, and advanced data and text processing. The focus will be on preparing students to use Python in their own areas.
Prerequisite(s): C S 153 or C S 453.

C S 155. Internet Programming I
3 Credits
This course is an introduction to data processing in the R language, covering fundamental scripts, data types and variables, functions, simple object creation and usage. Javascript usage will focus on dynamic page content. No prior programming experience is required, though a basic understanding of HTML will be assumed.
Prerequisite(s): MATH 120 and a basic understanding of HTML.

C S 156. Internet Programming II
3 Credits
This course covers advanced web scripting, including Javascript with AJAX, PHP integration with databases, object oriented features of PHP and Javascript, advanced CSS usage, and using web application frameworks.
Prerequisite(s): C S 155 or C S 455.

C S 157. Topics in Software Programming and Applications
3 Credits (2+2P)
Current topics in computer programming and software applications. Topic announced in the Schedule of Classes. May be repeated if subtitle is different.

C S 158. R Programming I
3 Credits
This course is an introduction to data processing in the R language, covering fundamental script configuration, data types and data collections, R control structures, and basic creation of graphs and data visualizations. This course will not focus on the statistical capabilities of R, though some basic statistical computations will be used.
Prerequisite(s): MATH 121G.

C S 159. R PROGRAMMING II
3 Credits
This course covers advanced R programming, including advanced data collection processing, advanced data visualizations, object oriented features of R, and file processing. It is recommended that students have one statistics course before taking this course.
Prerequisite(s): C S 158 or C S 458.
C S 171G. Introduction to Computer Science
4 Credits (3+2P)
Computers are now used widely in all areas of modern life. This course provides understanding of the theoretical and practical foundations for how computers work, and provides practical application and programming experience in using computers to solve problems efficiently and effectively. The course covers broad aspects of the hardware, software, and mathematical basis of computers. Weekly labs stress using computers to investigate and report on data-intensive scientific problems. Practical experience in major software applications includes an introduction to programming, word processing, spreadsheets, databases, presentations, and Internet applications.
Prerequisite(s): MATH 210G or MATH 120 or higher.

C S 172. Computer Science I
4 Credits (3+2P)
Computational problem solving; problem analysis; implementation of algorithms. Recursive structures and algorithms. Crosslisted with: C S 460.
Prerequisite(s): MATH 121G or higher; C S 111 or successful placement.

C S 209. Special Topics.
1-3 Credits
May be repeated for a maximum of 12 credits.

C S 271. Object Oriented Programming
4 Credits (3+2P)
Introduction to problem analysis and problem solving in the object-oriented paradigm. Practical introduction to implementing solutions in the C++ language. Hands-on experience with useful development tools.
Prerequisite(s): C- or better in C S 172 or E E 161.

C S 272. Introduction to Data Structures
4 Credits (3+2P)
Design, implementation, use of fundamental abstract data types and their algorithms: lists, stacks, queues, deques, trees; imperative and declarative programming. Internal sorting; time and space efficiency of algorithms.
Prerequisite(s): At least a C- in C S 172, or placement.

C S 273. Machine Programming and Organization
4 Credits (3+2P)
Computer structure, instruction execution, addressing techniques; programming in machine and assembly languages.
Prerequisite(s): At least a C- in C S 172 or E E 161.

C S 278. Discrete Mathematics for Computer Science
4 Credits (3+2P)
Discrete mathematics required for Computer Science, including the basics of logic, number theory, methods of proof, sequences, mathematical induction, set theory, counting, and functions. Crosslisted with: MATH 278.
Prerequisite(s): At least a C- in C S 172.

C S 343. Algorithm Design & Implementation
3 Credits
Prerequisite(s): At least a C- in C S 272, or consent of instructor.

C S 370. Compilers and Automata Theory
4 Credits (3+2P)
Methods, principles, and tools for programming language processor design; basics of formal language theory (finite automata, regular expressions, context-free grammars); development of compiler components.
Prerequisite(s): At least a C- in C S 271, C S 272, C S 273, and C S 278.

C S 371. Software Development
4 Credits (3+2P)
Software specification, design, testing, maintenance, documentation; informal proof methods; team implementation of a large project.
Prerequisite(s): At least a C- in C S 271 and C S 272.

C S 372. Data Structures and Algorithms
4 Credits (3+2P)
Prerequisite(s): At least a C- in CS 272 and C S 278.

C S 375. Introduction to Intelligent Agents Using Science Fiction
3 Credits
This course uses science-fiction movies to introduce fundamental principles and techniques in agents and multi-agent systems. It covers game theory, decision theory, machine learning, and distributed systems.

C S 409. Independent Study
1-6 Credits (1-6)
Faculty supervised investigation, to culminate in a written report. May be repeated up to 6 credits.
Prerequisite(s): Written agreement with faculty supervisor.

C S 419. Computing Ethics and Social Implications of Computing
1 Credit
Corequisite(s): C S 448 or C S 449.

C S 448. Senior Project
4 Credits
Capstone course in which C S majors work in teams and apply computer science skills to complete a large project. Consent of Instructor required. Restricted to: C S majors.
Prerequisite(s): Senior standing.
Corequisite(s): C S 419.

C S 449. Senior Thesis
4 Credits
Capstone course in which C S majors apply computer science skills to complete a research project, culminating in a written thesis report. Consent of Instructor required. Restricted to: C S majors.
Prerequisite(s): Consent of thesis adviser.
Corequisite(s): C S 419.

C S 450. C Programming
3 Credits (2+3P)
Programming in the C language. More advanced than C S 150. Recommended for nonmajors only. May be repeated up to 3 credits.
Prerequisite(s): Graduate standing.
C S 451. C++ Programming
3 Credits
Programming in the C language. More advanced than C S 151. Recommended for nonmajors only. May be repeated up to 3 credits.
Prerequisite(s): Graduate standing.

C S 452. Java Programming
3 Credits (2+2P)
Programming in the Java language. More advanced than C S 152. Recommended for nonmajors only. May be repeated up to 3 credits.
Prerequisite(s): Graduate standing.

C S 453. Python Programming I
3 Credits
This course is an introduction to programming in the Python language, covering fundamental scripts, data types and variables, functions, and simple object creation and usage. The focus will be on preparing students to use Python in their own areas. No prior programming experience is required. More advanced than C S 153.
Prerequisite(s): MATH 120 or higher.

C S 454. Python Programming II
3 Credits
This course covers advanced Python programming, including classes, objects, and inheritance, embedded programming in domain applications, database interaction, and advanced data and text processing. The focus will be on preparing students to use Python in their own areas. For graduate students only. Has more advanced work than C S 154, and does not count towards CS major requirements.
Prerequisite(s): C S 153 or C S 453.

C S 455. Internet Programming I
3 Credits
This course is an introduction to programming for the Web in PHP and Javascript, covering fundamental web scripting ideas, CSS, data types and variables, functions, and simple object creation and usage. Javascript usage will focus on dynamic page content. No prior programming experience is required. More advanced than C S 155. Does not count towards CS major requirements.
Prerequisite(s): MATH 120 and a basic understanding of HTML.

C S 456. Internet Programming II
3 Credits
This course covers advanced web scripting, including Javascript with AJAX, PHP integration with databases, object oriented features of PHP and Javascript, advanced CSS usage, and using web application frameworks. For graduate students only. Has more advanced work than C S 156. Does not count towards CS major requirements.
Prerequisite(s): C S 155 or C S 455.

C S 457. Topics in Software Programming and Applications
3 Credits (2+2P)
Current topics in computer programming and software applications. Topic announced in the Schedule of Classes. More advanced than C S 157, recommended for non-majors only. May be repeated if subtitle is different.
Prerequisite(s): Graduate standing.

C S 458. R Programming I
3 Credits
This course is an introduction to data processing in the R language, covering fundamental script configuration, data types and data collections, R control structures, and basic creation of graphs and data visualizations. This course will not focus on the statistical capabilities of R, though some basic statistical computations will be used. For graduate students only. Has more advanced work than C S 158. Does not count towards CS major requirements.
Prerequisite(s): MATH 121G.

C S 459. R Programming II
3 Credits
This course covers advanced R programming, including advanced data collection processing, advanced data visualizations, object oriented features of R, and file processing. It is recommended that students have one statistics course before taking this course. For graduate students only. Has more advanced work than C S 159, and does not count towards CS major requirements.
Prerequisite(s): C S 158 or C S 458.

C S 460. Computer Science I Transition
3 Credits
Computational problem solving; problem analysis; implementation of algorithms. Recursive structures and algorithms. For C S graduate students only; cannot be used to meet a C S student’s program of study. Taught with C S 172. Consent of Instructor required. Crosslisted with: C S 172.

C S 461. Programming in the C Language Transition
3 Credits
Hands-on experience with useful development tools. Practical introduction to implementing solutions in the C language. Hands-on experience with useful development tools. Cannot be used in a C S student’s program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 172 or C S 460 or consent of instructor.

C S 462. Object Oriented Programming Transition
3 Credits
Introduction to problem analysis and problem solving in the object-oriented paradigm. Practical introduction to implementing solutions in the C++ language. Hands-on experience with useful development tools. Cannot be used in a C S student’s program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 172 or C S 460 or consent of instructor.

C S 463. Introduction to Data Structures Transition
3 Credits
Design, implementation, use of fundamental abstract data types and their algorithms: lists, stacks, queues, deques, trees; imperative and declarative programming. Internal sorting; time and space efficiency of algorithms. Cannot be used in a C S student’s program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 172 or C S 460 or consent of instructor.

C S 464. Machine Programming and Organization Transition
3 Credits
Computer structure, instruction execution, addressing techniques; programming in machine and assembly languages. Cannot be used in a C S student’s program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 172 or C S 460 or consent of instructor.

C S 465. Discrete Math for Computer Science Transition
3 Credits
Logical connectives, sets, functions, relations, graphs, trees, proofs, induction, and application to computer science. Cannot be used in a C S student’s program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 172 or C S 460 or consent of instructor.
C S 466. Compilers and Automata Transition
3 Credits
Methods, principles, and tools for programming language processor design; basics of formal language theory (finite automata, regular expressions, context-free grammars); development of compiler components. For C S graduate students only; cannot be used in a students program of study. Consent of instructor required.
Prerequisite(s): At least a C in C S 271 or C S 462, in C S 272 or C S 463, in C S 273 or C S 464, in C S 278 or C S 465, or consent of instructor.

C S 468. Software Development Transition
3 Credits
Software specification, design, testing, maintenance, documentation; informal proof methods; team implementation of a large project. Cannot be used in a C S student's program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 271 or C S 462, in C S 272 or C S 463, or consent of instructor.

C S 469. Data Structure and Algorithms Transition
3 Credits
Prerequisite(s): At least a C- in C S 272 or C S 463, in C S 278 or C S 465, or consent of instructor.

C S 471. Programming Language Structure I
3 Credits
Syntax, semantics, implementation, and application of programming languages; abstract data types; concurrency. Not for C S graduate students.
Prerequisite(s): C- or better in C S 370 and C S 371.

C S 473. Architectural Concepts I
3 Credits
Comparison of architectures to illustrate concepts of computer organization; relationships between architectural and software features. Not for C S graduate students.
Prerequisite(s): At least a C- in C S 273 and C S 370.

C S 474. Operating Systems I
3 Credits
Operating system principles and structures, and interactions with architectures. Not for C S graduate students.
Prerequisite(s): At least a C- in C S 273, C S 371, and C S 372.

C S 475. Artificial Intelligence I
3 Credits
Fundamental principles and techniques in artificial intelligence systems. Intelligent Agents; solving problems by searching; local search techniques; game-playing agents; constraint satisfaction problems; knowledge representation and reasoning. Further selected topics may also be covered. Not for C S graduate students.
Prerequisite(s): At least a C- in C S 272 and C S 278.

C S 476. Computer Graphics I
3 Credits
Languages, programming, devices, and data structures for representation and interactive display of complex objects. Not for C S graduate students.
Prerequisite(s): At least C- in C S 370 or C S 371.

C S 477. Digital Game Design
3 Credits
An introductory to digital game design. Topics include design, develop, and playtest games. The course is structured to use team-based learning. Not for C S graduate students.
Prerequisite(s)/Corequisite(s): C S 371 or consent of instructor.

C S 478. Computer Security
3 Credits
Introduction to the art and science of computer security. Fundamentals of computer security including elementary cryptography, authentication and access control, security threats, attacks, detection and prevention in application software, operating systems, networks and databases.
Prerequisite(s): At least a C- in C S 273 or consent of instructor.

C S 479. Special Topics
1-6 Credits
Topic announced in the Schedule of Classes. May be repeated if subtitle is different. Not for C S graduate students. May be repeated up to 6 credits.

C S 480. Linux System Administration
3 Credits
Basic system administration for Linux environments. Topics include user managements, file systems, security, backups, system monitoring, kernel configuration and other relevant aspects of system administration. Not for Computer Science graduate students.

C S 481. Visual Programming
3 Credits
Design and implementation of programs using visual (i.e. dataflow or diagrammatic) programming techniques, with an emphasis on real-time data processing. Students will learn how to design visual programs, including how to handle cycles and state maintenance, and will learn to process audio, video, and other data using visual programs. Not for C S graduate students.
Prerequisite(s): C- or better in C S 272 and C S 278.

C S 482. Database Management Systems I
3 Credits
Database design and implementation; models of database management systems; privacy, security, protection, recovery. Not for C S graduate students.
Prerequisite(s): At least a C- in C S 272 and C S 278.

C S 483. Introduction to Robotics
3 Credits
Basic AI-based robotic architecture and concepts, with an emphasis on building and programming mobile robots. Not for C S graduate students. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 272 and C S 273.

C S 484. Computer Networks I
3 Credits
Fundamental concepts of computer communication networks: layered network architecture, network components, protocol stack and service. Example of application, transport, network and data link layers, protocols primarily drawn from the Internet (TCP, UDP, and IP) protocol multimedia networks; network management and security. Not for C S graduate students. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 272 and CS 278.
C S 485. User Interface Design
3 Credits
Interface design, conceptual models formed by users, computer aided instruction, natural and query languages, graphical representations. Not for C S graduate students.
Prerequisite(s): At least C- in C S 371.

C S 486. Bioinformatics
3 Credits
Introduction to bioinformatics and computational biology. Computational approaches to sequences analysis, protein structure prediction and analysis, and selected topics from current advances in bioinformatics. Not for C S graduate students.
Prerequisite(s): At least a C- in C S 272 and C S 278.

C S 488. Introduction to Data Mining
3 Credits
Techniques for exploring large data sets and discovering patterns in them. Data mining concepts, metrics to measure its effectiveness. Methods in classification, clustering, frequent pattern analysis. Selected topics from current advances in data mining. Taught with C S 508.
Prerequisite(s): At least a C- in C S 272 and C S 278.

C S 489. Bioinformatics Programming
3 Credits
Application of computer programming languages to address data processing and analysis problems in modern molecular biology. R/Perl/Python programming. Web API programming. Automatic manipulation of next generation sequence data, analysis of large gene expression tables, access to online biological databases, performing statistical analysis, and visualization of data and results. Taught with C S 509.
Prerequisite(s): At least a C- in C S 272 and C S 278.

C S 491. Parallel Programming
3 Credits
Programming of shared memory and distributed memory machines; tools and languages for parallel programming; techniques for parallel programming; parallel programming environments. Not for C S graduate students.
Prerequisite(s): C- or better in C S 370 or consent of instructor.

C S 493. Algorithm Design and Implementation
3 Credits
This course introduces the basic knowledge of designing classical algorithms and implementing these algorithms using a programming language. In particular, the course teaches various data structures, including graphs and balanced binary search trees, and efficient schemes to implement these data structures. This course also teaches basic algorithm design techniques including divide-and-conquer, greedy scheme, and dynamic programming. This course covers graph algorithms, including graph traversals (depth-first search and breadth-first search), connectivity, shortest paths, and minimum spanning trees. Restricted to: exclude C S majors.
Prerequisite(s): At least a C- in C S 272, or Consent of Instructor.

C S 494. Introduction to Smart Grids
3 Credits
This course is an introduction to the technologies and design strategies associated with the Smart Grid. The emphasis will be on the development of communications, energy delivery, coordination mechanisms, and management tools to monitor transmission and distribution networks. Topics include: Smart grid introduction and evolution; Power systems; Networking and transport control; Artificial intelligence & agent coordination; Data mining for smart grids.
Prerequisite(s): At least a C- in C S 272 and a C- in E E 201 or 280; or Consent of instructor.

C S 502. Database Management Systems I
3 Credits
Database design and implementation; models of database management systems; privacy, security, protection, recovery; requires more advanced graduate work than C S 482. Students are expected to have solid knowledge of data structures and discrete mathematics.

C S 503. Introduction to Robotics
3 Credits
Basic AI-based robotic architectures and concepts, with an emphasis on building and programming mobile robots; requires more advanced graduate work than C S 483. Students are expected to have solid knowledge of data structures and machine-level programming.

C S 504. Computer Networks I
3 Credits
Fundamental concepts of computer communication networks: layered network architecture, network components, protocol stack and service. Example of application, transport, network and data link layers, protocols primarily drawn from the Internet (TCP, UDP, and IP) protocol suite; local and wide area networks, wireless and mobile networks, multimedia networks; network management and security; requires more advanced graduate work than C S 484. Students are expected to have solid knowledge of data structures, machine-level programming. Knowledge of statistics (at the level of STAT 371 or 470) is recommended.

C S 505. Artificial Intelligence I
3 Credits
Fundamental principles and techniques in artificial intelligence systems. Knowledge representation formalisms; heuristic problem solving techniques; automated logical deduction; robot planning methods; algorithmic techniques for natural language understanding, vision and learning; requires more advanced graduate work than C S 475. Students are expected to have strong knowledge of algorithms and data structures (at the level of C S 372).

C S 506. Computer Graphics I
3 Credits
Languages, programming, devices, and data structures for representation and interactive display of complex objects. Requires more advanced graduate work than C S 476. Students are expected to have knowledge of compilers design and software engineering equivalent to CS 370 and CS 371.

C S 508. Introduction to Data Mining
3 Credits
Techniques for exploring large data sets and discovering patterns in them. Data mining concepts, metrics to measure its effectiveness. Methods in classification, clustering, frequent pattern analysis. Selected topics from current advances in data mining. Students are expected to have a preparation in Discrete Mathematics and Data Structures equivalent to C S 272 and C S 278. Requires more advanced graduate work than C S 488. Crosslisted with: C S 488.
C S 509. Bioinformatics Programming
3 Credits
Application of computer programming languages to address data processing and analysis problems in modern molecular biology. R/Perl/ Python programming, Web API programming. Automatic manipulation of next generation sequence data, analysis of large gene expression tables, access to online biological databases, performing statistical analysis, and visualization of data and results. Requires a preparation in discrete mathematics and data structures equivalent to C S 272 and C S 278. Taught with C S 489.

C S 510. Automata, Languages, Computability
3 Credits
Regular and context-free languages, pushdown and finite-slate automata, turing machines, models of computation, halting problems. Students are expected to have knowledge of compilers design and algorithms equivalent to C S 372 and C S 372.

C S 511. Logic and Constraint Logic Programming
3 Credits
Declarative programming techniques; foundations of logic programming; programming in Prolog; constraint logic programming; application of logic and constraint programming; requires more advanced graduate work than C S 472. Students are expected to have knowledge of data structures and discrete mathematics equivalent to C S 272 and C S 278.

C S 512. Computer Systems Modeling and Simulation
3 Credits
Basic concepts of modeling computer systems: continuous and discrete time models, states and transition, probabilistic models. Structures of simulation programs, time driven and event driven simulation, simulation on captured and synthetic traces, generation of random variables, queuing models, Markov chains, random walks, Poisson, Markov, renewal branching and Brownian motion processes, model validation and data analysis; requires more advanced graduate work than C S 492. Students are expected to have knowledge of algorithms and data structures equivalent to C S 372.

C S 513. Computer Security
3 Credits
Introduction to the art and science of computer security. Fundamentals of computer security including elementary cryptography, authentication and access control, security threats, attacks, detection and prevention in application software, operating systems, networks and databases.
Prerequisite(s): At least a C in C S 273 or consent of instructor.

C S 514. Introduction to Smart Grids
3 Credits
This course is an introduction to the technologies and design strategies associated with the Smart Grid. The emphasis will be on the development of communications, energy delivery, coordination mechanisms, and management tools to monitor transmission and distribution networks. Topics include: Smart grid introduction and evolution; Power systems; Networking and transport control; Artificial intelligence & agent coordination; Data mining for smart grids. Requires more advanced work than C S 494.
Prerequisite(s): At least a C- in C S 272 and a C- in E E 201 or 280; or Consent of instructor.

C S 515. User Interface Design
3 Credits
Interface design, conceptual models formed by users, computer-aided instruction, natural and query languages, graphical representations; requires more advanced graduate work than C S 485. Students are expected to have knowledge of software engineering equivalent to C S 371.

C S 516. Bioinformatics
3 Credits
Introduction to bioinformatics and computational biology. Computational approaches to sequences analysis, protein structure prediction and analysis, and selected topics from current advances in bioinformatics; requires more advanced graduate work than C S 486. Students are expected to have a knowledge of algorithms and data structures equivalent to C S 372 or exposure to Biology (equivalent to BIOL 221 or BIOL 311).

C S 517. Digital Game Design
3 Credits
An introductory digital game design. Topics include design, develop, and playtest games. The course is structured to use team-based learning.

C S 518. Visual Programming
3 Credits
Design and implementation of languages using visual but nontextual means to specify programs. Required more advanced work than C S 481.
Prerequisite(s): at least a C in C S 272 and C S 278.

C S 521. Parallel Programming
3 Credits
Programming of shared memory and distributed memory machines; tools and languages for parallel programming; parallelizing compilers; parallel programming environments; requires more advanced graduate work than C S 491. Students are expected to have knowledge of programming and machine organization equivalent to C S 271 and C S 273.

C S 560. Graph Theory
3 Credits
Graph theoretic models in all areas of computer science including computer architectures, computation geometry, fault tolerance, databases. Includes connectivity, colorability, factorization, topological embeddings in surfaces, reconstruction, groups and matrices associated with graphs.
Prerequisite: consent of instructor.

C S 570. Analysis of Algorithms
3 Credits
Techniques for design and analysis of algorithms; time and space complexity; proving correctness of programs. Particular algorithms such as sorting, searching, dynamic programming. NP complete problems. Students are expected to have knowledge of algorithms and data structures equivalent to C S 372.

C S 571. Programming Language Structure II
3 Credits
Formal semantics of programming languages. Students are expected to have knowledge of algorithms and data structures equivalent to C S 372, and knowledge of principles of programming languages equivalent to C S 471.

C S 572. Advanced Algorithms
3 Credits
Design, analysis, and use of important algorithms and data structures.
Prerequisite: C S 570 or consent of instructor.
Algorithm Theory - Undergraduate Minor

C S 573. Architectural Concepts II
3 Credits
Advanced topics related to computer architecture, guided by the current literature. Students are expected to have knowledge of computer architectures equivalent to C S 473 and of operating systems equivalent to C S 474. Crosslisted with: E E564.

C S 574. Operating Systems II
3 Credits
Advanced topics related to operating system principles, guided by the current literature. Students are expected to have knowledge of computer architectures and operating systems equivalent to C S 473 and C S 474.

C S 575. Artificial Intelligence II
3 Credits
Covers advanced theory and application of artificial intelligence. Concentration on several specific research areas, such as knowledge representation, problem solving, common-sense reasoning, natural language understanding, automated tutoring systems, learning systems. Students are expected to have knowledge of artificial intelligence equivalent to C S 475.

C S 579. Special Topics
1-6 Credits
Topic announced in the Schedule of Classes.

C S 581. Advanced Software Engineering
3 Credits
Advanced tools and methods for developing large software systems. Topics include object-oriented modeling and design, component architectures, templates and generic programming, software configuration and revision control, static and dynamic analysis tools, model checking, advanced testing, and verification. Students are expected to have knowledge of software engineering equivalent to C S 371.

C S 582. Database Management Systems II
3 Credits
Advanced data models and abstractions, dependencies, implementations, languages, database machines, and other advanced topics. Students are expected to have knowledge of database management systems equivalent to C S 482.

C S 584. Computer Networks II
3 Credits
Advanced topics in computer networks. Covers advanced topics in networking, with emphasis on wireless, and IP networks. Students are expected to have knowledge of computer networks equivalent to C S 484, and of statistics equivalent to STAT 371 or STAT 470.

C S 586. Algorithms in Systems Biology
3 Credits
The course will introduce important algorithms and computational models used in systems biology to study molecular mechanisms for cellular dynamics, processes, and systems. Cellular processes, such as metabolism and signal transduction, are studied as systems and networks quantitatively from high throughput molecular measurements. The topics include molecular biological systems, network alignment, model simulation, network inference, model optimization, and hybrid models. Students will be able to construct models and analyze their properties in the context of molecular biological systems. Students are expected to have knowledge of algorithms and data structures equivalent to C S 372.

C S 589. Special Research Problems
1-6 Credits
Faculty-supervised investigation, to culminate in a written report. May be repeated; maximum of 6 credits may be applied toward M.S. degree. Restricted to majors.
Prerequisite: written agreement with faculty supervisor.

C S 598. Master's Project
1-6 Credits
Project-oriented capstone course to be completed by M.S. students under supervision of their advisor. Maximum of 6 credits may be applied toward M.S. degree. Restricted to C S majors.
Prerequisite: written agreement with instructor.

C S 599. Master's Thesis
1-6 Credits (1-6)
Thesis to be developed by M.S. Students under supervision of their advisor. May be repeated for a maximum of 6 credits. Restricted to majors.
Prerequisite: consent of instructor.

Bioinformatics - Master of Science
The degree requirements include 30 graduate credit hours. The requirements are structured as follows:

**Introductory Courses**
Select Computational or Life Sciences Track  

**Computational Track**
- C S 462 Object Oriented Programming Transition
- C S 468 Software Development Transition
- C S 469 Data Structure and Algorithms Transition

**Life Sciences Track**
- C S 508 Introduction to Data Mining
- C S 570 Analysis of Algorithms
- C S 581 Advanced Software Engineering

**Core Courses**
- C S 509 Bioinformatics Programming 3
- C S 586 Algorithms in Systems Biology 3

Select one from the following:
- C S 516 Bioinformatics
- GENE 452 Applied Bioinformatics
- BIOL 566 Advanced Bioinformatics and NCBI Database

**Elective Courses**
Select 6 credits from the following:
- A ST 505 Statistical Inference I
- A ST 506 Statistical Inference II
- AGRO 506 Plant Genetics
- BCHE 542 Biochemistry I
- BCHE 546 Biochemistry II
- BCHE 649 Topics in Biochemistry
- BIOL 474 Immunology
- BIOL 475 Virology
- BIOL 478 Molecular Biology of Microorganisms
- BIOL 490 Neurobiology
- BIOL 520 Molecular Cell Biology
- BIOL 566 Advanced Bioinformatics and NCBI Database
- C S 502 Database Management Systems I
- C S 505 Artificial Intelligence I
- C S 508 Introduction to Data Mining
- C S 516 Bioinformatics
- C S 521 Parallel Programming
- C S 570 Analysis of Algorithms
- C S 572 Advanced Algorithms
- C S 575 Artificial Intelligence II
- C S 581 Advanced Software Engineering
- C S 582 Database Management Systems II
- GENE 452 Applied Bioinformatics
- GENE 486 Genes and Genomes
- GENE 488 Gene Regulation
- HORT 506 Plant Genetics
- MOLB 542 Biochemistry I
- MOLB 546 Biochemistry II
- MOLB 550 Topics in Molecular Biology

**Bioinformatics - Undergraduate Minor**

**Required Courses**
- BIOL 211G Cellular and Organismal Biology 3
- BIOL 211GL Cellular and Organismal Biology Laboratory 1
- C S 172 Computer Science I 4
- C S 272 Introduction to Data Structures 4
- C S 371 Software Development 4
- C S 486 Bioinformatics 3
- C S 489 Bioinformatics Programming 3

Select one from the following:
- C S 482 Database Management Systems I
- C S 491 Parallel Programming
- BIOL 305 Principles of Genetics
- CHEM 433 Physical Chemistry I
- MATH 331 Introduction to Modern Algebra
- PHYS 315 Modern Physics

**Computer Science - Bachelor of Arts**

The Bachelor of Arts in Computer Science is an open, flexible degree plan that offers the student both a rigorous undergraduate degree program in Computer Science and an extensive open credit hour allotment to pursue knowledge in other domains. It is an excellent choice to combine into a double major program, and is an option for the student who has an interest in learning both domain knowledge in some areas outside of Computer Science, and in acquiring a Computer Science background sufficient to pursue a strong technology career.
Students planning to undertake graduate work in Computer Science are encouraged to pursue the Bachelor of Science degree rather than the Bachelor of Arts degree. Students interested in graduate work should consult with their advisor regarding the possibility of taking other computer science electives to satisfy their departmental requirements.

**General Requirements Exception**

A grade of at least C- must be earned in each of the courses taken to satisfy the departmental and non-departmental requirements. No course may be counted as satisfying both a departmental and a non-departmental requirement. No course taken to satisfy either a departmental or a non-departmental requirement may be taken S/U.

**Requirements**

**General Education Requirements**

- **Viewing a Wider World**
  - 6 credits

**Departmental Requirements**

- CS 172: Computer Science I
- CS 271: Object Oriented Programming
- CS 272: Introduction to Data Structures
- CS 273: Machine Programming and Organization
- CS 278: Discrete Mathematics for Computer Science
- CS 370: Compilers and Automata Theory
- CS 371: Software Development
- CS 419: Computing Ethics and Social Implications of Computing
- CS 448: Senior Project
  or CS 449: Senior Thesis
- CS 482: Database Management Systems I

**Computer Science Electives**

**List 1:**

Select 6-7 credits from the following:

- CS 372: Data Structures and Algorithms
- CS 471: Programming Language Structure I
- CS 473: Architectural Concepts I
- CS 474: Operating Systems I
- CS 475: Artificial Intelligence I
- CS 476: Computer Graphics I
- CS 477: Digital Game Design
- CS 478: Computer Security
- CS 479: Special Topics
- CS 480: Linux System Administration
- CS 481: Visual Programming
- CS 483: Introduction to Robotics
- CS 484: Computer Networks I
- CS 485: User Interface Design
- CS 486: Bioinformatics
- CS 488: Introduction to Data Mining
- CS 491: Parallel Programming
- CS 494: Introduction to Smart Grids

**List 2:**

Select 6 credits from the following:

- CS 475: Artificial Intelligence I
- CS 476: Computer Graphics I
- CS 477: Digital Game Design
- CS 478: Computer Security
- CS 479: Special Topics
- CS 480: Linux System Administration
- CS 481: Visual Programming
- CS 483: Introduction to Robotics
- CS 484: Computer Networks I
- CS 485: User Interface Design
- CS 486: Bioinformatics
- CS 488: Introduction to Data Mining
- CS 491: Parallel Programming
- CS 494: Introduction to Smart Grids

**Non-departmental Requirements**

Select two upper-division courses in any one department except Computer Science

Select upper division electives to bring total upper division to 48

Select electives as needed to meet minimum credit requirements

Select one from the following:

- COMM 253G: Public Speaking
- COMM 255G: Principles of Human Communication
- HON 265G: Principles of Human Communication Honors

Select one from the following:

- ENGL 218G: Technical and Scientific Communication
- ENGL 311G: Advanced Composition
- ENGL 318G: Advanced Technical and Professional Communication

Select 3-4 credits from the following:

- MATH 142G: Calculus for the Biological and Management Sciences
- MATH 235: Calculus for the Technical Student I
- MATH 191G: Calculus and Analytic Geometry I

Select one from the following:

- STAT 251G: Statistics for Business and the Behavioral Sciences
- STAT 271G: Statistics for Psychological Sciences
- STAT 371: Statistics for Engineers and Scientists I
- STAT 470: Probability: Theory and Applications
- A ST 251G: Statistics for Business and the Behavioral Sciences

**Electives (to bring total to 120)**

Total Credits: 120-124

1 A course can satisfy only one requirement.
2 Must be taken for 3 credits to count as one course.

**A Suggested Plan of Study For Students**

**Course** | **Title** | **Credits**
---|---|---
Freshman | Computer Science Principles | 4
CS 111 | Rhetoric and Composition | 4
**Computer Science - Bachelor of Science**

The Bachelor of Science in Computer Science is the traditional undergraduate degree in Computer Science. It is rigorously focused on educating the student in the fundamental disciplines of Computer Science. It prepares the student for any technological field in industry, and also provides the preparation for graduate studies in Computer Science. It is the main undergraduate degree in the Computer Science department, and should be the choice of a single-major Computer Science student. This degree is accredited by the ABET Computing Accreditation Commission (CAC) under the General and Computer Science Program Criteria (through 9/30/2022).

### General Requirements Exception

A grade of at least C- must be earned in each of the courses taken to satisfy the departmental and non-departmental requirements. No course may be counted as satisfying both a departmental and a non-departmental requirement. No course taken to satisfy either a departmental or a non-departmental requirement may be taken S/U.

### Requirements

#### Departmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C S 172</td>
<td>Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>C S 271</td>
<td>Object Oriented Programming</td>
<td>4</td>
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<tr>
<td>C S 272</td>
<td>Introduction to Data Structures</td>
<td>4</td>
</tr>
<tr>
<td>C S 273</td>
<td>Machine Programming and Organization</td>
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<tr>
<td>C S 278</td>
<td>Discrete Mathematics for Computer Science</td>
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<td>C S elective, List 1</td>
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<tr>
<td>C S elective, List 1</td>
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<tr>
<td>Upper division from another department</td>
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<td>3-4</td>
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<tr>
<td>Viewing a Wider World</td>
<td></td>
<td>3</td>
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<tr>
<td>Area IV &amp; Area V</td>
<td></td>
<td>3</td>
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<tr>
<td>Select one from the following:</td>
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<tr>
<td>STAT 251G</td>
<td>Statistics for Business and the Behavioral Sciences</td>
<td></td>
</tr>
<tr>
<td>STAT 271G</td>
<td>Statistics for Psychological Sciences</td>
<td></td>
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<tr>
<td>STAT 371</td>
<td>Statistics for Engineers and Scientists I</td>
<td></td>
</tr>
<tr>
<td>STAT 470</td>
<td>Probability: Theory and Applications</td>
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</tr>
<tr>
<td>A ST 251G</td>
<td>Statistics for Business and the Behavioral Sciences</td>
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<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
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<tr>
<td>Credits</td>
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<td>30-31</td>
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</table>

#### Senior

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>C S 482</td>
<td>Database Management Systems I</td>
<td>3</td>
</tr>
<tr>
<td>C S electives, List 2</td>
<td></td>
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<tr>
<td>Upper division from another department</td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>Viewing a Wider World</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Area V: Humanities and Fine Arts</td>
<td></td>
<td>3</td>
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</table>

For electives see lists above.
### Computer Science - Bachelor of Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>C S 480</td>
<td>Linux System Administration</td>
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<tr>
<td>C S 481</td>
<td>Visual Programming</td>
<td>3</td>
</tr>
<tr>
<td>C S 482</td>
<td>Database Management Systems I</td>
<td>3</td>
</tr>
<tr>
<td>C S 483</td>
<td>Introduction to Robotics</td>
<td>3</td>
</tr>
<tr>
<td>C S 484</td>
<td>Computer Networks I</td>
<td>3</td>
</tr>
<tr>
<td>C S 485</td>
<td>User Interface Design</td>
<td>3</td>
</tr>
<tr>
<td>C S 486</td>
<td>Bioinformatics</td>
<td>3</td>
</tr>
<tr>
<td>C S 488</td>
<td>Introduction to Data Mining</td>
<td>3</td>
</tr>
<tr>
<td>C S 491</td>
<td>Parallel Programming</td>
<td>3</td>
</tr>
<tr>
<td>C S 494</td>
<td>Introduction to Smart Grids</td>
<td>3</td>
</tr>
</tbody>
</table>

### Non-departmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 280</td>
<td>Introduction to Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 480</td>
<td>Matrix Theory and Applied Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
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Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>COMM 253G</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>COMM 265G</td>
<td>Principles of Human Communication</td>
<td>3</td>
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<td>HON 265G</td>
<td>Principles of Human Communication</td>
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Select one from the following:

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</thead>
<tbody>
<tr>
<td>ENGL 218G</td>
<td>Technical and Scientific Communication</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 311G</td>
<td>Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
<td>3</td>
</tr>
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</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>MATH 331</td>
<td>Introduction to Modern Algebra</td>
<td>3</td>
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<tr>
<td>MATH 332</td>
<td>Introduction to Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MATH 377</td>
<td>Introduction to Numerical Methods</td>
<td>3</td>
</tr>
<tr>
<td>MATH 392</td>
<td>Introduction to Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 430</td>
<td>Combinatorial Mathematics</td>
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<td>MATH 454</td>
<td>Mathematical Logic</td>
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<tr>
<td>MATH 455</td>
<td>Elementary Number Theory</td>
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Select one from the following:

<table>
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<tr>
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<tbody>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
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</tr>
<tr>
<td>STAT 371</td>
<td>Statistics for Engineers and Scientists I</td>
<td>3</td>
</tr>
<tr>
<td>STAT 470</td>
<td>Probability: Theory and Applications</td>
<td>3</td>
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</table>

### Lab Science Courses

**List 1:**

Select two from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ASTR 110G</td>
<td>Introduction to Astronomy</td>
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<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
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<tr>
<td>&amp; 111GL</td>
<td>Natural History of Life Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 111G</td>
<td>Geography of the Natural Environment</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 111G</td>
<td>Introductory to Geology</td>
<td>3</td>
</tr>
<tr>
<td>HON 205G</td>
<td>Life, Energy, and Evolution</td>
<td>3</td>
</tr>
<tr>
<td>HON 219G</td>
<td>Earth, Time, and Life</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 211GL</td>
<td>General Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 212G</td>
<td>General Physics II</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 212GL</td>
<td>General Physics II Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 215G</td>
<td>Engineering Physics I</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 215GL</td>
<td>Engineering Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 216G</td>
<td>Engineering Physics II</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 216GL</td>
<td>Engineering Physics II Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

### List 2:

Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 111GL</td>
<td>Natural History of Life Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>HON 205G</td>
<td>Life, Energy, and Evolution</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 211GL</td>
<td>General Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 212G</td>
<td>General Physics II</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 212GL</td>
<td>General Physics II Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 213</td>
<td>Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 213L</td>
<td>Experimental Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 214</td>
<td>Electricity and Magnetism</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 214L</td>
<td>Electricity and Magnetism Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 215G</td>
<td>Engineering Physics I</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 215GL</td>
<td>Engineering Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 216G</td>
<td>Engineering Physics II</td>
<td>3</td>
</tr>
<tr>
<td>&amp; 216GL</td>
<td>Engineering Physics II Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

### Total Credits

87

1. A course can satisfy only one requirement.
2. Must be taken for 3 credits to count as a course.

### A Suggested Plan of Study for Students

The following plan applies to students who qualify to take MATH 191G Calculus and Analytic Geometry I.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C S 172</td>
<td>Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>C S 271</td>
<td>Object Oriented Programming</td>
<td>4</td>
</tr>
<tr>
<td>C S 273</td>
<td>Machine Programming and Organization</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
</tbody>
</table>

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Area IV: Social/ Behavioral Sciences

<table>
<thead>
<tr>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

Area V: Humanities and Fine Arts

<table>
<thead>
<tr>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

### Credits

30
5 Year Dual Degree BS+MS Program

The dual degree program combines some of the requirements of the Bachelor of Science (BS) and the Master of Science (MS) in Computer Science. It is very important for the student to apply to the BS+MS program before they take any 400-level C S courses. Full details of the program can be found at http://www.cs.nmsu.edu.

Admission occurs in two steps.

1. First, students will apply to the Computer Science department to receive approval for the BS+MS program. The student submits the pre-application when he/she is within 48 credits of earning a BS in Computer Science; an application form is provided on the department website. Qualification for the BS+MS program will be based on the cumulative (non-grade replaced) grade point average in Computer Science and Math courses taken up to that point (at least 3.5), including at least two of the following: C S 370 Compilers and Automata Theory, C S 371 Software Development and C S 372 Data Structures and Algorithms, and recommendations by faculty members listed on the departmental application. Additional factors might be taken into account when available (e.g., GRE scores). Students having a grade point average below 3.5 may be admitted to the combined program on a case-by-case basis, depending on faculty recommendations and evaluations of the individual academic and professional history.

2. Once the Computer Science department has notified the applicant of acceptance in the combined BS+MS program, the applicant must then formally apply to the graduate school (prospective.nmsu.edu/graduate) for formal admission to the graduate program. This application to the graduate school is made during the semester of graduation from the BS in Computer Science.

The curriculum for the first three years of the BS+MS program coincides with the requirements of the BS program. In particular, the general requirements include a grade of at least a C- in each course satisfying the departmental and non-departmental requirements. No course may be counted as satisfying both a departmental and non-departmental requirement. No course taken to satisfy either a departmental or non-departmental requirement may be taken S/U. The following are the departmental requirements for the degree (the non-departmental requirements are identical to those of the BS in Computer Science).

### Departmental Requirements for Years 1 through 4

- **C S 172** Computer Science I 4
- **C S 271** Object Oriented Programming 4
- **C S 272** Introduction to Data Structures 4
- **C S 273** Machine Programming and Organization 4
- **C S 278** Discrete Mathematics for Computer Science 4
- **C S 370** Compilers and Automata Theory 4
- **C S 371** Software Development 4
- **C S 372** Data Structures and Algorithms 4
- **C S 419** Computing Ethics and Social Implications of Computing 1
- **C S 449** Senior Thesis 4
- or **C S 448** Senior Project
- **C S 471** Programming Language Structure I 3
- **C S 473** Architectural Concepts I 3

### Credits 112

Students planning to undertake graduate work in computer science are encouraged to consult with their advisor regarding the possibility of taking other computer science electives to satisfy their departmental requirements.

---

### Computer Science - Bachelor of Science/Master of Science

**Area IV: Social/Behavioral Sciences** 3

**Area V: Humanities and Fine Arts** 3

Select one from the following:

- A ST 311 Statistical Applications 3
- STAT 371 Statistics for Engineers and Scientists I
- STAT 470 Probability: Theory and Applications

**Credits 34**

#### Junior

- **C S 371** Software Development 4
- **C S 471** Programming Language Structure I 3
- **C S 473** Architectural Concepts I 3
- **Computer Science 400-level Elective** 3
- **MATH elective (upper division)** 4
- **Lab Science Elective** 4
- **Lab Science Elective** 4
- **Area IV & Area V** 3
- **Viewing a Wider World** 3
- **Viewing a Wider World** 3

**Credits 33**

#### Senior

- **C S 448** Senior Project 4
- **C S 419** Computing Ethics and Social Implications of Computing 1
- **C S 474** Operating Systems I 3
- **Lab Science Elective** 4
- **Computer Science 400-level Elective** 4
- **Upper division electives to bring total upper division to 48** 4
- **Electives as needed to meet minimum credit requirements** 4

**Credits 15**

**Total Credits 112**

---

3. **AREA IV: Social/Behavioral Sciences** and **AREA V: Humanities and Fine Arts**: New Mexico State Common Core Requirements (http://nmsu-preview.courseleaf.com/nmsu/arts-sciences/computer-science/computer-science-bachelor-science)

4. For electives see lists above.
Computer Science - Doctor of Philosophy

Doctoral students may specialize in any of the areas in which computer science faculty members have active research interests. Through interdisciplinary arrangements with other doctoral departments at New Mexico State University, doctoral students may also specialize in such areas as computational biology, computer networks and architectures and cognitive science.

Doctoral students are expected to join the program with a preparation equivalent to that required for the Master’s degree in computer science at New Mexico State University. The requirements for the degree are as specified in the NMSU graduate catalog, with the following additional considerations:

- The qualifying examination consists of written exams in five subject areas: four of these are required areas, while the fifth is an elective area. The student will take four exams in the following required subjects:
  - Operating Systems or Computer Architectures;
  - Principles of Programming Languages;
  - Design and Analysis of Algorithms and Data Structures; and
  - Discrete Mathematics.
- The topics of each exam are listed on the departmental website.
- The student is required to enroll in an elective course offered in the first semester of his/her enrollment at NMSU, which identifies the fifth subject for the qualifying examination. The faculty in charge of the class will determine the exam topics of the elective subject.
- The student is required to take the qualifying examination at the end of the first semester of enrollment as a doctoral student at NMSU; the only exceptions will be granted to students entering the doctoral program with significant undergraduate deficiencies—in such case the deadline for the qualifying examination will be indicated in the admission records. It is the responsibility of the student to ensure that the qualifying examination is taken within the prescribed deadline. Students failing to meet the deadline will be automatically withdrawn from the doctoral program. If a student fails any of the exams, they must retake those exams in the following semester. If a student fails to pass all exams after the second attempt, they will be dismissed from the doctoral program.
- The comprehensive examination evaluates depth of knowledge in the specific research area selected by the candidate with the consent of their graduate committee. It includes: a written part, in the form of an extensive survey paper; an annotated bibliography; and an oral examination.
- The student is required to submit and defend a prospectus, at the same time or after completing the comprehensive examination. The prospectus describes and motivates the specific research problem to be addressed in the doctoral dissertation.
- A PhD student is required to take at least one course each in the following three areas (foundations, systems, or applications)

Graduation Requirements

**Foundations**

Select at least one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 510</td>
<td>Automata, Languages, Computability</td>
<td>3</td>
</tr>
<tr>
<td>CS 560</td>
<td>Graph Theory</td>
<td></td>
</tr>
<tr>
<td>CS 570</td>
<td>Analysis of Algorithms</td>
<td></td>
</tr>
<tr>
<td>CS 571</td>
<td>Programming Language Structure II</td>
<td></td>
</tr>
<tr>
<td>CS 586</td>
<td>Algorithms in Systems Biology</td>
<td></td>
</tr>
</tbody>
</table>

**Systems**

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 474</td>
<td>Operating Systems I</td>
<td>3</td>
</tr>
<tr>
<td>CS 502</td>
<td>Database Management Systems I</td>
<td></td>
</tr>
<tr>
<td>CS 503</td>
<td>Introduction to Robotics</td>
<td></td>
</tr>
<tr>
<td>CS 504</td>
<td>Computer Networks I</td>
<td></td>
</tr>
<tr>
<td>CS 505</td>
<td>Artificial Intelligence I</td>
<td></td>
</tr>
<tr>
<td>CS 506</td>
<td>Computer Graphics I</td>
<td></td>
</tr>
<tr>
<td>CS 508</td>
<td>Introduction to Data Mining</td>
<td></td>
</tr>
<tr>
<td>CS 511</td>
<td>Logic and Constraint Logic Programming</td>
<td></td>
</tr>
<tr>
<td>CS 512</td>
<td>Computer Systems Modeling and Simulation</td>
<td></td>
</tr>
<tr>
<td>CS 513</td>
<td>Computer Security</td>
<td></td>
</tr>
<tr>
<td>CS 515</td>
<td>User Interface Design</td>
<td></td>
</tr>
<tr>
<td>CS 516</td>
<td>Bioinformatics</td>
<td></td>
</tr>
<tr>
<td>CS 517</td>
<td>Digital Game Design</td>
<td></td>
</tr>
<tr>
<td>CS 518</td>
<td>Visual Programming</td>
<td></td>
</tr>
<tr>
<td>CS 521</td>
<td>Parallel Programming</td>
<td></td>
</tr>
<tr>
<td>CS 530</td>
<td>Automata, Languages, Computability</td>
<td></td>
</tr>
<tr>
<td>CS 560</td>
<td>Graph Theory</td>
<td></td>
</tr>
<tr>
<td>CS 570</td>
<td>Analysis of Algorithms</td>
<td></td>
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<td>CS 571</td>
<td>Programming Language Structure II</td>
<td></td>
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<tr>
<td>CS 572</td>
<td>Advanced Algorithms</td>
<td></td>
</tr>
<tr>
<td>CS 586</td>
<td>Algorithms in Systems Biology</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits** 76

1 In order to fulfill the degree requirement, the student must complete a total of 6 credits for either course.
Select at least one from the following: 3
- C S 573 Architectural Concepts II
- C S 574 Operating Systems II
- C S 584 Computer Networks II

Applications
Select at least one from the following: 3
- C S 515 User Interface Design
- C S 516 Bioinformatics
- C S 575 Artificial Intelligence II
- C S 581 Advanced Software Engineering
- C S 582 Database Management Systems II

Other
Other graduate credit to meet NMSU requirements 21
- C S 700 Doctoral Dissertation 18

Total Credits 48

Only courses from the MS CS program from NMSU can be used to waive this requirement.

Students should contact the department for information on additional graduation requirements, or visit the on-line Graduate Handbook (http://www.cs.nmsu.edu/).

Computer Science - Graduate Minor

Students who wish to take a minor in Computer Science will need to accumulate a minimum of 9 graduate credits in Computer Science courses. Students are encouraged to contact the Computer Science Graduate Committee Chair for directions in the selection of courses.

Computer Science - Master of Science

Each master’s student normally must write a thesis (C S 599 Master’s Thesis) or, with the advisor’s permission, undertake a research project (C S 598 Master’s Project). In either case, the number of required graduate credits is 33, including 6 for the thesis or project. In all cases, the students are required to sustain a final exam, covering the thesis/research project and the graduate course-work. The two parts of the exam bring equal weight.

In no case may a C S course numbered below 500 be counted towards the required number of credits. In particular, graduate students are expected to register for C S classes numbered 500 or above.

Degree Requirements
- C S 510 Automata, Languages, Computability 3
- C S 570 Analysis of Algorithms 3
- Select one from the following: 3
  - C S 573 Architectural Concepts II
  - C S 574 Operating Systems II
  - C S 584 Computer Networks II
- Select one from the following: 3
  - C S 571 Programming Language Structure II
  - C S 575 Artificial Intelligence II
  - C S 581 Advanced Software Engineering
  - C S 582 Database Management Systems II

Select one from the following: 3
- C S 571 Programming Language Structure II
- C S 572 Advanced Algorithms
- C S 573 Architectural Concepts II
- C S 574 Operating Systems II
- C S 575 Artificial Intelligence II
- C S 581 Advanced Software Engineering
- C S 582 Database Management Systems II
- C S 584 Computer Networks II
- C S 586 Algorithms in Systems Biology

Select one Computer Science course numbered above 550 and different from the following: 3
- C S 598 Master’s Project
- C S 599 Master’s Thesis
- C S 600 Pre-dissertation Research
- C S 700 Doctoral Dissertation
- C S courses above 500 or other pre-approved graduate courses 9

Thesis / Non-Thesis
- C S 599 Master’s Thesis 6
- or C S 598 Master’s Project

Total Credits 33

1 Each master’s student normally must write a thesis (C S 599 Master’s Thesis) or, with the advisor’s permission, undertake a research project (C S 598 Master’s Project). In either case, the number of required graduate credits is 33, including 6 for the thesis or project.

Courses not in Computer Science can be included in the student’s program of study only if prior written approval has been obtained from the student’s advisor and the departmental Graduate Committee. Further details can be found in the on-line Graduate Handbook (http://www.cs.nmsu.edu/).

Course-work Only - Master of Science Degree

With the advisor’s consent, the student may instead complete a coursework-only Master degree; this requires 36 credits of regular course work, satisfying the same requirements listed above, except that the 6 credits of thesis or project are replaced by 9 credits of courses numbered 550 or above and distinct from C S 589 Special Research Problems, C S 598 Master’s Project, and C S 599 Master’s Thesis. Students pursuing a coursework-only degree are expected to complete an oral exam covering a selected subset of the students’ plan of study. Further details can be found in the on-line Graduate Handbook (http://www.cs.nmsu.edu/).

Degree Requirements
- C S 510 Automata, Languages, Computability 3
- C S 570 Analysis of Algorithms 3
- Select one from the following: 3
  - C S 573 Architectural Concepts II
  - C S 574 Operating Systems II
  - C S 584 Computer Networks II
- Select one from the following: 3
  - C S 571 Programming Language Structure II
  - C S 575 Artificial Intelligence II
  - C S 581 Advanced Software Engineering
  - C S 582 Database Management Systems II

Select one from the following: 3
- C S 571 Programming Language Structure II
Select one from the following: 3

- CS 571 Programming Language Structure II
- CS 572 Advanced Algorithms
- CS 573 Architectural Concepts II
- CS 574 Operating Systems II
- CS 575 Artificial Intelligence II
- CS 581 Advanced Software Engineering
- CS 582 Database Management Systems II
- CS 584 Computer Networks II
- CS 586 Algorithms in Systems Biology

Select one Computer Science course numbered above 550 and different from the following: 3

- CS 598 Master's Project
- CS 599 Master's Thesis
- CS 600 Pre-dissertation Research
- CS 700 Doctoral Dissertation

Select 6-7 credits from the following: 6-7

- CS 370 Compilers and Automata Theory
- CS 471 Programming Language Structure I
- CS 472 Operating Systems I
- CS 473 Architectural Concepts I
- CS 474 Operating Systems I
- CS 475 Artificial Intelligence I
- CS 476 Computer Graphics I
- CS 482 Database Management Systems I
- CS 484 Computer Networks I
- CS 485 User Interface Design
- CS 491 Parallel Programming

Total Credits: 36

Creative Media

Undergraduate Program Information

New Mexico State University’s Creative Media Institute (CMI) prepares students to become digital storytellers using state of the art, industry-standard tools. The Creative Media Institute is dedicated to developing and nurturing the artistic endeavors of student filmmakers through industry-standard education, research and collaboration in the art, craft and production of the moving image through storytelling, resulting in a Bachelor of Creative Media degree. The program provides learning opportunities for newly admitted NMSU students, and provides some credit transfer opportunities for students with an associate degree from a NMSU community college or other two-year degree granting institution. The Bachelor of Creative Media provides a liberal arts background enabling students to pursue further education, professional training or employment in the digital media-based industry. Study in the CMI program fosters collaborative expression based on a clear understanding of media culture, history, design and practice. CMI also offers students the opportunity for internships in digital video, animation, visualization and simulation, industrial and educational video at varied production facilities on and off campus.

Theory and practice are integrated at every step as students manipulate text, sound and images using industry-standard technology. CMI houses a state of the art digital projection system screening room, post-production lab, animation lab, production space, motion capture laboratory and THX sound mixing theatre.

Due to limited capacity, new students wishing to continue in the CMI program after their freshman year are required to complete an application process. Transfer students from other institutions, including NMSU Community Colleges, must complete the application process. Transfer students should contact an Academic Advisor from the College of Arts and Sciences Advising Office for information about joining one of the two degree programs offered in CMI. Space is limited and varies each year. The quality of the student's work as demonstrated in the application and prior course work are additional criteria of the admission decision. Exact details and procedures for applying to the CMI program can be found on the CMI website at: cmi.nmsu.edu (http://cmi.nmsu.edu).

Degrees for the Department

Animation and Visual Effects - Bachelor of Creative Media (p. 261)
Minors for the Department
Animation and Visual Effects - Undergraduate Minor (p. 262)

Digital Film Making - Bachelor of Creative Media (p. 262)

Restricted to Las Cruces campus only.

Prerequisite(s)/Corequisite(s):
readings, screenings, lecture and periodic guest speakers. May be to 3 credits. Crosslisted with: CMT 206.

Explores the history of Animation as an art form and industry through sounds through challenging sound design projects. May be repeated up to 3 credits. Crosslisted with: CMT 206.

CMI 231. History of Animation
3 Credits
Examines effective writing principles for creating storyboards that communicate the overall picture of a project. There are timing, scene complexity, emotion and resource requirements. Crosslisted with: CMT 232 and ENGL 232. Restricted to: DFM, ANVE majors. Restricted to Las Cruces campus only.

CMI 232. Storyboarding
3 Credits
This course will explore the theory and practice of 3D lighting and rendering methodologies. Techniques covered will implement cameras, lighting sources, textures, surface-mapping and algorithmic rendering to produce stylized and photo realistic images. Topics covered will include direct and indirect lighting, shaders that simulate physical substances and effects, rendering multiple passes and simulating physical lens effects. Restricted to: Main campus only. Restricted to DFM, ANVE majors.

Prerequisite(s): CMI 260, CMI 280, or Consent of Instructor.

CMI 235. Narrative: Principles of Story Across the Media
3 Credits
Examines the various strategies of written and visual storytelling: narrative structure and its principle components (plot, theme, character, imagery, symbolism, point of view), with an attempt to connect them to elements of contemporary forms of media expression, including screenwriting, playwriting, writing for documentaries and animation, etc. Crosslisted with: ENGL 235. Restricted to Las Cruces campus only.

CMI 240. Digital Illustration
3 Credits
Introductory course examining traditional artistic expressions and translating visual art experiences into a digital art medium to enhance visual storytelling. Students acquire basic principles of drawing and painting through hands-on experience manipulating tonal value, composition, form development, light and shadow, color theory, rendering realism, and graphic design. Restricted to: ANVE, DFM majors. Restricted to Las Cruces campus only.

CMI 245. 2-D COMPOSITING & FX
3 Credits (3+3P)
The purpose of this course is to familiarize students with the powerful compositing and special effects tools of Adobe After Effects for 2D, traditional animation. Students will learn how to assemble an existing un-rendered animation into a final piece with advanced 3D lighting, spacing, and digital effects so that it can achieve a dynamic, professionally rendered look. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

CMI 250. Beginning 2-D Animation
3 Credits
Learn the basics of digital 2D animation by creating an animated short from a storyboarded scene using professional animation, imaging, and editing software. May be repeated up to 3 credits. Restricted to: DFM,ANVE majors. Restricted to Las Cruces campus only.

Minors for the Department
Animation and Visual Effects - Undergraduate Minor (p. 262)

Digital Film Making - Bachelor of Creative Media (p. 262)

Restricted to Las Cruces campus only.

Prerequisite(s)/Corequisite(s):
readings, screenings, lecture and periodic guest speakers. May be to 3 credits. Crosslisted with: CMT 206.

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CMI 235. Narrative: Principles of Story Across the Media
3 Credits
Examines the various strategies of written and visual storytelling: narrative structure and its principle components (plot, theme, character, imagery, symbolism, point of view), with an attempt to connect them to elements of contemporary forms of media expression, including screenwriting, playwriting, writing for documentaries and animation, etc. Crosslisted with: ENGL 235. Restricted to Las Cruces campus only.

CMI 240. Digital Illustration
3 Credits
Introductory course examining traditional artistic expressions and translating visual art experiences into a digital art medium to enhance visual storytelling. Students acquire basic principles of drawing and painting through hands-on experience manipulating tonal value, composition, form development, light and shadow, color theory, rendering realism, and graphic design. Restricted to: ANVE, DFM majors. Restricted to Las Cruces campus only.

CMI 245. 2-D COMPOSITING & FX
3 Credits (3+3P)
The purpose of this course is to familiarize students with the powerful compositing and special effects tools of Adobe After Effects for 2D, traditional animation. Students will learn how to assemble an existing un-rendered animation into a final piece with advanced 3D lighting, spacing, and digital effects so that it can achieve a dynamic, professionally rendered look. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

CMI 250. Beginning 2-D Animation
3 Credits
Learn the basics of digital 2D animation by creating an animated short from a storyboarded scene using professional animation, imaging, and editing software. May be repeated up to 3 credits. Restricted to: DFM,ANVE majors. Restricted to Las Cruces campus only.
CMI 260. Foundations of 3D Animation  
3 Credits  
The objective of this course is to provide a hands-on overview of the 3D animation production process. Students will be introduced to basic story development and the creation of computer generated assets and cinematic sequences. The course will survey specialty areas of digital animation and various software and techniques applied in entertainment and information media. Restricted to: Main campus only. Restricted to ANVE, DFM majors.  
Prerequisite(s): CMI 235, CMI 232 or consent of instructor.

CMI 270. Rigging for 3D Animation  
3 Credits  
This course will introduce principles and practices of current 3D animation rigging. Students will develop fundamental methods necessary to create character rigs. Students will learn aesthetic, technical, and optimization concepts as they apply to organic and mechanical designs. Topics will include: hierarchies, constraints, deformation rigging, skeleton creation, skinning, forward and inverse kinematics, controls, body and facial rigging. Restricted to: ANVE, DFM majors.  
Prerequisite(s): CMI 260.

CMI 280. Modeling  
3 Credits  
This course will introduce 3D modeling methods and current practices. Students will learn preliminary and detailed modeling techniques using industry standard software. Methods will emphasize formal and functional aspects of modeling as they apply to mechanical, organic, and sculpted topology for application in animation, games, and information media. Restricted to: Main campus only. Restricted to ANVE, DFM majors.

CMI 290. 3-D Animation  
3 Credits  
Overview of the essentials and principles of 3D animation; creative methods for using industry standard tools to produce the illusion of movement for storytelling. Topics include, keyframe and curve animation, kinematics, cycle animation, camera animation, deformers, and constraints. Restricted to: Main campus only.  
Prerequisite(s): CMI 260, CMI 250 or consent of instructor.

CMI 300. History of Cinema  
3 Credits  
In-depth analysis of cinema's history looking at each aspect of film from inception to current development. It focuses on the historical aspects of sound production, cinematography, technological advances, music scoring, foley, animation, and narrative development. Students will see examples of movies throughout the semester and will take part in discussions. May be repeated up to 6 credits. Restricted to Las Cruces campus only.

CMI 301. Sound Design II  
3 Credits  
Mixing and balancing dialogue, sound effects and music in postproduction. Study the role of sound effects, foley, soundtrack choices, and music supervision. Prerequisite: CMI 200

CMI 303. Cinema Review and Critique  
3 Credits  
This course is for the student who wants to learn to be a more active, intelligent film viewer. It encourages critical thinking about films and educates students on how to write a film review. Students will meet in the movie theater to watch essential films that serious movie watchers should see from classic motion pictures, to current release major motion pictures, independent films and world cinema features. The course will serve as a guide to the illuminating process of evaluating, analyzing, and reviewing movies. Students' reviews will be published publicly.

CMI 305. Business of Filmmaking/Animation  
3 Credits  
Explores the roles of unions, basic contracts, legal arrangements, and the economics of the production process, distribution, and financing.  
Prerequisite: CMI 235.

CMI 306. 3-D Animation Production  
3 Credits  
This class explores methods for, and approaches to, writing for animation. Students study and produce scripts for a range of animation projects. Techniques for film and television acting. In-depth analysis of film performance creation among actor, director, writer, cinematographer, and editor. Restricted to DFM, ANVE majors.  
Prerequisite(s): CMI 235 or consent of instructor.

CMI 307. Animated Film Review  
3 Credits  
This course will enhance student literacy in analyzing and writing about animated films. Through screenings, readings, discussion and lectures, students will acquire conceptual tools for viewing and evaluating films. Through analysis, students will identify cinematic elements.

CMI 310. Cinematography II  
3 Credits  
Advanced tools of the cinematographer, lighting and composition techniques. Artistic and technological elements of cinematography.  
Prerequisite(s): CMI 205, CMT 205. Restricted to ANVE, DFM majors.

CMI 311. Editing II  
3 Credits  
Advanced techniques in digital films using professional non-linear editing systems. Restricted to: ANVE, DFM majors.  
Prerequisite(s): CMI 216.

CMI 313. Animated Film Review  
3 Credits  
This course will enhance student literacy in analyzing and writing about animated films. Through screenings, readings, discussion and lectures, students will acquire conceptual tools for viewing and evaluating films. Through analysis, students will identify cinematic elements.

CMI 314. Acting for Film  
3 Credits  
Techniques for film and television acting. In-depth analysis of film performance creation among actor, director, writer, cinematographer, and editor. Restricted to: DFM, THTR majors, or Consent of Instructor.  
Prerequisite(s): CMI 100, AND CMI 235.
CMI 315. Adventures in Genre
3 Credits
Students learn storytelling strategies for the screen by studying various structural genres and components of screenplays and films. Utilizing these strategies, students develop a number of their own original screenplay ideas. Additionally, pitch workshops are held and students learn to present their ideas in various, practical situations. Prerequisite(s): CMI 235. Restricted to DFM, ANVE majors.

CMI 316. Border Cinema Around the World
3 Credits
What is the relationship between borders, identity, and vulnerability - and how is this relationship explored in cinema? How are borderlands also testing grounds - the sites of serious ethical dilemmas? By examining powerful feature films from such regions as the Middle East, the Balkans, and the US/Mexico border, we will explore ways in which personal, familial, communal, and national identities are defined through the complex process of bordering. We will investigate the role of cinema in reflecting and/or facilitating this process. May be repeated up to 3 credits.

CMI 318. Documentary Production
3 Credits
Survey of theory and history of documentary film making including viewings and discussions of notable films and directors. Class works with actual documentary project. May be repeated up to 6 credits. Restricted to: ANVE, DFM majors. Prerequisite(s): CMI 216, CMI 205.

CMI 320. Race and Gender in Film
3 Credits
In this course students will analyze film as an art form as well as be exposed to Race and Gender Feminist Film Theory. We will consider the role of film in our understandings of sex, gender and sexuality. Through discussions and writing we will work to discern relevant social, political, ideological, and aesthetic concepts in the media we examine. Crosslisted with: ENGL 399, W S 450 and W S 550.

CMI 328. Producing
3 Credits
Examines the role of the Producer, essential to every film production. The course will revolve around the best practices in organizational design, the production process, the budgeting process, financial controls, scheduling, insurance and distribution. Prerequisite(s)/Corequisite(s): CMI 200, 216, 235. Restricted to: ANVE, DFM majors.

CMI 329. Studies in Drama
3 Credits
Students will draw on a group of related American and European dramatic works to examine various areas of 20th century culture. Topics vary. Restricted to DFM, ANVE, ENGL, THTR majors. Crosslisted with: ENGL 329 and THTR 329.

CMI 330. Developing the Animated Project
3 Credits
This course will cover fundamental theories and elements of the production and development processes for animated projects. Concept, story, and story and character development will be addressed as well as storyboarding, layout, sound, voice recording and基本 editing. Students will develop at least one animated project, and construct an animatic to be used for future production. Restricted to: ANVE, DFM majors.

CMI 332. 3-D Character Animation
3 Credits
Essentials and principles of 3D character animation. Techniques and craft of breathing life into characters through movement, including dynamic poses, blocking action, run and walk cycles, lip synching and realism. THTR 110, Acting and CMI 200, Sound Design are recommended. May be repeated up to 3 credits. Restricted to: DFM, ANVE majors. Prerequisite(s): THTR 105 (or CMI 314 or CMI 348), CMI 260 and CMI 290 or consent of instructor.

CMI 341. Visual Effects I
3 Credits
Fundamentals and principles of live action footage and computer generated imagery integration, including 3D animation, matchmoving, green screen setup, keying and compositing. Restricted to: ANVE, DFM majors. Prerequisite(s): CMI 205, CMI 260, 280 (or consent of instructor).

CMI 348. Acting and Directing for Voiceover
3 Credits
Students will explore methods for approaching voiceover and for improving acting and directing skills. Exercises will promote ease with collaboration in the studio setting, written work will focus on viewing voiceover in an analytical and discerning light. Restricted to ANVE, DFM majors.

CMI 350. Intermediate 2-D Animation
3 Credits
Learn the more refined aspects of motion for character animation by focusing on Disney's 12 Principles of Animation, practicing these advanced drawing techniques in exercises and incorporating them into a brief final short. Prerequisite(s): CMI 250.

CMI 360. Previsualization
3 Credits
Implements 3D animation tools in preproduction shot and sequence design for motion picture and broadcast industries; including 3D storyboarding, technical planning and editing basics. LC Campus Only. Prerequisite(s): CMI 260, CMI 280, and CMI 290 or consent of instructor. Restricted to ANVE, DFM majors.

CMI 362. Motion Graphics
3 Credits
Students will learn the basics of Motion Graphics by working through a variety of exercises and a final project that will combine animation, text, visual effects, and sound using Adobe After Effects, Photoshop, and Illustrator. Restricted to: ANVE, DFM majors.

CMI 365. Character Design and Development
3 Credits
Digital character design for the entertainment industry. Provides insight into the process of creating iconic characters. Traditional and contemporary character designers are explored. Industry workflow is introduced and necessary skills are developed to design detailed 3D characters from concept through production. Prerequisite(s): CMI 250, CMI 260 and CMI 280, or consent of instructor. Restricted to ANVE, DFM majors.

CMI 395. Directing I
3 Credits
Study and application through short scene work of the basic tools of a director and relationships with actors, designers, playwright, and stage managers. Interpreting as well as organizing. May be repeated up to 3 credits. Restricted to: DFM, ANVE majors. Prerequisite(s): CMI 200, 205, AND CMI 216.
CMI 396. Directing II 3 Credits
Addresses pre-production concerns including script breakdown, casting ground plans and coverage. The criteria employed when selecting the creative team including a director of photography, art director, light, sound and wardrobe designers. Introduction to budgeting, scheduling, and script breakdowns. Prerequisite: CMI 395

CMI 397. Practicum 1-3 Credits (2-6P)
Practical application of the student's field of study in a project environment. May be repeated up to 9 credits. Consent of Instructor required.

CMI 398. Special Topics 3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.

CMI 400. Directed Studies 1-6 Credits (1-6)
Directed study course in CMI under the supervision of a CMI faculty member. May be repeated up to 9 credits.

CMI 401. Motion Capture Techniques 3 Credits
Implement industry standard motion capture techniques to capture and integrate performance for movie making, 3D animation and game rig and accessories, managing data and the post-production workflow. May be repeated up to 6 credits. Restricted to: DFM, ANVE majors.

CMI 402. Short Film Production 3 Credits
Students work in teams with rotating crews to write, produce, direct and edit individual and group projects-ultimately demonstrating growing confidence with production equipment and professional practices. May be taken up to 6 credits. Consent of instructor required. Pre/Prerequisite(s): CMI 200, CMI 216, CMI 205, CMI 235, CMI 309 and CMI 395.
Corequisite(s): CMI 328. Restricted to ANVE, DFM majors.

CMI 410. Cinematography III 3 Credits
This class is geared towards those who want to learn more about cinematography, color grading, and digital technology as it pertains to cinematography. Shooting high-end codecs (ProRes/DNxHD) or RAW are becoming more and more popular in filmmaking as camera manufactures and computer processing get better. This class will be a mix of production and post-production as learning how to shoot these higher end codecs do not end with the camera. Focus will be on techniques of shooting raw, understanding how to operate a camera capable of high end image acquisition, properly building up the camera rig and accessories, managing data and the post-production workflow. Consent of Instructor required. Restricted to: DFM, ANVE majors.
Pre/requisite(s): CMI 310.

CMI 420. Short Film Post-Production 3 Credits
Students work together to complete short films shot in CMI 420. This course focuses on advanced post-production techniques, including editing and sound design, as student directors, editors and producers continue to learn to work together. In the last half of the course, students will build marketing campaigns and submit their finished film to festivals. May be repeated up to 6 credits. Restricted to: DFM, ANVE majors.
Pre/Requisite(s): CMI 420.

CMI 421. Short Film Post-Production 3 Credits
Students work together to complete short films shot in CMI 420. This course focuses on advanced post-production techniques, including editing and sound design, as student directors, editors and producers continue to learn to work together. In the last half of the course, students will build marketing campaigns and submit their finished film to festivals. May be repeated up to 6 credits. Restricted to: DFM, ANVE majors.
Pre/Requisite(s): CMI 420.

CMI 422. Short Film Post-Production 3 Credits
Students work together to complete short films shot in CMI 420. This course focuses on advanced post-production techniques, including editing and sound design, as student directors, editors and producers continue to learn to work together. In the last half of the course, students will build marketing campaigns and submit their finished film to festivals. May be repeated up to 6 credits. Restricted to: DFM, ANVE majors.
Pre/Requisite(s): CMI 420.

CMI 433. Sets and Environments 3 Credits
Digital environment design and creation for movies and games from concept to production; including illustration, modeling, matte painting, texturing, lighting, rendering, integration, and camera projection. May be repeated up to 3 credits. Restricted to: DFM,ANVE majors.
Pre/requisite(s): CMI 260, CMI 280, and CMI 233 or consent of instructor.

CMI 450. Advanced 2-D Animation 3 Credits
Advanced techniques in two dimensional animation including motion graphics and integration of live action. Restricted to: ANVE,DFM majors.
Pre/requisite(s): CMI 350.

CMI 451. 3D Production Studio I 3 Credits
Practical application of the student's field of study in a project environment. May be repeated up to 9 credits. Consent of Instructor required. Pre/Requisite: CMI 309 or CMI 308 or consent of instructor.

CMI 452. 3D Production Studio II 3 Credits
This is a full-scale animation production class where students will be divided into teams according to the animation skills they have demonstrated in the beginning, intermediate, and advanced classes. Each team member will specialize in one important facet of the production process: character animation, background painting, technical direction, coloring, or story development and storyboarding. 4 to 8 minute animated shorts will be produced. Restricted to: ANVE,DFM majors.
Pre/requisite(s): CMI 450, CMI 361.

CMI 460. 3D Model & Texturing 3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.

CMI 470. Short 2-D Animation Production 3 Credits
Students will write 2 short scripts, 10-15 pages each throughout the semester. Focus will be on learning how to take notes and rewrite. Script analysis will be in a workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. Crosslisted with: ENGL 480
Pre/requisite(s): ENGL 309 or CMI 309 or THTR 306 or consent of instructor. Restricted to: ENGL, DFM, ANVE majors.

CMI 471. Advanced 2-D Animation 3 Credits
Students prepare a 30-60 page screenplay. Script analysis will be in an advanced workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. This course is aimed at preparing writers for the professional market. Consent of instructor required. Restricted to: ENGL, DFM, ANVE majors. Crosslisted with: ENGL 491

CMI 480. Screenwriting II 3 Credits
Students will write 2 short scripts, 10-15 pages each throughout the semester. Focus will be on learning how to take notes and rewrite. Script analysis will be in an advanced workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. This course is aimed at preparing writers for the professional market. Consent of instructor required. Restricted to: ENGL, DFM, ANVE majors. Crosslisted with: ENGL 491

CMI 490. Advanced Screenwriting 3 Credits
Students will write 2 short scripts, 10-15 pages each throughout the semester. Focus will be on learning how to take notes and rewrite. Script analysis will be in an advanced workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. This course is aimed at preparing writers for the professional market. Consent of instructor required. Restricted to: ENGL, DFM, ANVE majors. Crosslisted with: ENGL 491

CMI 491. 3D Production Studio I 6 Credits
The course is the first semester of a year-long effort to complete a Senior Project. The project will be narrative-driven short form, 3D animation or visual effects movie. Emphasis will be on pre-production and some production depending on ongoing CMI productions. You will produce a professional quality product with the aim to assist you in gaining entry into professional employment or graduate school. The course may be adapted toward a specific concentration in animation, visual effects, or digital film making, for group and individual productions. Each project must be approved by the Instructor and work within departmental policies and procedures.
Pre/requisite(s): CMI 332, CMI 360, CMI 365, CMI 433. Restricted to: ANVE majors.

CMI 492. 3D Production Studio II 3 Credits
This is a full-scale animation production class where students will be divided into teams according to the animation skills they have demonstrated in the beginning, intermediate, and advanced classes. Each team member will specialize in one important facet of the production process: character animation, background painting, technical direction, coloring, or story development and storyboarding. 4 to 8 minute animated shorts will be produced. Restricted to: ANVE,DFM majors.
Pre/requisite(s): CMI 450, CMI 361.

CMI 493. 3D Production Studio III 3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.

CMI 494. 3D Production Studio IV 3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.

CMI 495. 3D Production Studio V 3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.

CMI 496. 3D Production Studio VI 3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.

CMI 497. 3D Production Studio VII 3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.

CMI 498. 3D Production Studio VIII 3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.

CMI 499. 3D Production Studio IX 3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.

CMI 500. 3D Production Studio X 3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.
CMI 492. 2D Production Studio I
6 Credits
In CMI 498, Pre-Production, students will write a script, create a storyboard, record voice over and/or dialogue and time these storyboards to this dialogue/voice over creating an Animatic. For those doing demo reels, students will start to compile exercises from all of all their prior classes. Additional exercises will then be assigned to augment the skill set of the student according to the needs of each student. Restricted to: ANVE majors.
Prerequisite(s): CMI 350, CMI 361.

CMI 493. 3D Production Studio II
6 Credits
The course is the final semester of a year-long concentration on your Senior Project. Emphasis will be on the production, post-production, and distribution of the work created in the first semester. You will produce a professional quality product that will help you gain entry into professional employment or graduate school. The overall objective is that you will demonstrate mastery of craft through synthesis of concept and technique, resulting in an original cinematic experience. Restricted to: ANVE majors.
Prerequisite(s): CMI 491.

CMI 494. 2D Production Studio II
6 Credits
Students will complete an entire animated short, trailer, or demo reel for their portfolios by the end of Senior Project II. In CMI 494, Production and Post-Production, students will animate their stories according to the layout set in the animatic from Senior Project I. Lastly, they will composite and edit their shorts into a final piece that will be viewable in time for the Senior Showcase. For demo reels, students will continue to hone their reel into a finished piece that can be presented at the Senior showcase. Restricted to: ANVE majors.
Prerequisite(s): CMI 492.

CMI 495. Internship
1-12 Credits (1-12)
Placement in a production facility and supervised experience required. With CMI advisor approval only. May be repeated up to 18 credits. Consent of Instructor required. Restricted to: DFM, ANVE majors.

CMI 496. Media Law/Ethics
3 Credits
Overview of legal & ethical issues in creative media elements of business and commercial law. This class will focus on the fundamentals of entertainment law by exploring the business and legal relationships within film industries, and animation. Learn to anticipate and avoid legal problems prior to production. Key issues in the area of copyright law, sources of financing, distribution agreements; insurance and union consideration will be discussed. Restricted to ANVE majors.

CMI 497. Portfolio Design and Development
3 Credits
Advanced graphic design projects with an emphasis on conceptual development, portfolio preparation, and professional practices. Refine general marketing strategies, personal portfolio, and resumes. Define, target, and penetrate personal target markets. Students develop individual promotional/demo packages. May be repeated up to 3 credits. Restricted to: DFM, ANVE majors.

CMI 498. Final Year Senior Project I: Production and Post Production
3-6 Credits (3-6)
Senior Project I is the first half of a year long concentration on a pre-approved creative project guided by a faculty member. Projects are narrative-driven and have an end product: screen-play, short film, documentary, 2-D or 3-D animated short, or pilot with treatment for television. Consent of instructor required. Restricted to: ANVE, DFM majors.
Prerequisite(s): CMI 498 and Consent of Instructor.

CMI 499. Final Year Senior Project II: Production and Post Production
3-6 Credits (3-6)
Senior Project II is the second half of a year long concentration on a pre-approved project, guided by a faculty member. Projects are narrative driven and have an end product: short film, documentary, 2-D or 3-D animated short, or pilot and treatment for television. May be repeated up to 9 credits. Restricted to: ANVE, DFM majors.
Prerequisite(s): CMI 498 and Consent of Instructor.

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Website: http://cmi.nmsu.edu/

Animation and Visual Effects - Bachelor of Creative Media

Students must complete all university requirements and the Animation and Visual Effects curriculum outlined below. All Animation and Visual Effects Curriculum requirements must be completed with a grade of C- or higher.

Requirements

General Education Requirements: 35
Viewing a Wider World: 6

Departmental Requirements

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<th>Course</th>
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<td>History of Animation</td>
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<td>CMI 235</td>
<td>Narrative: Principles of Story Across the Media</td>
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<td>or ENGL 235</td>
<td>Narrative: Principles of Story Across the Media</td>
<td>3</td>
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<tr>
<td>CMI 225</td>
<td>Storyboarding</td>
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<td>or ENGL 232</td>
<td>Script Development and Storyboarding</td>
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<td>CMI 233</td>
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<td>or CMI 309</td>
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<td>CMI 341</td>
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or CMI 303 Animation and Visual Effects - Undergraduate Minor
or CMI 313 Animated Film Review
CMI 401 Motion Capture Techniques
or CMI 348 Acting and Directing for Voiceover
or CMI 362 Motion Graphics
CMI 360 Previsualization
or CMI 330 Developing the Animated Project
CMI 332 3-D Character Animation
or CMI 450 Advanced 2-D Animation
CMI 365 Character Design and Development
or CMI 433 Sets and Environments
CMI 491 3D Production Studio I
or CMI 492 2D Production Studio I
CMI 493 3D Production Studio II
or CMI 494 2D Production Studio II
Electives (to bring total to 120)

Total Credits 120

1 Required Pre-Application class for ANVE

Animation and Visual Effects - Undergraduate Minor

Must be admitted to DFM

Take 18 credits of CMI/ENGL, CMI/THTR courses as listed in the Animation and Visual Effects major. A minimum of 9 credits must be upper division.

Digital Film Making - Bachelor of Creative Media

Students must complete all university requirements and the Digital Film Making curriculum outlined below. All Digital Film Making Curriculum requirements must be completed with a grade of C- or higher.

Requirements

General Education Courses 1

Viewing a Wider World Courses 2

Foundation Courses

CMI 100 Introduction to the Creative Media Industry 3
CMI 200 Sound Design 1
or CMT 206 Principles of Sound
CMI 205 Cinematography I
or CMT 205 Cinematography
CMI 216 Editing I 3
or CMT 195 Digital Video Editing I
CMI 235 Narrative: Principles of Story Across the Media (Required pre-application course for DFM)
or ENGL 235 Narrative: Principles of Story Across the Media
CMI 300 History of Cinema
CMI 303 Cinema Review and Critique
or ENGL 303 Theory and Criticism: Film, Media and Culture

Elective Courses

Select 27 credits from the following (21 credits must be 300 level and above): 4

CMI 314 Acting for Film
CMI 328 Producing
CMI 497 Portfolio Design and Development

Electives: to bring the total to 120 credits

Total Credits 120

1 For more information please see the General Education (p. 47) and Viewing a Wider World (p. 49) section of the catalog.
2 Required pre-application course for DFM
3 Course may be taken at an NMSU community college.
Digital Film Making - Undergraduate Minor

Must be admitted to ANVE

Take 18 credits from the CMI/ENGL, CMI/THTR courses as listed in the Digital Film Making major. A minimum of 9 credits must be upper division.

Criminal Justice

Undergraduate Program Information

The Department of Criminal Justice offers courses in the traditional setting as well as online. However, we do not offer a fully online Bachelor of Criminal Justice (BCJ). We offer an online Degree Completion Program. Students interested in completing the degree online need to complete at least the first two years on campus while working closely with an academic advisor.

The criminal justice degree plan is broadly interdisciplinary in nature embracing the study of the humanities, law, natural, behavioral and social sciences. The curriculum seeks to balance theoretical inquiry with applied knowledge.

Students become prepared for careers in law enforcement, corrections, probation and parole, work with juveniles, victim services, non- and not-for profit organizations connected with criminal and social justice, and the related field of forensics. Graduates have also been successful in law school and graduate programs in the social sciences. The undergraduate major consists of at least 33 credits in the major field, 27 of which must be numbered 300 or above (excluding C J 393 Internship in Criminal Justice).

The department offers an interdisciplinary minor in Forensic Sciences and has partnered with various other departments to offer an interdisciplinary minor in child advocacy studies. Students interested in the minor should consult with the department head.

Graduate Program Information

The Department of Criminal Justice offers graduate study leading to the Master of Criminal Justice (MCJ) degree. Admission to the MCJ is competitive and prospective graduate students are expected to have at least a 3.0 undergraduate grade-point-average, coursework in research methods and statistics, and possess a bachelor’s degree. Those not meeting these requirements may be admitted conditionally and required to make up deficiencies at the outset of their program of study. Applicants must submit three letters of recommendation and a 3-5 page essay introducing themselves and addressing the following topic: "What is the most important change needed in the criminal justice system?" This essay serves as a sample of written work to be evaluated by the MCJ Graduate Committee. The GRE is NOT required for admission into the MCJ program. The MCJ Graduate Committee may require a student to complete additional English writing coursework. For more information, please visit our website: http://crimjust.nmsu.edu/criminal-justice-graduat/.

Students must declare their intent to pursue one of the two degree options: the thesis option or the focused coursework option. The degree options are provided so that students may better match their education with career goals. The thesis option is often used by students interested in pursuing careers in basic and applied criminal justice research or a doctoral degree. The focused coursework option is often used by students pursuing administrative positions within criminal justice agencies. The thesis option is only available for Campus-Based students. Online students may only pursue the Focused Coursework Option.

All candidates, regardless of chosen degree option, must complete a final examination. Examination requirements vary by degree option. Please contact the director of the MCJ program or consult the Department of Criminal Justice web site http://crimjust.nmsu.edu/criminal-justice-graduat/ for details.

Thesis students must submit a thesis proposal to their faculty committee at a proposal hearing for approval and subsequently complete the approved thesis project. An approved thesis proposal is one wherein the thesis committee determines the student demonstrates a comprehensive understanding of the nexus of theory, method, and policy as it applies to the proposed thesis project. At the discretion of the thesis committee the proposal may be considered inadequate and the student is required to revise and resubmit the thesis proposal until the committee determines the proposal is satisfactory. The final examination includes a defense of the completed thesis, but may also include a general examination based upon the candidate’s program of study. The minimum coursework requirements are displayed below.

Focused coursework students must pass two written comprehensive examinations following completion of the required courses, no earlier than their third semester. Students not passing the examinations will be required to wait until the following semester to retake the examination. The minimum course requirements are displayed below.

Online M.C.J. Coursework

There is an online option for the MCJ degree. Online criminal justice courses are available only to those admitted to the MCJ program as online students, or with permission of the Director of the MCJ program. Students desiring to be admitted to the MCJ program as online students must declare that intent in writing to the MCJ director. Online students may not enroll in campus-based criminal justice courses. Online students may only pursue the Focused Coursework Option, not the Thesis Option. For more information regarding the online MCJ degree option, consult the Department of Criminal Justice web page, http://crimjust.nmsu.edu, or contact the Director of the MCJ program.

Teaching Assistantships

Teaching assistantships are typically available for some traditional (on-campus) MCJ students on a competitive basis. The Director of the MCJ Program will contact admitted students to determine their interest, and the Graduate Committee will make recommendations to the Department Head for a final decision.

Degrees for the Department

Criminal Justice - Bachelor of Criminal Justice (p. 268)

Law and Society - Undergraduate Supplemental Major (p. 271)

Criminal Justice - Master of Criminal Justice (p. 269)

Minors for the Department

Child Advocacy Studies - Undergraduate Minor (p. 268)
Forensic Science - Undergraduate Minor (p. 270)

Professor, Dennis M. Giever, Department Head

Associate Professors Keys, Lara, Posadas; Assistant Professors Alatorre, Natividad, Tapia, Valadez; College Associate Professors Corbett, Dimitrijevic, Joseph; Emeritus Professors Crowley, Gregware, Mays (Regents), Winfree


*MCJ Program Director

C J 101G. Introduction to Criminal Justice
3 Credits
Examination of crime and justice within the broader social and cultural context of U.S. society from interdisciplinary social science perspectives. Includes critical analysis of criminal justice processes and the ethical, legal, and political factors affecting the exercise of discretion by criminal justice professionals.

C J 199. Special Topics in Criminal Justice I
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated under different topics for a maximum of 6 credits.

C J 205. Criminal Law
3 Credits
Rules, principles, and doctrines of criminal liability in the United States. The historical development, limits, and functions of the substantive criminal law. May be repeated up to 3 credits.

C J 210. The American Law Enforcement System
3 Credits
Historical and philosophical foundations of law and order. An in-depth examination of the various local, state, and federal law enforcement agencies.

C J 221. Fundamentals of Criminal Investigation
3 Credits
Investigation procedures from crime scene searches, collection of evidence, and case preparation. Community Colleges only. (Note: students completing C J 221 may not take C J 321.)

C J 230. Introduction to Corrections
3 Credits
Development of correctional philosophy, theory, and practice. Instructional and non-institutional alternatives available in the corrections process.

C J 250. Courts and the Criminal Justice System
3 Credits
Structures and functions of American courts. Roles of attorneys, judges, and other court personnel; operation of petit and grand juries, trial and appellate courts.

C J 293. Field Experience in Criminal Justice
3-6 Credits
Field experience in a public criminal justice agency or equivalent private sector organization. Supervised internship experience, conferences, and observations. Restricted to majors. Community Colleges only.

Prerequisites: C J 101G, prior arrangement and consent of instructor and a GPA of 2.0 or better in major.

C J 300. Introduction to Criminal Justice Research
3 Credits
Overview and evaluation of criminal justice research. Selection of research topics, methods of data selection and collection, analysis techniques, and presentation of findings.

Prerequisite: restricted to majors or consent of instructor.

C J 301. Advanced Research Methods
3 Credits
Study of selected quantitative and qualitative skills and their application to criminal justice research.

Prerequisite: Restricted to majors or consent of instructor.

C J 302. Crime, Justice and Society
3 Credits
Through critical analysis students build a rich understanding of the role of crime in our contemporary landscape and explore ideas and practices associated with justice, victimization, criminality, morality and righteousness. The course cultivates knowledge & awareness of the interactions between socially constructed phenomena (race, class, power, ethnicity, economic structures) and popular beliefs, policies, and practices associated with crime, punishment, and formal social control. It is recommended that you complete three of the following English courses before enrolling in this class: ENGL 111G, 203G, 211G, 218G, & 311G.

Restricted to: Criminal Justice majors.

C J 303. Introduction to Criminological Theory
3 Credits
Defining and measuring crime, crime causation, and the criminal behavior system, and their linkage to criminal justice policies, procedures, and practices. Completed two of the following: ENGL 111G, 203G, 211G, 218G, or 311G. Restricted to: C J majors.

Prerequisite(s): Restricted to majors or consent of the instructor and must have completed C J 300.

Corequisite(s): Must be enrolled or have completed third English writing class.

C J 304. Historical Perspectives of Criminal Justice Systems
3 Credits
Examines the precursors to and development of three distinct systems associated with crime and punishment in the United States: the Courts, the Police, & Corrections. By studying the historical context and socio-political backdrop in which theses institutions emerged and expanded students will come to a richer understanding of them and their attendant polices, practices, conventions, and assumptions. It is recommended that you complete three of the following English courses before enrolling in this class: ENGL 111G, 203G, 211G, 218G, & 311G. Restricted to: Criminal Justice majors.

Prerequisite(s): C J 300.

C J 306. Criminal Procedural Law
3 Credits
Legal analyses of the rights of criminal defendants; legal duties and responsibilities of criminal justice personnel in the processing of criminal defendants. May be repeated up to 3 credits. Restricted to: C J majors.

Prerequisites(s): Restricted to majors, Forensic Science minors, or consent of instructor.
C J 307. Law of Evidence
3 Credits
Evidentiary rules and concepts and their application in a criminal trial. May be repeated up to 3 credits. Restricted to: C J majors.
Prerequisite(s): Restricted to majors, Forensic Science minors, or consent of instructor.

C J 321. Criminal Investigation and Intelligence
3 Credits
Principles of criminal investigation and intelligence production; processing cases from complaint through crime scene search, identification and collection of evidence, interviewing and interrogation, and case preparation for courts. May be repeated up to 3 credits. Restricted to: C J majors.
Prerequisite(s): Restricted to majors, Forensic Science minors, or consent of instructor.

C J 322. Organized Crime
3 Credits
Study of national and international criminal organizations and organized crime core groups. Examination of criminal and legitimate enterprises of organized criminal syndicates. Study of tactics to combat organized crime. Current policy implications.
Prerequisite: restricted to majors or consent of instructor.

C J 331. American Correctional Institutions
3 Credits
Structure, organization, and operations of United States jails and prisons. Overview of correctional standards and classification systems, emphasizing current theory and practice.
Prerequisite: restricted to majors or consent of instructor.

C J 332. Correctional Law
3 Credits
Federal and state laws and rules of post-conviction procedures; rights of the convicted related to sentencing, appeals, clemency, and restoration of rights.
Prerequisite: restricted to majors or consent of instructor.

C J 333. Juvenile Corrections
3 Credits
Development and implementation of juvenile facilities and community programs. Effectiveness of current corrections practices. Restricted to majors.

C J 345. Victimology
3 Credits
Study of risk factors in crime victimization, the impact of crimes upon victims, and the role of the victim in the criminal justice system.
Prerequisite: restricted to majors or consent of instructor.

C J 346. Psychology and the Justice System
3 Credits
Analysis of psychological underpinnings of criminal behavior and the implications of these psychological principles for criminal justice policy. May be repeated up to 3 credits. Restricted to: C J majors.
Prerequisite(s): Restricted to majors, Forensic Science minors, or consent of instructor.

C J 347. Sex Crimes
3 Credits
Dynamics of sex crimes for victims and offenders, plus consideration of the legal and correction systems’ response to sex crimes. Restricted to majors.

C J 348. Serial Killers
3 Credits
Overview and critical assessment of serial homicide and its relevance for contemporary U.S. society. Focus on factors influencing definitions and cultural understanding of serial homicide.
Prerequisite(s): 60 credit hours.

C J 360. The Juvenile Justice System
3 Credits
History, development, and philosophy behind a separate juvenile justice system. Role of the juvenile court, evaluation of juvenile law and procedure, and the processing of juvenile offenders. Prerequisite: restricted to majors or consent of instructor.

C J 380. Introduction to Terrorism
3 Credits
Overview of the phenomenon of terrorism, psychological and sociological theories of terrorism, and various contemporary governmental policies.

C J 391. Special Readings in Criminal Justice
1-3 Credits
Individually chosen subject areas not readily available in other courses. May be repeated for a maximum of 6 credits under different subtitles. Restricted to majors. Prerequisites: at least a 2.5 GPA and consent of instructor.

C J 393. Internship in Criminal Justice
1-12 Credits
Field experience in a local, state, or federal criminal justice or private security agency. Includes orientation, observation, conferences, and work experience. Credits limited to six if student has taken C J 293. May be repeated for a maximum of 12 credits. Restricted to majors. Graded S/U. Prerequisites: consent of instructor and GPA of 2.5 or better.

C J 399. New Mexico Law
3 Credits
Same as GOVT 399, JOUR 399, SOC 399, and HIST 399.

C J 405. Juvenile Courts and Law
3 Credits
History, development, and current status of juvenile courts. Legal status of juveniles in court and constitutional protections afforded them. Restricted to majors.

C J 410. Criminal Justice Administrative Systems
3 Credits
Administrative structures in criminal justice agencies and institutions; relationship of administrative structures to practical police, courts, and corrections problems. Prerequisite: restricted to majors or consent of instructor.

C J 414. Race, Crime and Justice
3 Credits
Historical and contemporary analysis of the relationship between race and crime in the United States with emphasis upon human equality and fairness. Overview of racial and ethnic social categorizations and how they impact law and order.

C J 416. Global Perspectives on Youth and Drug Use
3 Credits
Overview of global drug use among young people, comparative legal structures, formal and informal responses. Restricted to C J, ANTH, GOVT, SOC, W S, S WK majors.

C J 417. Drugs In Our World
3 Credits
Comparative analysis of patterns and theories of drug use, formal government mitigation strategies.
C J 424. Forensic Law
3 Credits
Overview of the rules and issues related to the use of scientific information in the legal process. May be repeated up to 3 credits. Restricted to: C J majors.
Prerequisite(s): C J major, Forensic Science minors, or consent of instructor.

C J 425. Issues in Ethics, Law, and Criminal Justice
3 Credits
Examination of the key ethical and decision-making dilemmas facing professionals working in the field of law and criminal justice.
Prerequisite: restricted to majors or consent of instructor.

C J 427. Race and Crime in Film
3 Credits
Critical analysis of film where messages relating race and crime are present, with emphasis on how this imagery informs problem definition, policies, and practice within the criminal justice system.
Prerequisite(s): 60 credit hours.

C J 428. Mexican-American and Issues of Social Justice
3 Credits
In this course we will explore and discuss social issues related to the Mexican American community in the U.S., with special emphasis on their collective historical struggles and contributions to society. We will discuss the political, economic and cultural forces that exemplify their experience as a “whole.”
Prerequisite(s): Students must have completed C J 300 or research methods equivalent or consent from the instructor.

C J 429. Immigration & Justice
3 Credits
This course is designed to introduce undergraduate students to the complexities of immigration in the United States through a social justice lens. Students will explore the intersections of race, ethnicity, gender, and class in immigration through different groups' historical and contemporary experiences, including immigrants’ experience with the criminal justice system.
Prerequisite(s): Student must have completed C J 300 or Research Methods equivalent or consent of the instructor.

C J 430. The U.S. Supreme Court and the Criminal Justice System
3 Credits
History and workings of the U.S. Supreme Court in the context of the criminal justice system from writs of certiorari to last minute appeals in death penalty cases, including study of specific U.S. Supreme Court cases in the areas of criminal law, criminal procedural law, 8th amendment prison sentencing issues, and death penalty cases. Consent of Instructor required. Restricted to: Criminal Justice majors.

C J 431. Family Violence and the Law
3 Credits
This course will examine how practitioners are involved in the criminal justice system in areas of family violence including: child physical abuse; child sexual abuse; child neglect; child ritualistic abuse; child exploitation; sibling abuse; intimate partner abuse; stalking; sexual abuse and elder abuse. This course will be helpful for those who wish to go into law enforcement or victim’s advocacy work. Restricted to: Criminal Justice majors.

C J 432. Issues in Criminal Justice
3 Credits
Seminar on problems and conflicts encountered in major criminal justice issues. Topics announced in the Schedule of Classes. May be repeated for unlimited credits under different subtitles.

C J 434. Probation, Parole, and Community Corrections
3 Credits
Structure, organization, and operation of probation, parole, and other community-based correctional programs in the U.S. Overview of historical and recent trends in the supervision of offenders in the community and in the development of alternatives to incarceration. Analysis of issues related to community correctional policies and practices. Restricted to majors.

C J 435. Political Penology
3 Credits
Comparative analysis of incarceration and sanctions as punishment for crimes of conscience, religious intolerance, and dissidence.

C J 436. COURTS AND SENTENCING
3 Credits
This course will focus on the structure, organization, and operation of the state and federal court systems in the United States. It examines courtroom decision making and dynamics of courtroom justice—prosecutorial discretion, plea bargaining practices, jury and judicial decision making and sentencing. Additional topics will include racial, gender and class disparities in sentencing outcomes and the impact of recent reforms directed at the criminal court system. Restricted to: Criminal Justice majors.

C J 437. WRONGFUL CONVICTIONS
3 Credits
This course will address causes (e.g. problems in witness identification, forensics, police and attorney conduct) as well as results of erroneous dispositions (e.g. compensation, media dynamics, possible reforms) in a critical analysis. Appropriate for prospective police, legal, and policy professionals. Restricted to: Criminal Justice majors.

C J 440V. Comparative Criminal Justice Systems
3 Credits
Cross-national study of selected Western and non-Western legal systems. Comparison of structures and functions of police, court systems, and corrections in different systems.

C J 449. Senior Seminar
3 Credits
Problems and conflicts encountered in major attempts to control crime. Restricted to majors.
Prerequisite(s): C J 101, C J 205, C J 210, C J 230, C J 250, C J 300, C J 301, 90 credit hours completed.

C J 451. Border Violence and Justice
3 Credits
Critical analysis of violence and systems of justice along border regions. Examines causes and correlates of violence experienced by those living in border regions and the social responses to that violence.

C J 452. Upper World Crime
3 Credits
Corporate crime, white collar crime and political abuse and corruption; executive and corporate criminal behavior, and violations of the public trust by elected and appointed officials.
Prerequisite: restricted to majors or consent of instructor.

C J 453. Women and Justice
3 Credits
Critical analysis of the impact of the criminal justice system, race and class upon the lives of women. Restricted to majors.
C J 454. Human Trafficking
3 Credits

C J 455. Feminist Research Methods
3 Credits
Feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work. Same as W S 455.

C J 501. Research Methods in Criminal Justice
3 Credits
Research design, methods of data collection and analysis, and preparation of research reports. Restricted to majors. Prerequisite: C J major or consent of instructor.

C J 510. Advanced Criminal Justice Administrative Systems
3 Credits
Structure and operations of criminal justice agencies and institutions; relationships of structure and operations to practical police, courts, and corrections problems.

C J 511. Nature of Crime
3 Credits
Defining and measuring crime, crime causation, and criminal behavior systems. Restricted to majors. Prerequisite: C J major or consent of instructor.

C J 514. Advanced Race, Crime, and Justice
3 Credits
Advanced analysis of the historical and contemporary relationship between race and crime in the United States with emphasis upon human equality and fairness. Overview of racial and ethnic social categorizations and how they impact law and order.

C J 515. A Course on Punishment
3 Credits
Exploration and analysis of the idea and practice of punishment through a variety of philosophical perspectives, seeking to understand its moral and practical viability as employed in contemporary society, including its application within the criminal justice system.

C J 520. Advanced Girls, Women & Crime
3 Credits
Advanced critical social science analysis of concepts of violence and justice as experienced by women impacted by the criminal justice system. Restricted to C J, W S majors. Crosslisted with: W S 520

C J 521. Law and Social Control
3 Credits
The development and implementation of criminal law. Consideration of functionalist, conflict, and interpretive theories and research. Restricted to majors. Prerequisite: C J major or consent of instructor.

C J 524. Forensic Law
3 Credits
Rules and policy implications related to the use of scientific information in legal process. Restricted to majors. Prerequisite: C J major or consent of instructor.

C J 525. Issues in Ethics, Law, and Criminal Justice
3 Credits
Examination of the key ethical and decision-making dilemmas facing professionals working in the fields of law and criminal justice. Restricted to majors. Prerequisite: C J major or consent of instructor.

C J 526. Advanced Race & Environmental Justice
3 Credits
Advanced analysis of concepts of justice and social justice responses across the 20th and 21st centuries to environmental degradation affecting communities of differing racial and ethnic backgrounds.

C J 527. Advanced Race & Crime in Film
3 Credits
Advanced critical analysis of film where messages relating race and crime are present, with emphasis on how this imagery informs problem definition, policies, and practice within the criminal justice system.

C J 529. Advanced Immigration & Justice
3 Credits
Advanced analysis of the complexities of immigration in the United States through a social justice lens. Students will explore the intersections of race, ethnicity, gender, and class in immigration through different groups' historical and contemporary experiences, including immigrants' experience with the criminal justice system.

C J 530. Advanced U.S. Supreme Court and the Criminal Justice System
3 Credits
Advanced history and workings of the U.S. Supreme Court in the context of the criminal justice system from writs of certiorari to last minute appeals in death penalty cases, including study of specific U.S. Supreme Court cases in the areas of criminal law, criminal procedural law, 8th amendment prison sentencing issues, and death penalty cases. Restricted to: Criminal Justice majors.

C J 531. Advanced Family Violence and the Law
3 Credits
This course will examine how practitioners are involved in the criminal justice system in areas of family violence including: child physical abuse; child sexual abuse; child neglect; child ritualistic abuse; child exploitation; sibling abuse; intimate partner abuse; stalking; sexual abuse and elder abuse. This course will be helpful for those who wish to go into law enforcement or victim's advocacy work. Restricted to: Criminal Justice majors.

C J 532. Advanced Issues in Criminal Justice (f, s, sum)
3 Credits
Seminar on problems and conflicts encountered in major criminal justice issues. Topics announced in the Schedule of Classes. May be repeated under different subtitles for unlimited credit.

C J 535. Advanced Political Penology
3 Credits
Advanced comparative analysis of incarceration and sanctions as punishment for crimes of conscience, religious intolerance, and dissidence.

C J 537. Advanced Wrongful Convictions
3 Credits
This course will address causes (e.g. problems in witness identification, forensics, police and attorney conduct) as well as results of erroneous dispositions (e.g. compensation, media dynamics, possible reforms) in a critical analysis. Appropriate for prospective police, legal, and policy professionals. Restricted to: Criminal Justice majors.

C J 541. Seminar in Criminal Justice Policy Analysis and Planning
3 Credits
Seminar on policy development, planning and implementation processes in criminal justice. Links formal policy goals as they relate to theory and outcomes. Topics announced in the Schedule of Classes. Restricted to majors. Prerequisite: C J major or consent of instructor.
**Child Advocacy Studies - Undergraduate Minor**

The interdisciplinary undergraduate minor in Child Advocacy Studies (CAST) provides mandated reporters and responders in social work, public health, nursing, criminal justice, psychology, education, family studies, cooperative extension and other disciplines with evidence-based, culturally relevant knowledge and skills to improve the outcomes for maltreated children in New Mexico or wherever their paths may take them.

The core courses, worth three (3) credits each, will be focused on the needs specific to New Mexico and will adhere to both statewide and national best practice standards on the welfare of children. The remaining nine (9) out of the total of 18 required credits will come from courses that students choose from a list of selected courses already being taught across the campus. To declare this minor please contact the Family and Consumer Sciences department. For more information, please visit: http://aces.nmsu.edu/academics/FCS/cast.html

**Criminal Justice - Bachelor of Criminal Justice**

**Departmental Requirements**

**Lower Division (100 and 200-level)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C J 101G</td>
<td>Introduction to Criminal Justice</td>
<td>3</td>
</tr>
<tr>
<td>C J 205</td>
<td>Criminal Law</td>
<td>3</td>
</tr>
</tbody>
</table>

**Upper-Division (300 and 400-level)**

Select 3-4 credits from the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>C J 300</td>
<td>Introduction to Criminal Justice Research</td>
</tr>
<tr>
<td>GOVT 300</td>
<td>Political Research Skills</td>
</tr>
<tr>
<td>PSY 310</td>
<td>Experimental Methods</td>
</tr>
<tr>
<td>SOC 352</td>
<td>Social Research: Methods</td>
</tr>
</tbody>
</table>

Select 9 credits from the following: 9

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>C J 301</td>
<td>Advanced Research Methods (or any statistics class)</td>
</tr>
<tr>
<td>C J 302</td>
<td>Crime, Justice and Society</td>
</tr>
<tr>
<td>C J 425</td>
<td>Issues in Ethics, Law, and Criminal Justice</td>
</tr>
</tbody>
</table>

One course from the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>C J 303</td>
<td>Introduction to Criminological Theory</td>
</tr>
<tr>
<td>C J 304</td>
<td>Historical Perspectives of Criminal Justice Systems</td>
</tr>
<tr>
<td>C J 414</td>
<td>Race, Crime and Justice</td>
</tr>
</tbody>
</table>

**Criminal Justice Electives**

Select 12 credits from upper division Criminal Justice Electives. 12

**Nondepartmental Requirements**

Select one of the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
</tr>
</tbody>
</table>

Second Language Requirement

American Sign Language through C D 476

Select two Viewing a Wider World courses: 6

Select 3 credits from the following: 3

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**C J 545. Advanced Victimology**

3 Credits

Study of risk factors in crime victimization, the impact of crimes upon victims, and the role of the victim in the criminal justice system. Consideration of the impact of criminal justice policy on victim outcomes. Same as W S 545.

**C J 554. Advanced Human Trafficking**

3 Credits


**C J 555. Advanced Feminist Research Methods**

3 Credits

Advanced feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work. Same as W S 555.

**C J 560. Juvenile Justice Systems**

3 Credits

Policy development and operations in police, court, and correctional agencies in response to juveniles. Analysis of programs designed to identify, prevent and treat juvenile offenders. C J 570. Probation and Parole 3 cr. Advanced analysis of goals, theories and practices of all forms of correction in the community, including probation, parole, plus other intermediate sanctions. Restricted to majors.

**C J 581. Community Policing**

3 Credits

Overview and analysis of community policing issues from various perspectives. Analysis of strategies that facilitate police and community collaboration. Restricted to majors.

**C J 591. Directed Readings in Criminal Justice**

3 Credits

Supervised review of literature in specialized areas of the nature of crime, law and social control, and criminal justice administration. Consent of instructor required.

**C J 592. Independent Research**

1-3 Credits

Design and execution of a criminal justice research project. Requires a written paper in standard format, including literature review, hypotheses, methodology, findings, and conclusions.

**C J 593. Internship**

3-6 Credits

Supervised placement in an applied or research setting in criminal justice. An in-depth written report of the project is required. Restricted to C J majors. May be repeated for a maximum of 6 credits. Graded S/U.

**Prerequisites:** introductory graduate course in the area of the internship and consent of the internship supervisor.

**C J 599. Master's Thesis**

15 Credits

Thesis.

**Name:** Andrea Scarborough, Administrative Assistant

**Office Location:** Breland 107

**Phone:** (575) 646-3316

**Website:** http://crimjust.nmsu.edu
A student must earn a C- or better to receive credit for any departmental and nondepartmental requirement for the BC J degrees.

Criminal Justice - Master of Criminal Justice

All candidates, regardless of chosen degree option, must complete a final examination. Examination requirements vary by degree option. Please contact the director of the MCJ program or consult the Department of Criminal Justice website (http://crimjust.nmsu.edu/criminal-justice-graduate) for details.

Thesis Option (33 Credits)

Thesis students must submit a thesis proposal to their faculty committee for approval and subsequently complete the approved thesis project. An approved thesis proposal is one wherein the thesis committee determines the student demonstrates a comprehensive understanding of the nexus of theory, method, and policy as it applies to the proposed thesis project. At the discretion of the thesis committee the proposal may be considered inadequate and the student is required to revise and resubmit the thesis proposal until the committee determines the proposal is satisfactory. The final examination minimally includes a defense of the completed thesis, but may also include a general examination based upon the candidate’s program of study. The minimum coursework requirements are displayed below.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>C J 511</td>
<td>Nature of Crime</td>
</tr>
<tr>
<td>C J 514</td>
<td>Advanced Race, Crime, and Justice</td>
</tr>
<tr>
<td>or C J 521</td>
<td>Law and Social Control</td>
</tr>
<tr>
<td>C J 525</td>
<td>Issues in Ethics, Law, and Criminal Justice</td>
</tr>
<tr>
<td>C J 501</td>
<td>Research Methods in Criminal Justice</td>
</tr>
<tr>
<td>or C J 555</td>
<td>Advanced Feminist Research Methods</td>
</tr>
<tr>
<td>C J 510</td>
<td>Advanced Criminal Justice</td>
</tr>
<tr>
<td>or C J 541</td>
<td>Administrative Systems</td>
</tr>
<tr>
<td>C J 599</td>
<td>Master’s Thesis</td>
</tr>
</tbody>
</table>

General Electives

Select 12 credits from General Electives. 1

Total Credits 33

1 Students may not count C J 593 Internship or C J 592 Independent Research credit toward their elective requirement. No more than three total credits of C J 591 Directed Readings in Criminal Justice coursework may be used as electives; a minimum of 3 of the 12 credit general elective requirement must come from the Department of Criminal Justice.

A minor is optional (contact the director of the MCJ program or consult the Department of Criminal Justice web site, https://crimjust.nmsu.edu/https://crimjust.nmsu.edu, for details) and may result in more than 33 total credits for the degree.

Focused Coursework Option (36 Credits)

Focused coursework students must pass a written comprehensive examination following completion of the required courses. Students not passing the examination will be required to wait until the following semester to retake the examination. The minimum course requirements are displayed below.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>C J 511</td>
<td>Nature of Crime</td>
</tr>
<tr>
<td>C J 514</td>
<td>Advanced Race, Crime, and Justice</td>
</tr>
<tr>
<td>or C J 521</td>
<td>Law and Social Control</td>
</tr>
<tr>
<td>C J 525</td>
<td>Issues in Ethics, Law, and Criminal Justice</td>
</tr>
<tr>
<td>C J 501</td>
<td>Research Methods in Criminal Justice</td>
</tr>
<tr>
<td>or C J 555</td>
<td>Advanced Feminist Research Methods</td>
</tr>
<tr>
<td>C J 510</td>
<td>Advanced Criminal Justice</td>
</tr>
<tr>
<td>or C J 541</td>
<td>Administrative Systems</td>
</tr>
</tbody>
</table>
Forensic Science - Undergraduate Minor

Forensic Science is the application of principles and techniques of scientific analysis in a legal context. Forensic scientists study physical evidence to resolve issues involving criminal investigations, environment analyses and similar areas of research.

A student must pass 18 credits with a grade of C- or higher from the following curriculum to earn the Forensic Science minor. No courses may be taken S/U. Students must take at least 6 credits from departments outside their major(s). At least 9 credits in any minor must be upper division. Students must register in the minor before enrolling in any upper division Criminal Justice courses.

The following curriculum represents minimum requirements for a minor. Students interested in a career in Forensic Science are encouraged to take additional courses from those listed below.

**Core Courses**

Select 6 credits from the following:

- C J 306 Criminal Procedural Law
- C J 321 Criminal Investigation and Intelligence
- C J 424 Forensic Law
- PHYS 304 Forensic Physics
- PHYS 306 Forensic Physics

**Additional Course**

Select 3 credits from areas I or II above not already completed.

**Total Credits**

9

**Track A: Laboratory Analysis**

Students should check the catalog to ensure that they have taken prerequisites before enrolling in these courses.

Select one from the following:

- BIOL 221 & 221 L Introductory Microbiology
- BIOL 311 & 311 L and General Microbiology Laboratory
- BIOL 354 & 354 L and Laboratory of Human Physiology
- BCHE 395 Biochemistry I
- BCHE 396 Biochemistry II
- CHEM 371 Analytical Chemistry
- TOX 361 Basic Toxicology
- TOX 461 Toxicology I
- PHYS 211G & 211GL and General Physics I Laboratory

**Total Credits**

8-10

**Track B: Human Forensic Analysis**

Honors, Special Topics, or Independent Studies courses if approved by Academic Head, Department of Criminal Justice.

Select 9 credits from the following:

- ANTH 130G & 130GL Human’s Place in Nature: Introduction to Biological Anthropology and Human’s Place in Nature Laboratory
- ANTH 315 Introduction to Archaeology
- ANTH 355 Physical Anthropology
- ANTH 357V Medical Anthropology
- ANTH 388 Intermediate Archaeological Field School
- BIOL 330 Comparative Anatomy and Embryology
- ANTH 474 Human Osteology
- ANTH 477 Zooarchaeology

**Total Credits**

9

1. Recommended sequence ANTH 130G Human’s Place in Nature: Introduction to Biological Anthropology/ANTH 130GL Human’s Place in Nature Laboratory, ANTH 355 Physical Anthropology or ANTH 315 Introduction to Archaeology, and then ANTH 474 Human Osteology.

2. Courses have prerequisites, and students should check the catalog to ensure that they have taken prerequisites before enrolling in these courses.
Track C: Forensic Psychology

Students should check the catalog to ensure that they have taken prerequisites before enrolling in these courses.

Required Courses

Select three from the following: 9

**Principles of Behavior**
- PSY 317 Social Psychology
- PSY 321 Psychology of Personality
- PSY 324 Sexual Behavior
- PSY 330 Psychology and the Law
- PSY 376 Evolutionary Psychology

**Psychological Treatment**
- PSY 302 Abnormal Psychology
- PSY 445 Clinical Psychology
- CJ 346 Psychology and the Justice System

Total Credits 9

Track D: General

Select 9 credits from the following: 9

- ANTH 474 Human Osteology 3
- CJ 306 Criminal Procedural Law
- CJ 307 Law of Evidence
- CJ 321 Criminal Investigation and Intelligence
- CJ 346 Psychology and the Justice System
- CJ 424 Forensic Law
- PSY 330 Psychology and the Law 3
- PHYS 304 Forensic Physics

Total Credits 9

3 Courses have prerequisites, and students should check the catalog to ensure that they have taken prerequisites before enrolling in these courses.

Economics, Applied Statistics, and International Business

Undergraduate Program Information

The Department of Economics, Applied Statistics and International Business in the College of Business offers an economics major to Bachelor of Arts candidates in the College of Arts and Sciences. (Additional information may be found under the Economics and International Business (p. 426) section in the College of Business chapter).

Degrees for the Department

Economics - Bachelor of Arts (p. 273)

Minors for the Department

Economics - Undergraduate Minor (p. 274)

ECON 201G. Introduction to Economics
3 Credits
Economic institutions and current issues with special emphasis on the American economy.

ECON 251G. Principles of Macroeconomics
3 Credits
Macroeconomic theory and public policy: national income concepts, unemployment, inflation, economic growth, and international payment problems.

ECON 252G. Principles of Microeconomics
3 Credits
Microeconomic theory and public policy: supply and demand, theory of the firm, market allocation of resources, income distribution, competition and monopoly, governmental regulation of businesses and unions.

ECON 304. Money and Banking
3 Credits
Income measurement and determination, monetary and fiscal policies. **Prerequisite:** ECON 251G or equivalent, or consent of instructor.

ECON 311. Intermediate Macroeconomic Theory
3 Credits
Analysis of gross domestic product, the Classical, Keynesian, and Neo-Keynesian theories of income, employment, inflation and growth. **Prerequisite(s):** ECON 251G or equivalent.

ECON 312. Intermediate Microeconomic Theory
3 Credits
Contemporary economic theory with emphasis upon value and distribution. **Prerequisite(s):** ECON 252G or equivalent.

ECON 324V. Developing Nations
3 Credits
Economic analysis of problems related to development of developing nations. Issues such as growth, industrialization, poverty, population, international trade, foreign debt, and international economic relations.

Law and Society - Undergraduate Supplemental Major

The Law and Society Program is administered by the Department of Government and offers an interdisciplinary major for students interested in pursuing law school or careers that incorporate a strong legal element, such as government, law enforcement, business and social work. As a supplementary major, it must be taken in conjunction with a regular major. Some courses may double-count toward a student's regular major or General Education requirements. Students should check with academic advisors in their primary major. To declare this supplemental major please contact the College of Arts & Sciences Student Records Office. For more information please visit: https://deptofgov.nmsu.edu/academic-programs/law-society/.
ECON 325V. Economic Development of Latin America
3 Credits
Economic analysis of problems related to development in Latin America, including the agrarian problem, debt and austerity programs, industrialization, inflation and unemployment, the drug trade, U.S.-Latin American relations, development strategies. Also individual countries problems.

ECON 332. Public Finance
3 Credits
This course will examine the roles of government in modern, market-oriented, mixed economies. It will examine justifications for government participation in resource allocation, income distribution, and economic stabilization focusing primarily on the fiscal functions of government, taxation and public expenditure. Students will apply basic microeconomic analysis to analyze the impacts of public taxation and expenditures on economic decisions made elsewhere in the economy. In this course the emphasis will be on understanding the workings of public finance in fiscal federalist systems like the United States, but the principles taught will be applicable across other economic systems. Prerequisite(s): ECON 252

ECON 335V. Business and Government
3 Credits
Relation of government to business through regulation; political, legal, and social implications. Crosslisted with: MGT 335G

ECON 336. Labor Economics
3 Credits
This course aims at developing students' understanding of how the labor market works. Topics to be covered include: labor supply and demand, wage differentials, wage structure, unemployment, gender issues, labor market discrimination, and migration. May be repeated up to 3 credits. Prerequisite(s): ECON 252G.

ECON 337V. Natural Resource Economics
3 Credits
Same as AG E 337V. Prerequisite: ECON 201 or ECON 252G.

ECON 340. American Economic History
3 Credits
The rise of big business and organized labor, increasing price rigidities, and growing government intervention. Same as HIST 340.

ECON 384V. Water Resource Economics
3 Credits
Use of economic principles to evaluate current and emerging issues in water resources. Applications focus on use of economic methods of analysis to current policy decisions surrounding agricultural, municipal, industrial, and environmental uses of water. Same as AG E 384V. Prerequisite: AG E 100 or ECON 252G.

ECON 401. Managerial Economics
3 Credits
Application of economic theory to problems of business management. Prerequisite(s): ECON 252G and MATH 142 or equivalent, or consent of instructor.

ECON 404. Collegiate Advisory Board, Federal Reserve
3 Credits
Students serve on the Collegiate Advisory Board of the El Paso branch of the Federal Reserve Bank of Dallas. Guest speakers provide an overview of the Federal Reserve System, role of monetary policy, and issues facing specific industries in the local, national, and global economies. Students prepare reports, including a final paper, on an assigned industry in the regional or state economy and the current economic performance of their industry. Students must be of junior rank or higher with a GPA of at least 3.5. Consent of Instructor required.

ECON 405. Introductory Econometrics
3 Credits
Multiple regression and correlation applied to economics and business; inference techniques; significance tests; simultaneous equations, estimation, and problems. May be repeated up to 3 credits. Prerequisite(s): A ST 251G or STAT 251G or A ST 311 (or equivalent).

ECON 406. The Economics of Sports
3 Credits
Applying the tools of economic analysis to a particular industry and gaining an in-depth knowledge of the interaction of professional sports teams and leagues with the economy and society. Same as AG E 406. Prerequisite(s): one previous course in economics or consent of instructor.

ECON 432V. Economics of Health Care
3 Credits
Analysis of the allocation of resources in the field of health and medical care.

ECON 449. Open Economy Macroeconomics
3 Credits
This course studies theoretical and empirical macroeconomics in international dimension. It covers from the fundamental concepts of national income and growth, monetary/fiscal and exchange rate policies, foreign exchange markets, international trade and finance, and regionalization/economic integration to the impact analysis of these macroeconomic fundamentals in the open economy. Crosslisted with: I B 449. Prerequisite(s): FIN 341 OR ECON 372.

ECON 450. International Economics
3 Credits
Trade and capital flows between countries, international payments, government policy in balance-of-payments and tariff matters, international organizations. Crosslisted with: I B 450. Prerequisite(s): ECON 251G and ECON 252G.

ECON 457. Mathematical Economics
3 Credits
Application of mathematical tools, especially the calculus, to economic theory. Prerequisite: one upper-division economics course.

ECON 489. Senior Economics Seminar
3 Credits
Seminar primarily for economics majors in their final semester. Provides an opportunity to apply economic theory to a broad variety of topics. Prerequisite: ECON 371 or ECON 372.

ECON 490. Selected Topics
1-3 Credits
Current topics in economics. Subject matter to be designated for each semester.
ECON 498. Independent Study  
1-3 Credits  
Individual studies directed by consenting faculty with the prior approval of the department head. May be repeated for a maximum of 3 credits.  
Prerequisite: junior or above standing and consent of instructor.

ECON 503. Managerial Economics  
3 Credits  
Theory and application of microeconomics to the management of organizations.  
Prerequisite(s): A ST 251G or 311 or equivalent with B or better.

ECON 545. Econometrics II  
3 Credits  
Application of statistical techniques to estimation of economic relationships: demand functions, production and cost functions, and macroeconomic equations. May be repeated up to 3 credits.  
Prerequisite(s): ECON 251G, ECON 252G, STAT 251G or A ST 311, and AECE 540.

ECON 550. Special Topics  
1-3 Credits  
Seminars in selected current topics in the various areas of economics. Prerequisites vary according to the topic being offered.

ECON 571. Regulatory Policy and Industry Analysis: Electricity I  
3 Credits  
Regulatory policy and economic analysis related to the Electric Industry. Topics include: characteristics of a utility and legal justification for regulation; characteristics and functions of a regulatory commission; history and structure of the industry; technology and network design; revenue requirements; cost allocation; and basic rate design. May be repeated up to 3 credits.  
Prerequisite(s): ECON 252G, FIN 341, or consent of instructor.

ECON 572. Regulatory Policy and Industrial Analysis: Water and Natural Gas  
3 Credits  
Regulatory policy and economic analysis related to the Natural Gas and Water industries. Topics include: history and structure of the industry; technology and network design; revenue requirements; cost allocation; and retail rate design.

ECON 573. Regulatory Policy and Industry Analysis: Electricity II  
3 Credits  
Regulatory policy and economic analysis related to the Electric industry. Topics include: optimal generation mix; ancillary services; environmental policies; rate case procedures and strategies for effective testimony; advanced retail rate design; wholesale exchanges; unbundled transmission tariffs; market institutions and how different markets function; state and federal deregulation policies; Federal Energy Regulatory Commission orders and policies; demand-side management; and regulatory treatment of non-traditional retail services. Consent of instructor required.  
Prerequisite(s): ECON 571 or consent of instructor.

ECON 574. Advanced Seminar Regulatory Policy and Industry Analysis  
3 Credits  
Advanced seminar and writing course specializing in regulatory policy and regulatory casework. Topics include: special policy & regulatory issues in telecommunications, electricity, natural gas, and water; preparation of written testimony; expert witness effectiveness including cross-examination; and contested case management. This course involves extensive reading and writing assignments. Consent of instructor required.  
Prerequisite(s): ECON 571 or consent of instructor.

ECON 581. International Economics  
3 Credits  
Trade and capital flows between countries, international payments, government policy in balance-of-payments and tariff matters, international organizations. Recommended preparation, ECON 371 and 372. May be repeated up to 3 credits.  
Prerequisite(s): ECON 251G and ECON 252G.

ECON 582. Economics of Health Care  
3 Credits  
Analysis of the allocation of resources in the field of health and medical care. Taught with ECON 432V with differentiated assignments for graduate students.

ECON 596. Independent Study  
3 Credits  
Individual study program. Each offering will cover a subtitle. Maximum of 3 credits in a semester and 6 credits in a program. Consent of instructor required.

Name:  
Office Location:  
Phone: (575) 646-2113  
Website: http://business.nmsu.edu/academics/economics-ib/

Economics - Bachelor of Arts  
The study of economics can lead to career positions in economics and related managerial and technical specialties in businesses, financial institutions, government and education. Qualified students are also prepared for graduate study in economics, business administration including management and law. Students who plan to pursue graduate work in economics or to become professional economic analysts should consider taking supplementary courses in accounting, computer science, mathematics, quantitative economics and/or statistics, in addition to those listed below as required.

Requirements  
A student must earn a grade of C- or better in the nondepartmental requirements, and a cumulative GPA of 2.5 in the 27 hours of departmental requirements.

General Education Courses  
35  
Viewing a Wider World Courses  
6  
Nondepartmental Requirements  
ACCT 221 Financial Accounting  
3  
MATH 120 Intermediate Algebra  
3  
MATH 142G Calculus for the Biological and Management Sciences  
3  
MATH 121G College Algebra  
3  
STAT 251G Statistics for Business and the Behavioral Sciences  
or A ST 311 Statistical Application  
3  
Departmental Requirements  
ECON 251G Principles of Macroeconomics  
3  
ECON 252G Principles of Microeconomics  
3  
ECON 304 Money and Banking  
3  
ECON 311 Intermediate Macroeconomic Theory  
3
ECON 312 Intermediate Microeconomic Theory 3
ECON 405 Introductory Econometrics 3
ECON 457 Mathematical Economics 3
ECON 489 Senior Economics Seminar 3
Select 9 additional credits numbered 300 or above, including at least one course from the following to bring total upper-division in major to 27:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 332</td>
<td>Public Finance</td>
<td>3</td>
</tr>
<tr>
<td>ECON 336</td>
<td>Labor Economics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 449</td>
<td>Open Economy Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 450</td>
<td>International Economics</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives**

Select sufficient electives to bring total credits to 120, including 48 upper-division.

**Total Credits** 120

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**Economics - Undergraduate Minor**

A minor in economics consists of 18 or more credit hours of approved course work in economics of which at least 12 are numbered 300 or higher, all completed with a grade of C- or higher. Please note that the minor in economics is not available to Bachelor of Individualized Studies (BIS) or Bachelor of Applied Studies (BAS) students.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 304</td>
<td>Money and Banking</td>
<td>3</td>
</tr>
<tr>
<td>ECON 401</td>
<td>Managerial Economics</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 6 credits from any upper-division economics courses (numbered 300 or higher).

**Total Credits** 18

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**Graduate Program Information**

(department needs to add info during edits)

**Degrees for the Department**

- English - Bachelor of Arts (p. 285)
- English - Master of Arts (p. 288)
- Creative Writing - Master of Fine Arts in Creative Writing (p. 284)
- Rhetoric and Professional Communication - Doctor of Philosophy (p. 292)

**Minors for the Department**

- Creative Writing - Undergraduate Minor (p. 285)
- Literature - Undergraduate Minor (p. 290)
- Medieval and Early Modern Studies - Undergraduate Minor (p. 291)
- Rhetoric and Professional Communication - Undergraduate Minor (p. 293)

**Professor Barry Thatcher, Department Head**

*Professors* Thatcher, Wojahn; *Associate Professors* Bradburd, Cull, Garay, Greenfield, Hoang, Miller-Tomlinson, Rourke, Schirmer, Smith, Voisine, Wojahn; *Assistant Professors* Banazek, Lavender-Smith, Sharp-Hoskins, Stagliano, Stolte, Wells; *College Associate Professor* Brown; *College Assistant Professors* Conley, Hastings, Lanier; *College Instructor* Gray

B. Thatcher, Department Head, Ph.D. (Purdue) – professional communication, intercultural rhetoric; L. Rosenburg, Associate Department Head, Writing Program Director, Ph.D. (Massachusetts)-composition, literacy studies; R. Bradburd, M.F.A. (New Mexico State) – creative writing: fiction, creative nonfiction; R. Cull, Ph.D. (Illinois) – modern and contemporary American literature; J. Garay, Ph.D. (Arizona State) – Chicano/a and Latino/a literature; C. Gray, M.F.A. (New Mexico State)- creative writing, fiction; R. Greenfield, Ph.D. (Denver) – creative writing: poetry; L. Hoang, M.F.A (Notre Dame) – creative writing: fiction; C. Lanier, Ph.D. (New Mexico State)- rhetoric and professional communication; E. Lavender-Smith, M.F.A. (New Mexico State)- creative writing: fiction; T. Miller-Tomlinson, Ph.D. (Yale) – Shakespeare, early modern literature and culture; B. Rourke, Ph.D. (Stanford) – modern British
**ENGL 111 M. Rhetoric and Composition for International and Multilingual Students**

4 Credits

For international and multilingual students. Students will build on your prior knowledge of writing in English as a second or additional language by engaging in several genres of writing and reading, including reading responses, discussion posts, formal academic papers (Rhetorical Analysis and Documented Argument), and peer review. Your instructor and classmates will serve as your readers and will give you helpful and constructive criticism, which will in turn assist you in becoming a more fluent and engaging communicator in English. Fulfills English 111 Gen-ed requirement. Restricted to Las Cruces campus only.

**Prerequisite(s):** CBT/PB score of 500, or IBT score of 61, or SPCD 110, or consent of instructor.

**ENGL 111G. Rhetoric and Composition**

4 Credits

Skills and methods used in writing university-level essays.

**Prerequisite(s):** ACT standard score in English of 16 or higher or a Compass score 76 or higher; for those scoring 13-15 in English on the ACT or 35-75 on the Compass, successful completion of a developmental writing course; for those scoring 12 or below on the ACT standard score in English or 34 or below on the Compass, successful completion of two developmental writing courses.

**ENGL 111GH. Rhetoric and Composition Honors**

4 Credits

Individualized assignments and independent study. Satisfies 4 credits of General Education English Composition requirement.

**Prerequisite:** ACT standard English score of 25 or higher and departmental approval.

**ENGL 112. Rhetoric and Composition II**

2 Credits

A continuation of English 111G for those desiring more work in composition. Weekly themes based on outside reading.

**Prerequisite:** successful completion of ENGL 111G or the equivalent.

**ENGL 115G. Perspectives on Literature**

3 Credits

Examines literature by writers from culturally diverse backgrounds and from different cultural and historical contexts. Explores various strategies of critical reading.

**ENGL 116G. Perspectives on Film**

3 Credits (3+3P)

Explores narrative and documentary film and examines significant developments in the history of cinema. Criticism of film as an art form, technical enterprise, business venture, and cultural phenomenon.

**ENGL 203G. Business and Professional Communication**

3 Credits

Effective writing for courses and careers in business, law, government, and other professions. Strategies for researching and writing correspondence and reports, with an emphasis on understanding and responding to a variety of communication tasks with a strong purpose, clear organization, and vigorous professional style. May be repeated up to 3 credits.

**Prerequisite(s):** ENGL 111G or SPCD 111G or ENGL 111 M.

**ENGL 211G. Writing in the Humanities and Social Sciences**

3 Credits

Theory and practice in interpreting texts from various disciplines in the humanities and social sciences. Strategies for researching, evaluating, constructing, and writing researched arguments. Course subtitled in the Schedule of Classes. May be repeated up to 3 credits.

**Prerequisite(s):** ENGL 111G or SPCD 111G or ENGL 111 M.

**ENGL 218G. Technical and Scientific Communication**

3 Credits

Effective writing for courses and careers in sciences, engineering, and agriculture. Strategies for understanding and presenting technical information for various purposes to various audiences. May be repeated up to 3 credits.

**Prerequisite(s):** ENGL 111G or SPCD 111G or ENGL 111 M.

**ENGL 220G. Introduction to Creative Writing**

3 Credits

Examines classic and contemporary literature in three genres. Various forms, terminologies, methods and technical aspects of each genre, and the art and processes of creative writing. May be repeated up to 3 credits.

**Prerequisite(s):** ENGL 111G or SPCD 111G or ENGL 111 M.

**ENGL 232. Script Development and Storyboarding**

3 Credits

Examines effective writing principles for creating storyboards that communicate the overall picture of a project, timing, scene complexity, emotion and resource requirements. Crosslisted with: CMI 232.

**ENGL 235. Narrative: Principles of Story Across the Media**

3 Credits

Examines the various strategies of written and visual storytelling, narrative structure and its principal components (plot, theme, character, imagery, symbolism, point of view) with an attempt to connect them to elements of contemporary forms of media expression, including screenwriting, playwriting, writing for documentaries and animation, etc. Crosslisted with: CMI 235.

**ENGL 243. The Bible as Literature**

3 Credits

Develops informed readings of Hebrew and Christian scriptures. Emphasizes understanding Biblical literary forms, techniques, themes; historical, cultural contexts for interpretation; authorship, composition, audience for individual books; development of Biblical canon.

**ENGL 244G. Literature and Culture**

3 Credits

Intensive reading of and discussion and writing about selected masterpieces of world literature. Emphasizes cultural and historical contexts of readings to help students appreciate literary traditions. Core texts include works by Homer, Dante, and Shakespeare, a classic novel, an important non-Western work, and modern literature.

**ENGL 251. Survey of American Literature I**

3 Credits

From the colonial period to the transcendentalists.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 252</td>
<td>Survey of American Literature II</td>
<td>3</td>
<td>From Whitman to the present.</td>
</tr>
<tr>
<td>ENGL 262</td>
<td>Masterpieces of Western European Literature, Post-Renaissance to Modern Times</td>
<td>3</td>
<td>Modern Western European literary classics, from the seventeenth through the twentieth centuries, with attention to the rise of the novel and other modern forms.</td>
</tr>
<tr>
<td>ENGL 263</td>
<td>History of Argument</td>
<td>3</td>
<td>Investigates the major figures and movements in rhetoric from the classical period to modern rhetorical theory, examining relations between rhetorical teaching and practice, culture, epistemology, and ideology. Main campus only.</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>Survey of English Literature I</td>
<td>3</td>
<td>From Beowulf through the eighteenth century.</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
<td>3</td>
<td>From the pre-Romantics to the present.</td>
</tr>
<tr>
<td>ENGL 299</td>
<td>Special Topics</td>
<td>1-3</td>
<td>Emphasis on a literary and/or writing subject chosen for the semester. Repeatable for a unlimited credit under different subtitles.</td>
</tr>
<tr>
<td>ENGL 301</td>
<td>Theory and Criticism: Rhetoric and Culture</td>
<td>3</td>
<td>Introduction to rhetorical criticism with an emphasis on understanding the theoretical and cultural underpinnings for the rhetorical analyses of texts.</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>Theory and Criticism: Literature and Culture</td>
<td>3</td>
<td>Introduction to literary criticism, from its classical beginnings through contemporary critical approaches.</td>
</tr>
<tr>
<td>ENGL 303</td>
<td>Theory and Criticism: Film, Media and Culture</td>
<td>3</td>
<td>Surveys classical and contemporary film theory. Explores the relationship of theory to textual analysis and filmmaking practices. Includes auteurism semiotics, psychoanalysis, and other theories, as well as theories of other media.</td>
</tr>
<tr>
<td>ENGL 304</td>
<td>Creative Writing: Prose</td>
<td>3</td>
<td>Imaginative writing, chiefly prose narrative. Repeatable for a maximum of 9 credits.</td>
</tr>
<tr>
<td>ENGL 305</td>
<td>Creative Writing: Reading Series</td>
<td>1</td>
<td>A one credit class based on the English Department’s literary reading series. The class meets online and at the literary readings.</td>
</tr>
<tr>
<td>ENGL 306</td>
<td>Creative Writing: Poetry</td>
<td>3</td>
<td>Introduction to the writing of poetry. Repeatable for a total of 9 credits.</td>
</tr>
<tr>
<td>ENGL 307</td>
<td>Creative Writing: Creative Nonfiction</td>
<td>3</td>
<td>Introduction to creative nonfiction. Skills emphasized will include the personal voice, powers of observation and reflection, advocacy, argument, and a creative, powerful use of language. Repeatable for a maximum of 9 credits.</td>
</tr>
<tr>
<td>ENGL 308</td>
<td>Creative Writing: Playwriting</td>
<td>3</td>
<td>Technique of one-act playwriting, and analysis of dramatic structure. Crosslisted with: THTR 308</td>
</tr>
<tr>
<td>ENGL 309</td>
<td>Screenwriting I</td>
<td>3</td>
<td>Writing intensive. Students learn the craft of screenwriting, honing skills in writing dialogue and visual narrative, crafting dynamic characters and dramatic action. Original student scripts will be performed and discussed in class. Consent of instructor required. Crosslisted with: CMI 309 and THTR 306.</td>
</tr>
<tr>
<td>ENGL 310</td>
<td>Critical Writing</td>
<td>3</td>
<td>A course in critical reading, writing, and research designed to prepare English majors for upper-division courses.</td>
</tr>
<tr>
<td>ENGL 311G</td>
<td>Advanced Composition</td>
<td>3</td>
<td>Writing of nonfiction prose. Reviews principles of expository and descriptive writing. Emphasizes the argument/persuasion essay with detailed discussion of semantic and rhetorical techniques. Prerequisite: junior or senior standing, or consent of instructor.</td>
</tr>
<tr>
<td>ENGL 315</td>
<td>Writing for the Web</td>
<td>3</td>
<td>Introduction to writing for the World Wide Web through practical application and analysis on both theory and research. Allows hands-on learning in a computer classroom.</td>
</tr>
<tr>
<td>ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
<td>3</td>
<td>Theory and practice of writing in technical and professional fields, individualized to each student’s field. Emphasizes efficient writing processes and effective written products. Prerequisite: junior or above standing, or consent of instructor.</td>
</tr>
<tr>
<td>ENGL 321V</td>
<td>Modern European Drama</td>
<td>3</td>
<td>Masterworks of European drama from the late 18th century to present. Crosslisted with: THTR 321V</td>
</tr>
<tr>
<td>ENGL 322</td>
<td>Dramatic Character</td>
<td>3</td>
<td>How characters have been created for the stage from the beginning of theatrical performances in ancient Greece to the present day. Exploring characterization related to dramatic structure, style, and genre, and how dramatic characters differ from those in literary fiction. Crosslisted with: THTR 322.</td>
</tr>
<tr>
<td>ENGL 323</td>
<td>American Drama</td>
<td>3</td>
<td>Masterworks of American drama by noted American playwrights. Crosslisted with: THTR 323</td>
</tr>
<tr>
<td>ENGL 326</td>
<td>Cultural Identity and Representation Across the Media</td>
<td>3</td>
<td>Considers complex relationships between representation and culture including how images and language shape racial, ethnic, gender, sexual, and class identities. Examines theories from several disciplines. Includes lecture, discussion and production exercises.</td>
</tr>
<tr>
<td>ENGL 327V</td>
<td>Shakespeare around the Globe</td>
<td>3</td>
<td>Introduction to multicultural issues in Shakespeare’s plays and to adaptations of Shakespeare’s plays in other cultures.</td>
</tr>
</tbody>
</table>
ENGL 328V. Literature of Science Fiction and Fantasy  
3 Credits  
Survey and critical examination of the development of science fiction and fantasy as literature genres through selected authors and texts.

ENGL 329. Studies in Drama  
3 Credits  
Emphasis on a group of related works of European or American drama; topics will vary. Crosslisted with: THTR 329 and CMI 329

ENGL 330V. Studies in Poetry  
3 Credits  
Emphasis on a related group of poems or on the work of one or more poets; topics will vary.

ENGL 335V. Studies in the Novel  
3 Credits  
Intensive reading of, discussion of, and writing about selected major novels from around the world. Emphasizes the history of the novel and its role in culture.

ENGL 336. Studies in Film  
3 Credits (3+3P)  
Explores the conventions of cinematic representation; the strategies involved in writing about and reading film; and/or the adaptation of literary texts to film. Repeatable under different subtitles.

ENGL 339V. Chicana/o Literature  
3 Credits  
Introduction to Chicano novels, short stories and selected creative nonfiction.

ENGL 341V. American Indian Literature  
3 Credits  
Forms and themes of Native American oral literary traditions; Native American writing in English, especially novels, short fiction, and poetry.

ENGL 349. The Short Story  
3 Credits  
Development of the short story as a distinct form. Readings and critical analysis of representative nineteenth and twentieth century pieces.

ENGL 354. Form and Technique in Fiction  
3 Credits  
Literature course designed for fiction writers, especially those English majors in the Creative Writing emphasis. The course combines the study of published fiction with the study of craft. Some of the assignments will require the student to write original fiction based on exercises provided by the instructor. Repeatable for up to 9 credits.

ENGL 356. Form and Technique in Poetry  
3 Credits  
Literature course designed for poets, especially those English majors in the Creative Writing emphasis. The course combines the study of published poetry with the study of craft. Some of the assignments will require the student to write original poems based on exercises provided by the instructor. Repeatable for up to 9 credits.

ENGL 358. Form and Technique in Playwriting  
3 Credits  
Literature course designed for playwrights, especially those English majors in the Creative Writing emphasis. The course combines the study of published plays and performances with the study of craft. Some of the assignments will require the student to write original plays based on exercises provided by the instructor. Repeatable up to 9 credits.

ENGL 363. Literature for Children and Young Adults  
3 Credits  
A comparative, historical survey of literature for young (K to 12th grade) readers. Emphasis on critical evaluation.  
Prerequisite: junior or above standing.

ENGL 380V. Women Writers  
3 Credits  
Introduction to multicultural women’s traditions through intensive study of works by women writers. Crosslisted with: W S 380V.

ENGL 392V. Mythology  
3 Credits  
Greek and Roman mythology and its impact on European and English literature. Readings in myths, classical plays, and other literature with mythological interest, including nonclassical myths.

ENGL 394V. Southwestern Literature  
3 Credits  
Introduction to multicultural literature of the Southwest: oral folk literature, literary fiction (classic and contemporary), nonfiction and poetry.

ENGL 399. Special Topics  
3 Credits  
Emphasis on a theme, genre, figure, or technique chosen for study during the semester. Repeatable under different subtitles.

ENGL 400. Independent Study: Upper Division  
1-3 Credits  
For students with demonstrated aptitude for independent work. Approval of instructor required before registration. Repeatable under different subtitles.

ENGL 405. Chaucer  
3 Credits  
Principal works, with emphasis on The Canterbury Tales.

ENGL 407. Milton  
3 Credits  
Studies in Milton’s works.

ENGL 408. Shakespeare I  
3 Credits  
Principal plays of Shakespeare’s first two periods. Crosslisted with: THTR 408.

ENGL 409. Shakespeare II  
3 Credits  
Principal plays of Shakespeare’s last two periods. Crosslisted with: THTR 409.

ENGL 412. Writing in the Workplace  
3 Credits  
Study of workplace writing practices, including a focus on research-based, theoretical, and pedagogical approaches to professional communication.

ENGL 413. Advanced Creative Writing: Prose Workshop  
3 Credits  
Imaginative writing, chiefly the narrative. May be repeated up to 12 credits.  
Prerequisite(s): ENGL 304 or consent of instructor.

ENGL 414. Advanced Creative Writing: Poetry Workshop  
3 Credits  
For advanced writers of poetry. Repeatable for a total of 12 credits.  
Prerequisite(s): ENGL 306 or consent of instructor.
ENGL 415. Advanced Creative Writing: playwriting Workshop
3 Credits
Technique of full-length playwriting, and analysis of dramatic structure. May be repeated up to 12 credits. Consent of Instructor required. Crosslisted with: THTR 309 and CMI 309.
Prerequisite(s): ENGL 308 or consent of instructor.

ENGL 416. Approaches to Literature
3 Credits
Understanding, appreciation, techniques of instruction in the high school. Prerequisite: at least 6 credits in upper-division English courses.

ENGL 417. Advanced Study in Critical Theory
3 Credits
Advanced study of one or more major trends in theoretical inquiry within English studies. Some prior study of theory, such as English 301-303, strongly recommended. Repeatable under different subtitles.

ENGL 418. History of Rhetoric
3 Credits
Investigation of crucial writings that have shaped Western attitudes towards and practice of rhetoric. Will examine key concepts from the Greeks through the Enlightenment, especially as they have influenced contemporary rhetorical theory.

ENGL 419. Modern Rhetorical Theory
3 Credits
Major figures in rhetorical theory, with particular emphasis on developments in rhetorical theory in the twentieth century.

ENGL 420. Advanced Study in a Literary Period or Movement
3 Credits
Close study of a historical or theoretical topic in a particular literary period or movement. Repeatable under different subtitles.

ENGL 421. Advanced Study in a Literary Form or Genre
3 Credits
Close study of a topic in a particular literary form or genre. May be repeated under different subtitles.

ENGL 422. Advanced Study in a Major Author
3 Credits
Close study of selected works by a major author. May be repeated under different subtitles.

ENGL 423. Advanced Study in a Major Text
3 Credits
Close study of a major text. Course subtitled in the Schedule of Classes. Repeatable under different subtitles.

ENGL 424. Advanced Study in Comparative Literature
3 Credits
Close study of a selection of non-English literary works read in translation. English-language works from a similar literary period or genre may also be read. Repeatable under different subtitles.

ENGL 425. British Romanticism
3 Credits
Intensive study of major writers and critical topics from the Romantic period. Repeatable under different subtitles.

ENGL 426. Online Publishing
3 Credits
This three-credit course provides a theoretical background for online publishing and design as well as hands on experience publishing an online arts magazine.

ENGL 431. Technical Editing
3 Credits
Uses workshops, readings, hands-on projects, and discussion to improve skills in gathering, writing, designing, and editing technical information. For students interested in technical communication as well as students interested in developing strengths in communicating in scientific and technical fields.

ENGL 432. Gothic Literature
3 Credits
Intensive study of gothic literature in particular historical, aesthetic, cultural, or intellectual contexts, such as American Gothic, Female Gothic, Dark Romanticism, or Vampire Literature. Repeatable under different subtitles.

ENGL 433. Victorian Literature
3 Credits
Intensive study of major writers and critical topics from the Victorian period. Repeatable under different subtitles.

ENGL 438. Literature of the American Renaissance
3 Credits
Intensive study of topics critical to the development of nineteenth century American literature before and during the Civil War, and the work of authors such as Emerson, Thoreau, Poe, Hawthorne, Melville, Whitman and Dickinson. Repeatable once under a different subtitle.

ENGL 442. Modern and Contemporary American Poetry
3 Credits
Studies the development of American poetry from World War I to the present. Repeatable once under a different subtitle.

ENGL 444. Modern British Fiction
3 Credits
Study of the fiction produced in the British Isles in the 20th and 21st centuries. Repeatable once under a different subtitle.

ENGL 445. Postmodern Fiction
3 Credits
Study of the various forms of formally innovative experimental fiction produced since 1945, with a focus on the relationship between literary history and its sociohistorical contexts. Some texts will be read in translation. Repeatable once under a different subtitle.

ENGL 446. Advanced Creative Writing: Nonfiction Prose
3 Credits
This workshop-format class for advanced writers will examine the many varieties of Creative Nonfiction. Students should be prepared for a rigorous reading load of published nonfiction and student submissions. Because of the workshop format, every student is expected to contribute extensively to every class, both in printed form and oral comments. Taught with ENGL 546. May be repeated up to 12 credits.
Prerequisite(s): ENGL 307 or consent of instructor.

ENGL 449. Advanced Study in Writing
3 Credits
Close study of a topic in composition, rhetoric and/or technical and professional communication. Repeatable for a maximum of 6 credits with permission of department.

ENGL 451. Practicum in the Grammar of American English
3 Credits
Studies of formal grammar of the English language in preparation for the teaching of the English language and/or advanced linguistic analysis.
ENGL 452. History of the English Language
3 Credits
This course examines the history of the English language from its Indo-European origins through its development into an international language. The aim is to describe the English language formally and to trace linguistic change over time. Samples of written English will illustrate various stages in the development of English. Also considered are contemporary social and political issues related to language, including the problem of 'standard English' and the uses of language in advertising, the media, and politics.

ENGL 453. World Literatures
3 Credits
Study of one or more literary traditions exclusive of those originating in Europe and the United States. Readings will include texts in translation. Repeatable once under a different subtitle.

ENGL 456. Ethnic Studies in US Literature and Culture
3 Credits
Concentrates on comparative study of literary and cultural production by two or more U.S. ethnic populations. Incorporates both literary and sociocultural readings of texts. Repeatable under different subtitles.

ENGL 458. Latino/a Literature and Culture
3 Credits
Focuses on established and emergent Latino/a literary and cultural production. Incorporates both literary and sociocultural readings of texts. Repeatable once under a different subtitle.

ENGL 460. Proposal Writing
3 Credits
Developing proposals and grants in a workshop setting.

ENGL 462. Interdisciplinary, Client-Based Project Practicum
3 Credits
Hands-on experience in designing projects within interdisciplinary teams for organizational clients. Taught with ENGL 562.

ENGL 463. Advanced Study in English Literature
3 Credits
Covers selected works for a particular period of English literary history. Repeatable under different subtitles.

ENGL 469. Advanced Study in American Literature
3 Credits
Covers selected works for a particular period of American literary history. Repeatable under different subtitles.

ENGL 470. Approaches to Composition
3 Credits
Theory and practice of teaching writing. Discussion and application of classroom practices, definition of standards, and evaluation of student writing.

ENGL 478. Document Design
3 Credits
Advanced study in writing, with an emphasis on the computer as a tool for designing visually informative text. Includes theory and research in document design and the use of page composition and graphics software.

ENGL 479. Computers and Writing
3 Credits
This course will trace the history of computers and composition as a field by looking at the work of important scholars including Selfe, Hawisher, Johnson-Eilola, and Wysocki. We will then focus on specific ways new media might be integrated into composition classrooms. The course will include discussions, student facilitations, and experimentation with technologies.

ENGL 480. Screenwriting II
3 Credits
Students will write two short scripts, 10-15 pages each. Focus will be on learning how to take notes and rewrite. Script analysis will be in a workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialog, character development, etc. Crosslisted with: CMI 480
Prerequisite(s): ENGL 309 or CMI 309 or THTR 306 or consent of instructor.

ENGL 481. Women's Literature
3 Credits
Intensive study of literature by women, in particular historical, aesthetic, cultural, or intellectual contexts. Repeatable under different subtitles. Crosslisted with: W S 484

ENGL 486. Hollywood Film
3 Credits (3+3P)
Intensive study of Hollywood film in its artistic, cultural, or historical contexts. Repeatable under different subtitles.

ENGL 489. Cultural Studies: Literature and Theory
3 Credits
Examines the theory and practice of cultural studies in relation to the variety of discourse describable as literary, including autobiography, avant-garde writing, nonfiction prose, the essay, online writing, folklore, and popular genre fiction (such as mystery, romance, thriller, or horror). Repeatable once under a different subtitle.

ENGL 493. Middle English Textual Cultures
3 Credits
Intensive study of cultures of reading, writing, and literary production in late-medieval England, situating Middle English literature in its manuscript contexts. No prior experience with Middle English required.

ENGL 497. Internship
3-6 Credits (3-6)
Supervised technical and professional communication internship in business, industry, government, or the university. Repeatable for a total of 6 credits. Consent of instructor required.

ENGL 500. Supervised Study
1-3 Credits
To prepare the student for the master's degree examinations by special studies in fields not covered in routine course work.
Prerequisite: consent of instructor.

ENGL 501. Online Publishing
3 Credits
This three-credit course provides a theoretical background for online publishing and design as well as hands-on experience publishing an online arts magazine. Taught with ENGL 430.

ENGL 505. Graduate Study in Chaucer
3 Credits
Principal works, with emphasis on the Canterbury Tales. Requirements include independent directed research.
Prerequisite: ENGL 261 or consent of instructor.
ENGL 508. Graduate Study in Shakespeare I  
3 Credits  
Principal plays of Shakespeare's first two periods. Requirements include independent directed research.

ENGL 509. Graduate Study in Shakespeare II  
3 Credits  
Principal plays of Shakespeare's last two periods. Requirements include independent directed research.

ENGL 510. Proseminar in Rhetoric and Professional Communication  
3 Credits  
Introduction to research in rhetoric and professional communication. Taught with ENGL 610.

ENGL 511. Discourse and Theories  
3 Credits  
Investigates theories describing how humans use language and considers production, reception, and cultural context. Topics vary. Repeatable for a maximum of 6 credits.

ENGL 512. Graduate Study in Writing in the Workplace  
3 Credits  
Study of workplace writing practices, including a focus on research-based, theoretical, and pedagogical approaches to professional communication.

ENGL 513. Creative Writing Workshop: Fiction  
3 Credits  
Advanced creative writing prose workshop. Imaginative writing, chiefly the narrative. Graduate level workshop for students who are not in the English Department MFA program. May be repeated for a maximum of 12 credits. Taught with ENGL 413 with additional work required at the graduate level.

ENGL 514. Creative Writing Workshop: Poetry  
3 Credits  
Creative writing poetry workshop for advanced writers of poetry. Graduate level works for students who are not in the English Department MFA program. Repeatable for a maximum of 12 credits. Taught with ENGL 414 with additional work required at the graduate level.

ENGL 516. Graduate Study in Approaches to Literature  
3 Credits  
Understanding, appreciation, techniques of instruction in the high school. Requirements include independent directed research. 
Prerequisite: at least 6 credits in upper-division English courses.

ENGL 517. Graduate Study in Critical Theory  
3 Credits  
Advanced study of one or more major trends in theoretical inquiry within English studies. Some prior study of theory, such as English 301, 302, or 303, strongly recommended. Repeatable under different subtitles.

ENGL 518. History of Rhetoric  
3 Credits  
An investigation of the crucial writings that have shaped Western attitudes towards and practice of rhetoric. Course will examine key texts from the Greeks through the Enlightenment, especially as they have influenced contemporary rhetorical theory.

ENGL 519. Graduate Study in Modern Rhetorical Theory  
3 Credits  
Major figures in rhetorical theory, with particular emphasis on developments in rhetorical theory in the 20th century. Students will be responsible for all requirements of ENGL 419 and will in addition undertake independent directed research.

ENGL 520. Workshop: Advanced Composition  
3 Credits  
Intensive work in composition in a workshop setting.

ENGL 521. Graduate Study in a Literary Period or Movement  
3 Credits  
Close study of a topic in a particular literary period or movement. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 522. Graduate Study in a Literary Form or Genre  
3 Credits  
Close study of a topic in a particular literary form or genre. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 523. Graduate Study of a Major Author  
3 Credits  
Close study of selected works of a major author. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 524. Graduate Study in a Major Text  
3 Credits  
Close study of a major text. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 525. Graduate Study in Comparative Literature  
3 Credits  
Close study of a selection on non-English literary works read in translation. English-language works from a similar literary period or genre may also be read. Requirements include independent directed research. Repeatable under different subtitles. 
Prerequisite: graduate standing or consent of instructor.

ENGL 526. Special Topics in Critical Theory  
3 Credits  
Study of a specific historical or theoretical topic, trend, or movement in Critical Theory. Repeatable under different subtitles.

ENGL 527. Graduate Study in Film and Digital Media  
3 Credits  
Offers close graduate study of a form or genre, a major figure or style, a historical period or movement, or a major theme or text. Topics vary from semester to semester.

ENGL 529. British Romanticism  
3 Credits  
Intensive study of major writers and critical topics from the Romantic period. Repeatable under different subtitles.

ENGL 530. Argument Theory and Practice  
3 Credits  
Examining theories of argument and how language convinces audiences to think and act in certain ways and not in others. Investigates argument across disciplines and in social/political contexts.

ENGL 531. Technical Editing  
3 Credits  
Uses workshops, readings, hands-on projects, and discussion to improve skills in gathering, writing, designing, and editing technical information. For students interested in technical communication as well as students interested in developing strengths in communicating in scientific and technical fields.
ENGL 532. Gothic Literature
3 Credits
Intensive study of gothic literature in particular historical, aesthetic, cultural, or intellectual contexts, such as American Gothic, Female Gothic, Dark Romanticism, or Vampire Literature. Repeatable under different subtitles.

ENGL 533. Victorian Literature
3 Credits
Intensive study of major writers and critical topics from the Victorian period. Repeatable under different subtitles.

ENGL 534. Graduate Study: Form and Technique in Fiction
3 Credits
Advanced study of issues in form and technique in fiction, including point of view, scene and dialogue, and story structure. Repeatable for a maximum of 6 credits.

ENGL 535. Graduate Study: Form and Technique in Poetry
3 Credits
Advanced study of issues in form and technique in poetry, including voice, tone, syntax, and structure. Repeatable for a maximum of 12 credits.

ENGL 536. The Borderlands Writing Project
3-6 Credits (3-6)
Intensive month-long seminar for practicing teachers and educators designed to improve the teaching of writing and the writing process and literacy and reading in schools and other educational contexts. Reading, discussing, and writing about current professional literature; completing teacher inquiry; and planning action research. Participants complete personal and professional writing, as well as additional professional development activities. By invitation only. Affiliated with the National Writing Project. Consent of instructor required. Crosslisted with: RDG 536

ENGL 537. Practitioner Inquiry and Literacy Action Research
1-3 Credits (1-3)
Inquiry concerning literacy practices within specific contexts and the planning, implementing, and assessing projects designed to increase and improve literacy within that context. Instruction includes reading and web-based discussion, bi-monthly seminars, and onsite consultations. Associated with ongoing community outreach by the English Department and the Borderlands Writing Project. Consent of instructor required.

ENGL 538. Antebellum American Literature
3 Credits
Intensive study of topics critical to the development of nineteenth century American literature before and during the Civil War, and the work of authors such as Emerson, Thoreau, Poe, Hawthorne, Melville, Whitman and Dickinson. Repeatable once under a different subtitle. May be repeated up to 6 credits.

ENGL 542. Modern and Contemporary American Poetry
3 Credits
Studies the development of American poetry from World War I to the present. Repeatable once under a different subtitle.

ENGL 543. Multimedia Theory and Production
3 Credits
Issues, theories, and production practices underlying design of multimedia, including rhetorical choices, aesthetic approaches, usability concerns, and diverse academic and popular discourses contributing to continued development of digital texts. Taught with ENGL 643.

ENGL 544. Modern British Fiction
3 Credits
Study of the fiction produced in the British Isles in the 20th and 21st centuries. Repeatable once under a different subtitle.

ENGL 545. Postmodern Fiction
3 Credits
Study of the various forms of formally innovative experimental fiction produced since 1945, with a focus on the relationship between literary history and its sociohistorical contexts. Some texts will be read in translation. Repeatable once under a different subtitle.

ENGL 548. Graduate Study in Empirical Research
3 Credits
Introduction to empirical research methods in composition, professional communication, and rhetoric.

ENGL 549. Graduate Study in Writing
3 Credits
Close study of a topic in composition, rhetoric, and/or technical and professional communication. Topics vary. Repeatable for a maximum of 6 credits.

ENGL 550. Graduate Study in Literacy
3 Credits
Studies in literacy theory and literacy research. Topics may vary. Taught with ENGL 650.

ENGL 551. Practicum in the Grammar of American English
3 Credits
Studies of formal grammar of the English language in preparation for the teaching of the English language and/or advanced linguistic analysis. Taught with ENGL 451.

ENGL 552. Graduate Study in History of the English Language
3 Credits
This course examines the history of the English language from its Indo-European origins through its development into an international language. The aim is to describe the English language formally and to trace linguistic change over time. Samples of written English will illustrate various stages in the development of English. Also considered are contemporary social and political issues related to language, including the problem of ‘standard English’ and the uses of language in advertising, the media, and politics.

ENGL 553. World Literatures
3 Credits
Study of one or more literary traditions exclusive of those originating in Europe and the United States. Readings will include texts in translation. Repeatable once under a different subtitle.

ENGL 555. Graduate Study in Rhetoric of Scientific Literature
3 Credits
Intensive study of the rhetoric of selected works of scientific literature.

ENGL 556. Ethnic Studies in US Literature and Culture
3 Credits
Concentrates on comparative study of literary and cultural production by two or more U.S. ethnic populations. Incorporates both literary and sociocultural readings of texts. Repeatable under different subtitles.

ENGL 558. Latino/a Literature and Culture
3 Credits
Focuses on established and emergent Latino/a literary and cultural production. Incorporates both literary and sociocultural readings of texts. Repeatable once under a different subtitle.
ENGL 559. Black Literature and Culture in the United States
3 Credits
Focuses on established and emergent Black U.S. literary and cultural production. Incorporates both literary and sociocultural readings of texts. Repeatable under a different subtitle.

ENGL 560. Proposal and Grant Writing
3 Credits
Developing proposals and grants in a workshop setting.

ENGL 561. Topics in Writing Program Administration
3 Credits
Explores issues, theories, and research underlying the design of writing programs and the administration of writing centers. Repeatable for a maximum of 6 credits. Taught with ENGL 661.

ENGL 562. Interdisciplinary, Client-Based Project Practicum
3 Credits
Hands-on experience in collaborating within interdisciplinary teams designing projects for organizational clients. Taught with ENGL 462.

ENGL 563. Graduate Study in English Literature
3 Credits
Covers selected works for a particular period of English literary history. Repeatable under different subtitles.

ENGL 564. History and Theory of Composition Studies
3 Credits
Studies in the history and theory of composition as a discipline. Taught with ENGL 664.

ENGL 565. Intercultural Rhetoric and Professional Communication
3 Credits
Examines rhetorical traditions in intercultural professional, technical, academic, and governmental contexts. Taught with ENGL 665.

ENGL 566. Online Pedagogy for Writing and Professional Communication
3 Credits
Course explores key issues related to teaching and learning in online environments, with a focus on the teaching of writing and professional communication. Examines digital classroom practices and the theories that inform them and evaluates applicability and relevance of available technologies.

ENGL 567. Documentary Film Theory and Criticism
3 Credits (3+3P)
Course offers critical survey of documentary film theory and criticism including considerations of the epistemological assumptions, rhetorical choices, aesthetic approaches, political circumstances of historical and contemporary documentary film.

ENGL 568. Rhetoric and Cultural Studies
3 Credits
Explores intersections between rhetoric and cultural studies. Examines theories and practices of texts and discourses in political and cultural contexts. Taught with ENGL 668.

ENGL 569. Graduate in American Literature
3 Credits
A group of works from a particular period of American literary history. Repeatable under different subtitles.

ENGL 570. Graduate Study in Approaches to Composition
3 Credits
Theory and practice of teaching writing, including classroom practices, definition of standards, and evaluation of student writing. Requirements include independent directed research.

ENGL 571. Composition Pedagogy and Practicum
3 Credits
Examines the pedagogical implications of contemporary composition theory and research. Focuses on teaching composition at the college level. Consent of instructor required.

ENGL 572. Technical-Professional Communication: Theory and Pedagogy
3 Credits
Topics in teaching business, technical and scientific communication in academic and workplace contexts.
Prerequisite: graduate standing.

ENGL 574. Workshop: Advanced Writing Prose
3 Credits
Intensive practice in prose writing, primarily fiction, in a workshop environment with peer criticism. Repeatable for a total of 15 credits. Consent of instructor required.

ENGL 575. Workshop: Advanced Writing Poetry
3 Credits
Intensive practice in poetry writing in a workshop environment with peer criticism. Repeatable for a total of 15 credits. Consent of instructor required.

ENGL 576. Workshop: Advanced Writing Playwriting
3 Credits
Intensive practice in dramatic writing in a workshop environment with peer criticism. Repeatable for a total of 9 credits. Consent of instructor required.

ENGL 577. Workshop: Advanced Technical and Professional Writing
3 Credits
Intensive practice in technical and professional writing and editing in a workshop environment. May be repeated for a total of 6 credits. Consent of instructor required.

ENGL 578. Topics in Rhetoric and Technology
3 Credits
Explores intersections between rhetoric and technology, approaches may highlight theory, media production, and/or research. Repeatable for a maximum of 6 credits. Taught with ENGL 678.

ENGL 579. Computers and Writing
3 Credits
This course will trace the history of computers and composition as a field by looking at the work of important scholars including Selfe, Hawisher, Johnson-Eilola, and Wysocki. We will then focus on specific ways new media might be integrated into composition classrooms. The course will include discussions, student facilitations, and experiment with technologies.

ENGL 580. Graduate Problems in Creative Writing
3 Credits
Independent study in creative writing. Consent of instructor required. Repeatable for a total of 9 credits.

ENGL 581. Women's Literature
3 Credits
Intensive study of literature by women, in particular historical, aesthetic, cultural, or intellectual contexts. Repeatable under different subtitles. Crosslisted with: W S 584
ENGL 582. Gender and Popular Culture
3 Credits
Intensive study of the representations of gender in popular culture. Examines the historical, aesthetic, and cultural contexts of these representations and the various critical and theoretical lenses we use to understand them. Repeatable under different subtitles. Crosslisted with: W S 582

ENGL 583. Critical Writing Studies
3 Credits
Overview of current and historical approaches to the critical study of gender and language: how gender theoretically manifests in linguistic, social, cultural, academic, and professional contexts.

ENGL 584. Workshop: Advanced Academic Writing for International Students
3 Credits
This workshop-based course is for graduate-level multilingual writers from all disciplines who want to improve their English academic writing in an intensive and collaborative environment. Students will propose a major writing project to workshop throughout the semester, such as dissertation, thesis, comprehensive exams, etc. Some of the topics covered will be academic language, cohesion/coherence, organization, and supporting academic arguments. Other topics to be determined by needs of the class. 4.Consent of instructor.
Prerequisite(s): 1.Be classified as a graduate student by the Graduate School 2.Be classified as an international student whose first language is not English. 3.Have a major writing project in progress (comprehensive exams, thesis, dissertation, conference paper, etc.

ENGL 585. Advanced Writing Workshop: RPC Capstone
3 Credits
Students work to develop and revise their chosen Master’s program Capstone Project (a portfolio, thesis or master essay) in consultation with instructor and classmates. Students provide and receive feedback on their work-in-progress. Consent of Instructor required.

ENGL 586. Hollywood Film
3 Credits (3+3P)
Intensive study of Hollywood film in its artistic, cultural, or historical contexts. Repeatable under different subtitles.

ENGL 587. Modernist and Experimental Film
3 Credits
Explores the variety of film aesthetics that depart to some degree from the conventions of classical cinema. Focuses on how film form relates to modernist, postmodernist, experimental, and avant-garde tendencies in the arts. Special attention will be paid to the implications of radical formal experimentation for cultural politics, in particular in the context of modern and contemporary history. Repeatable once under a different subtitle.

ENGL 589. Cultural Studies: Literature and Theory
3 Credits
Examines the theory and practice of cultural studies in relation to the variety of discourse describable as literary, including autobiography, avant-garde writing, nonfiction prose, the essay, online writing, folklore, and popular genre fiction (such as mystery, romance, thriller, or horror). Repeatable once under a different subtitle.

ENGL 590. Master’s Seminar in Rhetoric
3 Credits
Studies in theories of and issues in rhetoric. Topics may vary from year to year. Repeatable for a total of 9 credits.

ENGL 591. Graduate Screenwriting
3 Credits
Students will prepare a feature-length screenplay. Script analysis will be in an advanced workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. Aimed at preparing writers for the professional market. Consent of instructor required.

ENGL 595. Master’s Workshop: Poetry
3-6 Credits (3-6)
Students will submit a draft of thesis project for workshop critique. Revision of the thesis draft submitted to the instructor. Restricted to MFA CW majors.
Prerequisite(s): Enrolled in MFA penultimate semester.

ENGL 596. Master’s Workshop: Fiction
3-6 Credits
Students will submit a draft of thesis project for workshop critique. Revision of the thesis draft submitted to the instructor. Restricted to MFA CW majors.
Prerequisite(s): Enrolled in MFA penultimate semester.

ENGL 597. Internship in Technical and Professional Communication
3-6 Credits (3-6)
Supervised technical and professional communication in business, industry, government, or the university. May be repeated for a total of 6 credits. Consent of instructor required.

ENGL 598. Master’s Essay
3 Credits
Students electing the master essay option complete revision of a scholarly essay of 25-30 pages, the approximate length of a journal article, and reformulation of this essay to the 7-8 pages appropriate for presentation at a conference. This option also requires research of appropriate publication venues and a final oral defense of the project. A supervising faculty member will approve the selected essay, guide revision, and help students form an examining committee, which consists of at least two members of the graduate English faculty and one member of the graduate faculty from outside the department. Students are encouraged to undertake the Master Essay process in the first half of their third semester of full time graduate work, or soon after completing 18 hours of course work. This option is the preferred exam option, particularly for those students who intend to pursue Ph.D. study. Consent of instructor required.

ENGL 599. Master’s Thesis
1-15 Credits
Thesis.

ENGL 600. Doctoral Research
1-15 Credits
Assigns credit for research performed prior to the doctoral comprehensive examination.

ENGL 601. Qualitative Research
3 Credits
Theory and practice of designing research studies and of collecting and analyzing data. Emphasis on qualitative methods of research in composition, professional communication, and rhetoric.

ENGL 602. Quantitative Research
3 Credits
Theory and practice of designing quantitative research studies and of collecting and analyzing data. Emphasis on quantitative methods of research in composition, professional communication, and rhetoric.
ENGL 603. Rhetorical Criticism and Methodology
3 Credits
Theory and practice of designing research studies and of collecting and analyzing data. Emphasis on methods of rhetorical criticism.

ENGL 604. Digital Research Methods
3 Credits
This course will serve as one of the core methods courses in the RPC PhD program, focusing on "digital" methods in rhetorical studies. As such, the aim of this class is to help you begin to gain confidence in conducting research in rhetoric, professional communication, and composition using digital methods. In this course we will assume that digital methods in rhetoric take broadly two forms: first, digital methods of acquisition, processing, and presentation of research data. And second, digital methods of production and circulation of rhetorical objects. The former closely resembles the methods of "digital humanities" while the latter will be closer to media archaeology and "critical making" practices. In all cases, we will relate these tools and methods to key questions and theories in our field, asking how and why we might apply digital methods in rhetorical scholarship.
Prerequisite(s): graduate standing.

ENGL 610. Proseminar in Rhetoric and Professional Communication
3 Credits
Introduction to research in rhetoric and professional communication. Required of and limited to students enrolled in the Ph.D. program in Rhetoric and Professional Communication.

ENGL 643. Multimedia Theory and Production
3 Credits
Issues, theories, and production practices underlying design of multimedia, including rhetorical choices, aesthetic approaches, usability concerns, and diverse academic and popular discourses contributing to continued development of digital texts. Taught with ENGL 543.

ENGL 646. Teaching Rhetoric and Writing with English Language Learners
3 Credits
This course introduces students to the rich interdisciplinary world of writing for English language learners with the goal of helping researchers and instructors understand the unique characteristics and needs of ELL writers. It also examines Generation 1.5, bilingualism, and Spanish-dominant writers along the U.S.-Mexico Border. The course prepares students to work with ELL writing in curriculum design, needs analysis, classroom implementation, assessment, writing program administration, and institutional policies. The course will be a requirement for those GAs seeking to teach experimental sections of first-year multilingual composition at NMSU.
Prerequisite(s): graduate standing.

ENGL 649. Graduate Study in Writing
3 Credits
Close study of a topic in composition, rhetoric, and/or technical and profession communication. Repeatable for a total of 6 credits.

ENGL 650. Graduate Study in Literacy
3 Credits
Studies in literacy theory and literacy research. Topics may vary. Taught with ENGL 550.

ENGL 661. Topics in Writing Program Administration
3 Credits
Explores issues, theories, and research underlying writing programs and the administration of writing centers. Repeatable for a maximum of 6 credits. Taught with ENGL 561.

ENGL 664. History and Theory of Composition Studies
3 Credits
Studies in the history and theory of composition as a discipline. Taught with ENGL 564.

ENGL 665. Intercultural Rhetoric and Professional Communication
3 Credits
Examines rhetorical traditions in intercultural professional, technical, academic, and governmental contexts. Taught with ENGL 565.

ENGL 667. Documentary Film Theory and Criticism
3 Credits (3+3P)
Course offers critical survey of documentary film theory and criticism including considerations of the epistemological assumptions, rhetorical choices, aesthetic approaches, and political circumstances of historical and contemporary documentary film. Taught with ENGL 567

ENGL 668. Rhetoric and Cultural Studies
3 Credits
Explores intersections between rhetoric and cultural studies. Examines theories and practices of texts and discourses in political and cultural contexts. Taught with ENGL 568.

ENGL 678. Topics in Rhetoric and Technology
3 Credits
Explores intersections between rhetoric and technology, approaches may highlight theory, media production, and/or research. Repeatable for a maximum of 6 credits. Taught with ENGL 578.

ENGL 683. CRITICAL WRITING STUDIES
3 Credits
This course investigates the field of Writing Studies as a distinct field of study, related to but not synonymous with Composition Studies. While debates surrounding the relationships among Writing Studies and Composition Studies flourish, this course centers on the former—investigating writing as a practice, process, and object that merits attention in its own right. Such attention will be grounded in contemporary critical and cultural theory that contests writing as a positive or neutral sign (i.e. activity theory, posthumanism, ecocriticism, new materialism, new media studies; feminist, queer, critical race or decolonial theory). Crosslisted with: ENGL 583.
Prerequisite(s): graduate standing.

ENGL 690. Doctoral Seminar in Rhetoric
3 Credits
Studies in theories of and issues in rhetoric. Topics may vary from year to year. Repeatable for a maximum of 9 credits.

ENGL 700. Doctoral Dissertation
15 Credits
Dissertation.

Name:

Office Location:

Phone: (575) 646-3931

Website: http://www.nmsu.edu/~english/

Creative Writing - Master of Fine Arts in Creative Writing

Students pursuing the MFA in Creative Writing devote themselves to concentrated study and development of a chosen genre: poetry or fiction. Students
• complete 54 hours of graduate-level coursework,
• present a book-length thesis of original work with an introduction or afterward,
• perform a public reading from the thesis, and
• pass an oral examination in the final semester.

A maximum of 12 credits in Form and Technique count for the degree.

Required Coursework

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFA workshop in the major genre (poetry, fiction)</td>
<td>12</td>
</tr>
<tr>
<td>Form and Technique courses in major genre</td>
<td>6</td>
</tr>
<tr>
<td>Workshop in a second genre</td>
<td>3</td>
</tr>
<tr>
<td>Master Workshop (poetry, fiction)</td>
<td>6-12</td>
</tr>
<tr>
<td>Graduate literature courses (may include 2 Form &amp; Technique)</td>
<td>12</td>
</tr>
<tr>
<td>ENGL 599 Master’s Thesis</td>
<td>1-15</td>
</tr>
<tr>
<td>Elective Courses</td>
<td>3-12</td>
</tr>
<tr>
<td>Total Credits</td>
<td>43-72</td>
</tr>
</tbody>
</table>

1 Graduate assistants must take 3 hours of ENGL 571 Composition Pedagogy and Practicum, during their first semester of teaching.

Creative Writing - Undergraduate Minor

Students not earning a bachelor’s degree in English with an emphasis in Creative Writing are eligible to pursue a minor in Creative Writing. Students must earn 18 credits from the approved course lists below. At least 12 credits must be upper division. Students may request approval for other courses clearly related to the minor from the undergraduate advisor in the Department of English. Students earning a BA in English must earn at least 6 credits approved by the Department of English undergraduate advisor beyond those earned for the major in order to earn a minor in Creative Writing.

Requirements

Select two from the following: 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 220G</td>
<td>Introduction to Creative Writing</td>
</tr>
<tr>
<td>ENGL 243</td>
<td>The Bible as Literature</td>
</tr>
<tr>
<td>ENGL 251</td>
<td>Survey of American Literature I</td>
</tr>
<tr>
<td>ENGL 252</td>
<td>Survey of American Literature II</td>
</tr>
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<td>ENGL 262</td>
<td>Masterpieces of Western European Literature, Post-Renaissance to Modern Times</td>
</tr>
<tr>
<td>ENGL 263</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>Survey of English Literature I</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
</tbody>
</table>

Select two from the following: 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 304</td>
<td>Creative Writing: Prose</td>
</tr>
<tr>
<td>ENGL 306</td>
<td>Creative Writing: Poetry</td>
</tr>
<tr>
<td>ENGL 307</td>
<td>Creative Writing: Creative Nonfiction</td>
</tr>
<tr>
<td>ENGL 308</td>
<td>Creative Writing: Playwriting</td>
</tr>
<tr>
<td>ENGL 309</td>
<td>Screenwriting I</td>
</tr>
<tr>
<td>ENGL 413</td>
<td>Advanced Creative Writing: Prose Workshop</td>
</tr>
<tr>
<td>ENGL 414</td>
<td>Advanced Creative Writing: Poetry Workshop</td>
</tr>
</tbody>
</table>

ENGL 415 Advanced Creative Writing: playwriting Workshop
ENGL 480 Screenwriting II
Select one from the following: 2

ENGL 413 Advanced Creative Writing: Prose Workshop
ENGL 414 Advanced Creative Writing: Poetry Workshop
ENGL 415 Advanced Creative Writing: playwriting Workshop
ENGL 480 Screenwriting II
Select 3 credits from English literature courses numbered 300 and above.

Total Credits 18

1 Students may make 1 or 2 of the following substitutions:
   - HON 229G The New Testament as Literature for ENGL 243 The Bible as Literature;
   - HON 234G The Worlds of Arthur, or HON 239G Medieval Understandings: Literature and Culture in the Middle Ages for ENGL 271 Survey of English Literature I;

2 All Creative Writing workshops may be taken more than once.

English - Bachelor of Arts

Concentration: Creative Writing

Departmental Requirements

In addition to meeting the English basic skills requirement, the student majoring in Creative Writing must complete 42 credits in English beyond ENGL 111G Rhetoric and Composition satisfying the following requirements.

Departmental Requirements

Select three from the following: 1, 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 243</td>
<td>The Bible as Literature</td>
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<tr>
<td>ENGL 251</td>
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<tr>
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</tr>
<tr>
<td>ENGL 271</td>
<td>Survey of English Literature I</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 310</td>
<td>Critical Writing</td>
</tr>
</tbody>
</table>

Select one from the following: 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 301</td>
<td>Theory and Criticism: Rhetoric and Culture</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>Theory and Criticism: Literature and Culture</td>
</tr>
<tr>
<td>ENGL 303</td>
<td>Theory and Criticism: Film, Media and Culture</td>
</tr>
</tbody>
</table>

Select a minimum of two different Creative Writing workshops from the following:

<table>
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<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ENGL 304</td>
<td>Creative Writing: Prose</td>
</tr>
<tr>
<td>ENGL 306</td>
<td>Creative Writing: Poetry</td>
</tr>
<tr>
<td>ENGL 307</td>
<td>Creative Writing: Creative Nonfiction</td>
</tr>
</tbody>
</table>
ENGL 308 Creative Writing: Playwriting
ENGL 309 Screenwriting I

Select two advanced Creative Writing Workshops from the following:

ENGL 413 Advanced Creative Writing: Prose Workshop
ENGL 414 Advanced Creative Writing: Poetry Workshop
ENGL 415 Advanced Creative Writing: playwriting Workshop
ENGL 480 Screenwriting II

Select two from the following:

ENGL 354 Form and Technique in Fiction
ENGL 356 Form and Technique in Poetry
ENGL 358 Form and Technique in Playwriting

Select 9 additional credits from English courses numbered 400-499.

Total Credits 42

1 Students may make 1 or 2 of the following substitutions:
   - HON 229G The New Testament as Literature for ENGL 243 The Bible as Literature;
   - HON 234G The Worlds of Arthur, or HON 239G Medieval Understandings: Literature and Culture in the Middle Ages for ENGL 271 Survey of English Literature I;

2 These 15 credits should be completed before the student enrolls in 400-level courses.

**Concentration: English**

**Departmental Requirements**

In addition to meeting the English basic skills requirement, the student majoring in English must complete 42 credits in English beyond ENGL 111G Rhetoric and Composition satisfying the following requirements.

**Departmental Requirements**

Select four from the following: 1,2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 220G</td>
<td>Introduction to Creative Writing</td>
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<tr>
<td>ENGL 243</td>
<td>The Bible as Literature</td>
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<td>ENGL 251</td>
<td>Survey of American Literature I</td>
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<tr>
<td>ENGL 252</td>
<td>Survey of American Literature II</td>
</tr>
<tr>
<td>ENGL 262</td>
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<tr>
<td>ENGL 263</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>Survey of English Literature I</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 310</td>
<td>Critical Writing</td>
</tr>
</tbody>
</table>

Select one from the following: 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 301</td>
<td>Theory and Criticism: Rhetoric and Culture</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>Theory and Criticism: Literature and Culture</td>
</tr>
<tr>
<td>ENGL 303</td>
<td>Theory and Criticism: Film, Media and Culture</td>
</tr>
</tbody>
</table>

Select 6 additional credits from English courses numbered 298-399.

Students may count 1 or 2 of the following Honors courses towards the requirement of 6 hours of 300-level electives:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HON 348V</td>
<td>Comparative Mythology: Myth, Ritual, and the Life Cycle</td>
</tr>
<tr>
<td>HON 365V</td>
<td>African and Caribbean: Literature and Film</td>
</tr>
<tr>
<td>HON 366V</td>
<td>The Gothic Imagination</td>
</tr>
<tr>
<td>HON 379V</td>
<td>Literature as Film</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 469</td>
<td>Advanced Study in American Literature</td>
</tr>
<tr>
<td>ENGL 438</td>
<td>Literature of the American Renaissance</td>
</tr>
<tr>
<td>ENGL 442</td>
<td>Modern and Contemporary American Poetry</td>
</tr>
<tr>
<td>ENGL 456</td>
<td>Ethnic Studies in US Literature and Culture</td>
</tr>
<tr>
<td>ENGL 458</td>
<td>Latino/a Literature and Culture</td>
</tr>
<tr>
<td>ENGL 405</td>
<td>Chaucer</td>
</tr>
<tr>
<td>ENGL 407</td>
<td>Milton</td>
</tr>
<tr>
<td>ENGL 408</td>
<td>Shakespeare I</td>
</tr>
<tr>
<td>ENGL 409</td>
<td>Shakespeare II</td>
</tr>
</tbody>
</table>

Select 9 additional credits from English courses numbered 400-499.

Total Credits 42

1 Students may make 1 or 2 of the following substitutions:
   - HON 229G The New Testament as Literature for ENGL 243 The Bible as Literature;
   - HON 234G The Worlds of Arthur, or HON 239G Medieval Understandings: Literature and Culture in the Middle Ages for ENGL 271 Survey of English Literature I;

2 These 15 credits should be completed before the student enrolls in 400-level courses.

3 Students may not take both ENGL 392V Mythology and HON 348V Comparative Mythology: Myth, Ritual, and the Life Cycle.

**Concentration: Literature, Language and Culture**

**Departmental Requirements**

In addition to meeting the English basic skills requirement, the student pursuing an emphasis in Literature, Language, and Culture must complete 42 credits in English beyond ENGL 111G Rhetoric and Composition satisfying the following requirements.

**Departmental Requirements**

Select three from the following: 1,2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 251</td>
<td>Survey of American Literature I</td>
</tr>
<tr>
<td>ENGL 252</td>
<td>Survey of American Literature II</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>Survey of English Literature I</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 310</td>
<td>Critical Writing</td>
</tr>
</tbody>
</table>

Select one from the following: 2

<table>
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<tbody>
<tr>
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<td>Theory and Criticism: Literature and Culture</td>
</tr>
<tr>
<td>ENGL 303</td>
<td>Theory and Criticism: Film, Media and Culture</td>
</tr>
<tr>
<td>ENGL 220G</td>
<td>Introduction to Creative Writing</td>
</tr>
<tr>
<td>ENGL 243</td>
<td>The Bible as Literature</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>ENGL 262</td>
<td>Masterpieces of Western European Literature, Post-Renaissance to Modern Times</td>
</tr>
<tr>
<td>ENGL 263</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 310</td>
<td>Critical Writing</td>
</tr>
<tr>
<td><strong>Select one from the following:</strong></td>
<td></td>
</tr>
<tr>
<td>ENGL 301</td>
<td>Theory and Criticism: Rhetoric and Culture</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>Theory and Criticism: Literature and Culture (recommended)</td>
</tr>
<tr>
<td>ENGL 303</td>
<td>Theory and Criticism: Film, Media and Culture</td>
</tr>
<tr>
<td><strong>Select 6 additional credits from English courses numbered 298-399.</strong></td>
<td></td>
</tr>
<tr>
<td>ENGL 301</td>
<td>Theory and Criticism: Rhetoric and Culture</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>Theory and Criticism: Literature and Culture (recommended)</td>
</tr>
<tr>
<td>ENGL 303</td>
<td>Theory and Criticism: Film, Media and Culture</td>
</tr>
<tr>
<td>Select one from the following:</td>
<td></td>
</tr>
<tr>
<td>ENGL 321V</td>
<td>Modern European Drama</td>
</tr>
<tr>
<td>ENGL 323</td>
<td>American Drama</td>
</tr>
<tr>
<td>ENGL 326</td>
<td>Cultural Identity and Representation Across the Media</td>
</tr>
<tr>
<td>ENGL 327V</td>
<td>Shakespeare around the Globe</td>
</tr>
<tr>
<td>ENGL 328V</td>
<td>Literature of Science Fiction and Fantasy</td>
</tr>
<tr>
<td>ENGL 329</td>
<td>Studies in Drama</td>
</tr>
<tr>
<td>ENGL 330V</td>
<td>Studies in Poetry</td>
</tr>
<tr>
<td>ENGL 335V</td>
<td>Studies in the Novel</td>
</tr>
<tr>
<td>ENGL 336</td>
<td>Studies in Film</td>
</tr>
<tr>
<td>ENGL 339V</td>
<td>Chicana/o Literature</td>
</tr>
<tr>
<td>ENGL 341V</td>
<td>American Indian Literature</td>
</tr>
<tr>
<td>ENGL 349</td>
<td>The Short Story</td>
</tr>
<tr>
<td>ENGL 363</td>
<td>Literature for Children and Young Adults</td>
</tr>
<tr>
<td>ENGL 380V</td>
<td>Women Writers</td>
</tr>
<tr>
<td>ENGL 392V</td>
<td>Mythology</td>
</tr>
<tr>
<td>ENGL 394V</td>
<td>Southwestern Literature</td>
</tr>
<tr>
<td>ENGL 399</td>
<td>Special Topics (with advisor approval)</td>
</tr>
<tr>
<td><strong>Select one from the following:</strong></td>
<td></td>
</tr>
<tr>
<td>ENGL 469</td>
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<td>ENGL 438</td>
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<td>ENGL 405</td>
<td>Chaucer</td>
</tr>
<tr>
<td>or ENGL 407</td>
<td>Milton</td>
</tr>
<tr>
<td>ENGL 408</td>
<td>Shakespeare I</td>
</tr>
<tr>
<td>or ENGL 409</td>
<td>Shakespeare II</td>
</tr>
</tbody>
</table>

**Select 6 additional credits from English courses numbered 400-499.**

**Select 3 credits from the following:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 400</td>
<td>Independent Study: Upper Division (with advisor approval)</td>
</tr>
<tr>
<td>ENGL 405</td>
<td>Chaucer</td>
</tr>
<tr>
<td>ENGL 407</td>
<td>Milton</td>
</tr>
<tr>
<td>ENGL 408</td>
<td>Shakespeare I</td>
</tr>
<tr>
<td>ENGL 409</td>
<td>Shakespeare II</td>
</tr>
<tr>
<td>ENGL 417</td>
<td>Advanced Study in Critical Theory</td>
</tr>
<tr>
<td>ENGL 421</td>
<td>Advanced Study in a Literary Period or Movement</td>
</tr>
<tr>
<td>ENGL 422</td>
<td>Advanced Study in a Literary Form or Genre</td>
</tr>
<tr>
<td>ENGL 423</td>
<td>Advanced Study in a Major Author</td>
</tr>
<tr>
<td>ENGL 424</td>
<td>Advanced Study in a Major Text</td>
</tr>
<tr>
<td>ENGL 425</td>
<td>Advanced Study in Comparative Literature</td>
</tr>
<tr>
<td>ENGL 429</td>
<td>British Romanticism</td>
</tr>
<tr>
<td>ENGL 432</td>
<td>Gothic Literature</td>
</tr>
<tr>
<td>ENGL 433</td>
<td>Victorian Literature</td>
</tr>
<tr>
<td>ENGL 438</td>
<td>Literature of the American Renaissance</td>
</tr>
<tr>
<td>ENGL 442</td>
<td>Modern and Contemporary American Poetry</td>
</tr>
<tr>
<td>ENGL 444</td>
<td>Modern British Fiction</td>
</tr>
<tr>
<td>ENGL 445</td>
<td>Postmodern Fiction</td>
</tr>
<tr>
<td>ENGL 451</td>
<td>Practicum in the Grammar of American English</td>
</tr>
<tr>
<td>ENGL 452</td>
<td>History of the English Language</td>
</tr>
<tr>
<td>ENGL 453</td>
<td>World Literatures</td>
</tr>
<tr>
<td>ENGL 456</td>
<td>Ethnic Studies in US Literature and Culture</td>
</tr>
<tr>
<td>ENGL 458</td>
<td>Latino/a Literature and Culture</td>
</tr>
<tr>
<td>ENGL 463</td>
<td>Advanced Study in English Literature</td>
</tr>
<tr>
<td>ENGL 469</td>
<td>Advanced Study in American Literature</td>
</tr>
<tr>
<td>ENGL 481</td>
<td>Women's Literature</td>
</tr>
<tr>
<td>ENGL 486</td>
<td>Hollywood Film</td>
</tr>
<tr>
<td>ENGL 489</td>
<td>Cultural Studies: Literature and Theory</td>
</tr>
<tr>
<td>ENGL 493</td>
<td>Middle English Textual Cultures</td>
</tr>
</tbody>
</table>

**Total Credits**: 45

1. Students may make 1 or 2 of the following substitutions:
   - HON 229G The New Testament as Literature for ENGL 243 The Bible as Literature;
   - HON 234G The Worlds of Arthur, or HON 239G Medieval Understandings: Literature and Culture in the Middle Ages for ENGL 271 Survey of English Literature I;

2. These 18 credits should be completed before the student enrolls in 400 level courses.

3. Three of these credits may come from any of the 300-level English department courses. Students may not take both ENGL 392V Mythology and HON 348V Comparative Mythology: Myth, Ritual, and the Life Cycle.

4. Three of these credits may come from any of the 400-level English department courses.
Concentration: Rhetoric, Digital Media and Professional Communication

Departmental Requirements

In addition to meeting the English basic skills requirement, the student pursuing an emphasis in Rhetoric, Digital Media, and Professional Communication must complete 42 credits in English beyond ENGL 111G Rhetoric and Composition satisfying the following requirements.

Departmental Requirements

Select four from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 220G</td>
<td>Introduction to Creative Writing</td>
</tr>
<tr>
<td>ENGL 243</td>
<td>The Bible as Literature</td>
</tr>
<tr>
<td>ENGL 251</td>
<td>Survey of American Literature I</td>
</tr>
<tr>
<td>ENGL 252</td>
<td>Survey of American Literature II</td>
</tr>
<tr>
<td>ENGL 262</td>
<td>Masterpieces of Western European Literature, Post-Renaissance to Modern Times</td>
</tr>
<tr>
<td>ENGL 263</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>Survey of English Literature I</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 310</td>
<td>Critical Writing</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 301</td>
<td>Theory and Criticism: Rhetoric and Culture (recommended)</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>Theory and Criticism: Literature and Culture</td>
</tr>
<tr>
<td>ENGL 303</td>
<td>Theory and Criticism: Film, Media and Culture (recommended)</td>
</tr>
</tbody>
</table>

Rhetoric and Composition

Select two from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 418</td>
<td>History of Rhetoric</td>
</tr>
<tr>
<td>ENGL 419</td>
<td>Modern Rhetorical Theory</td>
</tr>
<tr>
<td>ENGL 449</td>
<td>Advanced Study in Writing</td>
</tr>
<tr>
<td>ENGL 451</td>
<td>Practicum in the Grammar of American English</td>
</tr>
<tr>
<td>ENGL 452</td>
<td>History of the English Language</td>
</tr>
<tr>
<td>ENGL 470</td>
<td>Approaches to Composition</td>
</tr>
</tbody>
</table>

Professional Communication

Select two from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
</tr>
<tr>
<td>ENGL 412</td>
<td>Writing in the Workplace</td>
</tr>
<tr>
<td>ENGL 431</td>
<td>Technical Editing</td>
</tr>
<tr>
<td>ENGL 449</td>
<td>Advanced Study in Writing</td>
</tr>
<tr>
<td>ENGL 460</td>
<td>Proposal Writing</td>
</tr>
<tr>
<td>ENGL 462</td>
<td>Interdisciplinary, Client-Based Project Practicum</td>
</tr>
<tr>
<td>ENGL 497</td>
<td>Internship</td>
</tr>
</tbody>
</table>

Digital Rhetoric and Design

Select two from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 315</td>
<td>Writing for the Web</td>
</tr>
<tr>
<td>ENGL 326</td>
<td>Cultural Identity and Representation Across the Media</td>
</tr>
<tr>
<td>ENGL 449</td>
<td>Advanced Study in Writing</td>
</tr>
</tbody>
</table>

ENGL 478 | Document Design

Additional Courses

Select 6 credits of upper division level, advisor-approved English courses relevant to program of study.

Total Credits: 42

1 Students may make 1 or 2 of the following substitutions:
   - HON 229G The New Testament as Literature for ENGL 243 The Bible as Literature;
   - HON 234G The Worlds of Arthur, or HON 239G Medieval Understandings: Literature and Culture in the Middle Ages for ENGL 271 Survey of English Literature I;

2 These 18 credits should be completed before the student enrolls in 400 level courses.

3 Students must take a total of 12 credit hours at the 400 level or above.

English - Master of Arts

New Mexico State University offers MA programs in four areas of emphasis; each one requires 36 hours of graduate-level work.

Emphasis: Creative Writing

Students electing this emphasis

- complete 36 hours of graduate-level course work including creative writing and literature;
- submit a creative writing portfolio (totaling 20-50 pages), depending on genre choices, that includes original creative work in more than one genre and either an essay describing the writer’s personal poetics or a critical piece of writing relevant to the portfolio; and
- pass an oral examination.

Required Coursework

Workshop courses in at least two genres
Graduate form and technique courses
Graduate literature courses in the Department of English
Elective courses

In the final term:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 520</td>
<td>Workshop: Advanced Composition</td>
</tr>
<tr>
<td>ENGL 574</td>
<td>Workshop: Advanced Writing Prose</td>
</tr>
<tr>
<td>ENGL 575</td>
<td>Workshop: Advanced Writing Poetry</td>
</tr>
<tr>
<td>ENGL 576</td>
<td>Workshop: Advanced Writing Playwriting</td>
</tr>
<tr>
<td>ENGL 591</td>
<td>Graduate Screenwriting</td>
</tr>
</tbody>
</table>

Total Credits: 48

Graduate assistants must take 3 hours of ENGL 571 Composition Pedagogy and Practicum, during their first semester of teaching.

Emphasis: English Studies for Teachers

Students take 36 hours of graduate coursework, including core courses in creative writing, film, literature and rhetoric and professional communication, as well as additional courses in an area of specialization approved by an advisor. Students in the program develop individualized plans of study in consultation with an advisor. They conclude their program by developing a master’s portfolio or other approved capstone project and passing an oral examination. This portfolio may provide material for public schools’ Professional Development Dossier. With
advisor approval, students may take up to two related courses (six credit hours) in other departments, such as Communication Studies, Education, Journalism, and Theatre, and may also develop an alternative capstone experience and enroll for appropriate credits (such as independent study).

Required Coursework

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core class in Composition, Rhetoric, and Professional Communication</td>
<td>3</td>
</tr>
<tr>
<td>Core class in Creative Writing</td>
<td>3</td>
</tr>
<tr>
<td>Core class in Literature</td>
<td>3</td>
</tr>
<tr>
<td>Core class in Film</td>
<td>3</td>
</tr>
<tr>
<td>Courses in core area of specialization</td>
<td>18-21</td>
</tr>
<tr>
<td>ENGL 577 Workshop: Advanced Technical and Professional Writing</td>
<td>3-6</td>
</tr>
<tr>
<td>Or Portfolio</td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td>33-39</td>
</tr>
</tbody>
</table>

Emphasis: Literature

Students electing this emphasis can choose to work in various areas of literature, criticism and film. Students are required to

- complete 36 hours of coursework while satisfying area requirements (in early and modern literatures, in British and American Literatures, and in critical theory) with advisor-approved courses;
- demonstrate competency in a foreign language;
- deliver a public presentation on their research;
- write a master essay or thesis; and
- complete their program by passing an oral examination.

See advisor for list of courses satisfying theory and distribution requirements.

Required Coursework

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate course in critical theory</td>
<td>3</td>
</tr>
<tr>
<td>Literature courses, including &quot;early&quot; and &quot;late&quot; periods, English and American</td>
<td>18</td>
</tr>
<tr>
<td>Elective courses in English Department</td>
<td>9-12</td>
</tr>
<tr>
<td>ENGL 599 Master's Thesis</td>
<td>3-6</td>
</tr>
<tr>
<td>or ENGL 598 Master's Essay</td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td>33-39</td>
</tr>
</tbody>
</table>

Emphasis: Rhetoric and Professional Communication

Students electing this emphasis take core courses across a wide range of topics within rhetoric and professional communication and choose from one of four areas of specialization:

- Composition,
- Critical/Cultural Studies,
- Rhetoric and
- Professional and Technical Communication.

Students conclude their program by writing a thesis, composing a portfolio of work completed in the program, or writing a master essay and by passing an oral examination. Students develop individualized plans of study in consultation with an advisor.

Required Coursework

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core classes from an area of specialization:</td>
<td>6</td>
</tr>
<tr>
<td>Composition</td>
<td></td>
</tr>
<tr>
<td>Critical/Cultural Studies</td>
<td></td>
</tr>
<tr>
<td>Rhetoric</td>
<td></td>
</tr>
<tr>
<td>Professional and Technical Communication</td>
<td></td>
</tr>
<tr>
<td>Core classes in additional area(s)</td>
<td>6</td>
</tr>
<tr>
<td>Additional courses in area of specialization</td>
<td>12</td>
</tr>
</tbody>
</table>

Methods Course

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 548 Graduate Study in Empirical Research</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 601 Qualitative Research</td>
<td></td>
</tr>
<tr>
<td>ENGL 602 Quantitative Research</td>
<td></td>
</tr>
<tr>
<td>ENGL 603 Rhetorical Criticism and Methodology</td>
<td></td>
</tr>
</tbody>
</table>

Elective Courses

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advisor-approved electives in English and/or related fields</td>
<td></td>
</tr>
<tr>
<td>ENGL 597 Internship in Technical and Professional Communication</td>
<td></td>
</tr>
<tr>
<td>ENGL 599 Master's Thesis</td>
<td>1</td>
</tr>
</tbody>
</table>

Capstone Course

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 585 Advanced Writing Workshop: RPC Capstone</td>
<td>3-6</td>
</tr>
<tr>
<td>ENGL 598 Master's Essay</td>
<td></td>
</tr>
<tr>
<td>ENGL 599 Master's Thesis</td>
<td>1</td>
</tr>
</tbody>
</table>

Core Courses

Select two core courses from area of specialization.                     | 6       |
Select two core courses from any of the other three core areas:        | 6       |

Core Composition Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 564 History and Theory of Composition Studies</td>
<td></td>
</tr>
<tr>
<td>ENGL 570 Graduate Study in Approaches to Composition</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 571 Composition Pedagogy and Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

Core Critical/Cultural Studies Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 517 Graduate Study in Critical Theory</td>
<td></td>
</tr>
<tr>
<td>ENGL 568 Rhetoric and Cultural Studies</td>
<td></td>
</tr>
</tbody>
</table>

Core Professional and Technical Communication Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 512 Graduate Study in Writing in the Workplace</td>
<td></td>
</tr>
<tr>
<td>ENGL 572 Technical-Professional Communication: Theory and Pedagogy</td>
<td></td>
</tr>
</tbody>
</table>

Core Rhetoric Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 518 History of Rhetoric</td>
<td></td>
</tr>
</tbody>
</table>
ENGL 519  Graduate Study in Modern Rhetorical Theory

Specialized Courses
Select four additional courses in area of specialization determined in consultation with an advisor.

Composition Courses
ENGL 549  Graduate Study in Writing
ENGL 550  Graduate Study in Literacy
ENGL 561  Topics in Writing Program Administration

Critical/Cultural Studies Courses
ENGL 511  Discourse and Theories
ENGL 549  Graduate Study in Writing
ENGL 550  Graduate Study in Literacy
ENGL 555  Graduate Study in Rhetoric of Scientific Literature
ENGL 590  Master's Seminar in Rhetoric

Professional and Technical Communication Courses
ENGL 451  Practicum in the Grammar of American English
ENGL 478  Document Design
ENGL 543  Multimedia Theory and Production
ENGL 549  Graduate Study in Writing
ENGL 562  Interdisciplinary, Client-Based Project Practicum
ENGL 565  Intercultural Rhetoric and Professional Communication
ENGL 577  Workshop: Advanced Technical and Professional Writing
ENGL 578  Topics in Rhetoric and Technology

Rhetoric Courses
ENGL 511  Discourse and Theories
ENGL 530  Argument Theory and Practice
ENGL 549  Graduate Study in Writing
ENGL 555  Graduate Study in Rhetoric of Scientific Literature
ENGL 590  Master's Seminar in Rhetoric

Total Credits 54-57

1 Students must take 6 credits of ENGL 599 Master's Thesis to complete this requirement. ENGL 599 Master's Thesis: in lieu of portfolio or master essay.
2 Graduate assistants must take 3 hours of ENGL 571 Composition Pedagogy and Practicum, during their first semester of teaching.
3 Students may take either ENGL 570 Graduate Study in Approaches to Composition or ENGL 571 Composition Pedagogy and Practicum as a core course. Taking a second course will count under the area of specialization.
4 Students are encouraged to take ENGL 510 Proseminar in Rhetoric and Professional Communication, early in their time as a graduate student. This course is appropriate for all areas of specialization. Appropriate courses for each specialization are suggested, though the lists are not inclusive of all options.

English - Undergraduate Minor

Students not earning a bachelor's degree in English are eligible to pursue a minor in English. Students must earn 18 credits from the approved course lists below. Students may request approval for other courses clearly related to the minor from the undergraduate advisor in the Department of English.

Requirements
Select 6 credits from the following:

- ENGL 220G Introduction to Creative Writing
- ENGL 243 The Bible as Literature
- ENGL 251 Survey of American Literature I
- ENGL 252 Survey of American Literature II
- ENGL 262 Masterpieces of Western European Literature, Post-Renaissance to Modern Times
- ENGL 263 History of Argument
- ENGL 271 Survey of English Literature I
- ENGL 272 Survey of English Literature II

Select one from the following:

- ENGL 301 Theory and Criticism: Rhetoric and Culture
- ENGL 302 Theory and Criticism: Literature and Culture
- ENGL 303 Theory and Criticism: Film, Media and Culture
- ENGL 310 Critical Writing
- ENGL 311G Advanced Composition

Select 6 credits from English courses numbered 300-499.

Select three additional credits from English courses numbered 400-499.

Total Credits 18

1 Students may make 1 or 2 of the following substitutions:
   - HON 229G The New Testament as Literature for ENGL 243 The Bible as Literature;
   - HON 234G The Worlds of Arthur, or HON 239G Medieval Understandings: Literature and Culture in the Middle Ages for ENGL 271 Survey of English Literature I;

Literature - Undergraduate Minor

Students not earning a bachelor's degree in English with an emphasis in Literature, Language and Culture are eligible to pursue a minor in Literature. Students must earn 18 credits from the approved course lists below. At least 12 credits must be upper division. Students may request approval for other courses clearly related to the minor from the undergraduate advisor in the Department of English. Students earning a BA in English must earn at least 6 credits approved by the Department of English undergraduate advisor beyond those earned for the major in order to earn a minor in Literature.

Requirements
Select two from the following:

- ENGL 243 The Bible as Literature
- ENGL 251 Survey of American Literature I
- ENGL 252 Survey of American Literature II
## Medieval and Early Modern Studies - Undergraduate Minor

Students must earn 18 credits from the approved course lists below. At least 9 credits must be upper division. No more than 9 credits may be taken under faculty in any department. Students may request approval for other courses clearly related to Medieval and/or Early Modern Studies from the undergraduate advisor in the Department of English in consultation with faculty in medieval and early modern studies.

### Requirements

Select three from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 262</td>
<td>Masterpieces of Western European Literature, Post-Renaissance to Modern Times</td>
</tr>
<tr>
<td>ENGL 263</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>Survey of English Literature I</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature I</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
<tr>
<td>ENGL 271</td>
<td>History of Argument</td>
</tr>
<tr>
<td>ENGL 272</td>
<td>Survey of English Literature II</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 301</td>
<td>Theory and Criticism: Rhetoric and Culture</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>Theory and Criticism: Literature and Culture (recommended)</td>
</tr>
<tr>
<td>ENGL 303</td>
<td>Theory and Criticism: Film, Media and Culture</td>
</tr>
<tr>
<td>ENGL 310</td>
<td>Critical Writing</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 321V</td>
<td>Modern European Drama</td>
</tr>
<tr>
<td>ENGL 323</td>
<td>American Drama</td>
</tr>
<tr>
<td>ENGL 326</td>
<td>Cultural Identity and Representation Across the Media</td>
</tr>
<tr>
<td>ENGL 327V</td>
<td>Shakespeare around the Globe</td>
</tr>
<tr>
<td>ENGL 328V</td>
<td>Literature of Science Fiction and Fantasy</td>
</tr>
<tr>
<td>ENGL 329</td>
<td>Studies in Drama</td>
</tr>
<tr>
<td>ENGL 330V</td>
<td>Studies in Poetry</td>
</tr>
<tr>
<td>ENGL 335V</td>
<td>Studies in the Novel</td>
</tr>
<tr>
<td>ENGL 336</td>
<td>Studies in Film</td>
</tr>
<tr>
<td>ENGL 339V</td>
<td>Chicana/o Literature</td>
</tr>
<tr>
<td>ENGL 341V</td>
<td>American Indian Literature</td>
</tr>
<tr>
<td>ENGL 349</td>
<td>The Short Story</td>
</tr>
<tr>
<td>ENGL 363</td>
<td>Literature for Children and Young Adults</td>
</tr>
<tr>
<td>ENGL 380V</td>
<td>Women Writers</td>
</tr>
<tr>
<td>ENGL 392V</td>
<td>Mythology</td>
</tr>
<tr>
<td>ENGL 394V</td>
<td>Southwestern Literature</td>
</tr>
<tr>
<td>ENGL 399</td>
<td>Special Topics (with advisor approval)</td>
</tr>
</tbody>
</table>

Substitutions Allowed

- HON 348V Comparative Mythology: Myth, Ritual, and the Life Cycle
- HON 365V African and Caribbean: Literature and Film
- HON 366V The Gothic Imagination

Select two from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 405</td>
<td>Chaucer</td>
</tr>
<tr>
<td>ENGL 407</td>
<td>Milton</td>
</tr>
<tr>
<td>ENGL 408</td>
<td>Shakespeare I</td>
</tr>
<tr>
<td>ENGL 409</td>
<td>Shakespeare II</td>
</tr>
<tr>
<td>ENGL 417</td>
<td>Advanced Study in Critical Theory</td>
</tr>
<tr>
<td>ENGL 421</td>
<td>Advanced Study in a Literary Period or Movement</td>
</tr>
<tr>
<td>ENGL 422</td>
<td>Advanced Study in a Literary Form or Genre</td>
</tr>
<tr>
<td>ENGL 423</td>
<td>Advanced Study in a Major Author</td>
</tr>
<tr>
<td>ENGL 424</td>
<td>Advanced Study in a Major Text</td>
</tr>
<tr>
<td>ENGL 425</td>
<td>Advanced Study in Comparative Literature</td>
</tr>
<tr>
<td>ENGL 429</td>
<td>British Romanticism</td>
</tr>
</tbody>
</table>

ENGL 432 | Gothic Literature                          |
ENGL 433 | Victorian Literature                       |
ENGL 438 | Literature of the American Renaissance     |
ENGL 442 | Modern and Contemporary American Poetry     |
ENGL 444 | Modern British Fiction                      |
ENGL 445 | Postmodern Fiction                         |
ENGL 451 | Practicum in the Grammar of American English |
ENGL 452 | History of the English Language             |
ENGL 453 | World Literatures                          |
ENGL 456 | Ethnic Studies in US Literature and Culture |
ENGL 458 | Latino/a Literature and Culture             |
ENGL 463 | Advanced Study in English Literature        |
ENGL 469 | Advanced Study in American Literature       |
ENGL 481 | Women's Literature                         |
ENGL 486 | Hollywood Film                             |
ENGL 489 | Cultural Studies: Literature and Theory     |
ENGL 493 | Middle English Textual Cultures             |

Total Credits 18

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1 Students may make 1 or 2 of the following substitutions:
- HON 229G The New Testament as Literature for ENGL 243 The Bible as Literature;
- HON 234G The Worlds of Arthur, or HON 239G Medieval Understandings: Literature and Culture in the Middle Ages for ENGL 271 Survey of English Literature I;
ART 328  Baroque Art and Architecture in Northern Europe
ART 333  Baroque Art and Architecture in Italy, Spain, and Hispanic Latin America
ART 477  Independent Research Problems in Art History
ART 478  Seminar: Selected Topics in Art History
ENGL 380V  Women Writers
ENGL 392V  Mythology
ENGL 405  Chaucer
ENGL 407  Milton
ENGL 408  Shakespeare I
ENGL 409  Shakespeare II
ENGL 421  Advanced Study in a Literary Period or Movement
ENGL 422  Advanced Study in a Literary Form or Genre
ENGL 423  Advanced Study in a Major Author
ENGL 424  Advanced Study in a Major Text
ENGL 425  Advanced Study in Comparative Literature
ENGL 452  History of the English Language
ENGL 463  Advanced Study in English Literature
ENGL 481  Women's Literature
WS 484  Women's Literature
ENGL 493  Middle English Textual Cultures
FREN 381  Survey of French Literature I
FREN 451  Special Topics in French
HIST 311V  Colonial Latin America
HIST 323  Cultural History of Later Imperial China
HIST 372  The Roman World
HIST 383  Germany
HIST 387  Spain
HIST 388  Women in Europe I
HIST 392  Tudor-Stuart England, 1485-1715
HIST 400  Special Topics
HIST 433  United States Labor History Since 1877
HIST 434  Urban History
HIST 471  China through the Ming Dynasty
HON 326V  Art and Mythology
HON 400  Honors Thesis
MUS 302  Music History and Literature: Classic through Romantic
MUS 420  Music of the Middle Ages and Renaissance
MUS 421  Music of the Baroque Era
PHIL 344  Modern Philosophy
PHIL 363  Independent Studies
PHIL 463  Independent Studies
SPAN 306  Special Topics
THTR 312  Acting Shakespeare

1 Courses are approved for the minor only when their topics are appropriate. Students must seek approval to count these courses for the minor from the undergraduate advisor in the Department of English.

### Rhetoric and Professional Communication - Doctor of Philosophy

Students in the doctoral program will develop individualized plans of study in consultation with advisors. Students are required to take:

- 78 hours of graduate-level coursework including the doctoral proseminar in the first semester;
- courses in research methods;
- core courses in composition, critical/cultural studies, professional communication, and rhetoric;
- additional coursework in an area of specialization determined in consultation with an advisor;
- an internship; and
- a dissertation.

The Ph.D. also requires a qualifying portfolio, a comprehensive examination and an oral examination. The dissertation must be completed and approved within 5 years after the comprehensive exam. Consult the department for additional instructions regarding the internship, qualifying comprehensive examinations, portfolio and dissertation.

### Requirements

#### Program Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 610</td>
<td>Proseminar in Rhetoric and Professional Communication</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 597</td>
<td>Internship in Technical and Professional Communication</td>
<td>6</td>
</tr>
<tr>
<td>ENGL 700</td>
<td>Doctoral Dissertation</td>
<td>18</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 548</td>
<td>Graduate Study in Empirical Research</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 601</td>
<td>Qualitative Research</td>
<td></td>
</tr>
<tr>
<td>ENGL 602</td>
<td>Quantitative Research</td>
<td></td>
</tr>
<tr>
<td>ENGL 603</td>
<td>Rhetorical Criticism and Methodology</td>
<td></td>
</tr>
</tbody>
</table>

#### Core Courses

Select four from the following core courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 664</td>
<td>History and Theory of Composition Studies</td>
<td></td>
</tr>
<tr>
<td>ENGL 571</td>
<td>Composition Pedagogy and Practicum</td>
<td></td>
</tr>
</tbody>
</table>

#### Core Composition Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ENGL 664</td>
<td>History and Theory of Composition Studies</td>
<td></td>
</tr>
<tr>
<td>ENGL 571</td>
<td>Composition Pedagogy and Practicum</td>
<td></td>
</tr>
</tbody>
</table>

#### Core Critical/Cultural Studies Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 517</td>
<td>Graduate Study in Critical Theory</td>
<td></td>
</tr>
<tr>
<td>ENGL 668</td>
<td>Rhetoric and Cultural Studies</td>
<td></td>
</tr>
</tbody>
</table>

#### Core Professional and Technical Communication Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 512</td>
<td>Graduate Study in Writing in the Workplace</td>
<td></td>
</tr>
</tbody>
</table>
ENGL 572  Technical-Professional Communication: Theory and Pedagogy

Core Rhetoric Courses
ENGL 518  History of Rhetoric
ENGL 519  Graduate Study in Modern Rhetorical Theory

Specialized Courses
Select 15-18 credits in area of specialized determined in consultation with an advisor.  15-18

Total Credits 63-66

1 Graduate assistants must take 3 hours of ENGL 571 Composition Pedagogy and Practicum, during their first semester of teaching.

2 Students define their specialized area, a coherent set of related courses drawn from both inside and outside the Department of English, in consultation with their doctoral committee. Possible specializations include Border Rhetorics and Cultures; Writing Program Administration/Writing Center Administration; Assessment; Pedagogy; Literacy Studies; Identity and Political and Social Rhetoric; New Media Rhetoric and Design; Intercultural Rhetorics; Writing Across the Curriculum; Workplace Communication; and the Rhetoric of Science.

Transfer Courses (up to 18 credits)
Students may apply 18 hours of master’s level work to the 54-hour coursework requirement with departmental approval. In consultation with an advisor and the Doctoral Committee, students petition for transfer credits when they submit their qualifying portfolio and file the program of study with the Graduate School.

Financial Support
Students are eligible for teaching assistantships and a variety of positions that involve writing around campus and the community. Because many students work full time, many courses are offered in the late afternoon and evening to accommodate various schedules.

Application Information
Please refer to the online application process described on the NMSU Admissions website for specific instructions for each program.

Rhetoric and Professional Communication - Undergraduate Minor
Students not earning a bachelor’s degree in English with an emphasis in Rhetoric, Digital Media and Professional Communication are eligible to pursue a minor in Rhetoric and Professional Communication. Students must earn 18 credits from the approved course lists below. Students may request approval for other courses clearly related to the minor from the undergraduate advisor in the Department of English. Students earning a BA in English must earn at least 6 credits approved by the Department of English undergraduate advisor beyond those earned for the major in order to earn a minor in Rhetoric and Professional Communication.

Requirements
Select one from the following: 3
ENGL 220G  Introduction to Creative Writing

Total Credits 18

1 Students may make 1 or 2 of the following substitutions:
• HON 229G The New Testament as Literature for ENGL 243 The Bible as Literature;
• HON 234G The Worlds of Arthur, or HON 239G Medieval Understandings: Literature and Culture in the Middle Ages for ENGL 271 Survey of English Literature I;

Geography
Undergraduate Program Information
The Geography Program emphasizes the interaction of humans with the environment, and the program prepares students for professional positions in the public and private sectors, as well as for graduate work. The Department offers two concentrations for the major:
The Department of Geography offers graduate study leading to the Master of Applied Geography degree, with a specific focus on the use of geographic perspectives and tools to examine an array of applied research questions related to land use change, water resources, biogeography, desertification, landscape conservation, and urban and transportation planning. A minor in Geographic Information Science and Technology (GIS&T) is also available for all graduate students, regardless of major; details are provided above. Admission to the program is in accord with the general regulations of the Graduate School. Foreign students must receive a minimum score of 570 on the paper-based or 230 on the computer-based Test of English as a Foreign Language (TOEFL) examination. Any applicant who does not have an adequate undergraduate background in geography will be required to make up the deficiencies. Applicants must submit three letters of recommendation and a formal statement of intent to the Department as part of the application process. Please contact Dr. Daniel Dugas, Geography Graduate Director (ddugas@nmsu.edu) if you have any questions about the program.

The Department is a sponsor of the interdisciplinary graduate degree program, which offers both MS and Ph.D. degrees in water science and management. Program details, application procedures, and funding resources are listed under the program description that is part of the College of Agricultural Consumer and Environmental Sciences, the lead College for the program. Interested students are encouraged to contact Dr. Christopher Brown, at (575) 646-1892 or brownchr@nmsu.edu, for more information.

The Department is also a participant in the Western Regional Graduate Program (WRGP) supported by the Western Interstate Commission of Higher Education (WICHE). The WRGP is a tuition-reciprocity arrangement that enables students that are legal residents in WICHE states (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming) to attend NMSU and pay the resident tuition rate, instead of the nonresident rate that an out-of-state student would normally pay.

The Department has a contract research laboratory (Spatial Applications Research Center-SpARC) and a state-of-the-art computer teaching laboratory, both of which support the full suite of ESRI and ENVI geospatial analytical software. The SpARC laboratory employs graduate students who work with local and state governments and research agencies, as well as with businesses on applied geography projects. Our teaching laboratory supports graduate students engaged in course work and research projects. The Department has good working relationships with the Water Resources Research Institute, the Jornada Experimental Range, the Physical Sciences Laboratory, and other units on campus. The Department has its own field equipment and field vehicle, which graduate students can use to support their thesis research. The potential for financial support exists for graduate students in Geography through teaching assistanceships and research assistanceships. Inquiries regarding the program and assistanceships should be directed to the Dr. Daniel Dugas, Geography Graduate Director (ddugas@nmsu.edu). Financial aid questions should be addressed to the Office of Financial Aid at NMSU.

### Degrees for the Department

**Geography - Bachelor of Science (p. 298)**

**Geography - Master of Applied Geography (p. 300)**

### Minors for the Department

**Geographic Information Science and Technology - Undergraduate Minor (p. 298)**

**Geographic Information Science and Technology - Graduate Minor (p. 298)**

**Associate Professor, Carol Campbell, Department Head**

**Professors** DeMers; **Associate Professors** Brown, Buenemann, Campbell; **Assistant Professors** Dugas; **Adjunct Faculty** Rango, Whitford; **Professor Emeritus** Czerniak, Wright

- C. P. Brown, Ph.D., (California-Santa Barbara/San Diego State) – geographic information systems, water resources, U.S.-Mexico border environmental issues; M. Buenemann, Ph.D. (Oklahoma) – geographic information science and technology, land change science, drylands; C. L. Campbell, Department Head, Ph.D. (UCLA) – biogeography, landscape ecology, remote sensing; M. N. DeMers, Ph.D. (Kansas) – geographic information science, landscape ecology, geographic education; D. Dugas, Ph.D. (Oregon) – geomorphology, physical geography;

**Emeritus Faculty** – R. J. Czerniak, Ph.D. (Colorado-Boulder) – land use and transportation planning, Europe, urban geography; J. B. Wright, Ph.D. (California-Berkeley) – environmental conservation, cultural geography, American West

**GEOG 111G. Geography of the Natural Environment**

4 Credits (3+3P)

Introduction to the physical processes that shape the human environment: climate and weather, vegetation dynamics and distribution, soil development and classification, and geomorphic processes and landform development.

**GEOG 112G. World Regional Geography**

3 Credits

Overview of the physical geography, natural resources, cultural landscapes, and current problems of the world’s major regions. Students will also examine current events at a variety of geographic scales.

**GEOG 120G. Culture and Environment**

3 Credits

Study of human-environmental relationships: how the earth works and how cultures impact or conserve nature. Introduction to relationships between people and natural resources, ecosystems, global climate change, pollution, and conservation.
GEOG 257. Introduction to Weather Science
4 Credits (3+3P)
Introduction to Earth's atmosphere and the dynamic world of weather as it happens. Working with current meteorological data delivered via the Internet and coordinated with learning investigations keyed to the current weather; and via study of select archives. Crosslisted with: SOIL 257 and AGRO 257
Prerequisite(s): None.

GEOG 259. Introduction to Oceanography
4 Credits (3+3P)
Introduces the origin and development of the ocean and marine ecological concepts. Examines physical processes such as waves, tides, and currents and their impact on shorelines, the ocean floor, and basins. Investigates physical processes as they relate to oceanographic concepts. Includes media via the Internet and laboratory examination of current oceanic data as an alternative to the actual oceanic experience. Students will gain a basic knowledge and appreciation of the ocean's impact on the world's ecology.

GEOG 281. Map Use: Reading, Analysis and Interpretation
3 Credits (2+3P)
Exploration of the cartographic medium. Development of critical map analysis and interpretation skills, and map literacy. Comprised of traditional lecture, labs, and map use projects.

GEOG 291. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

GEOG 295. Introduction to Climate Science
4 Credits (3+3P)
Examines fundamentals and related issues of Earth's climate system, climate variability, and climate change. Develops solid understandings of Earth's climate system framed in the dynamic, Earth system based approach to the science.

GEOG 315V. World Agriculture and Food Problems
3 Credits
Same as AG E 315V.

GEOG 325V. New Mexico and the American West
3 Credits
Examination of the cultural and historical patterns, economic activities and physical characteristics of New Mexico with comparisons made with other western states.

GEOG 326. U.S. National Parks
3 Credits
Exploration of origins, landscapes, ecosystems, management issues, and conflicts in U.S. National Parks. The regional geography of the United States as seen through the creation and protection of biologically and culturally significant lands.

GEOG 328V. Geography of Latin America
3 Credits
Explores Latin America from a geographical perspective, integrating environmental, cultural and socioeconomic factors in an in-depth study of the development of the region and contemporary issues and challenges facing the region.

GEOG 331V. Europe
3 Credits
Focus on the cultural continent of Europe, from Iceland to the Ural Mountains and from Archangel, Russia, to Malta. An overview of climate, geology, topography, soils, and vegetation, as well as a brief historical geography of the continent. Current environmental, social, and political issues of Europe will be discussed. A series of regional studies is also offered.

GEOG 351. Fundamentals of Biogeography
3 Credits
Floristic and physiognomic characteristics of the Earth's major ecosystems and their distributions; ecosystem dynamics, evolution, and physical environment; field and laboratory techniques including remote sensing. Taught with GEOG 557.

GEOG 353. Geomorphology
3 Credits (2+3P)
Examination of the principle theories and concepts of landform creation; exploration of the roles of structure, processes, climate, and time in the formation of various types of landforms. Taught with GEOG 553. Crosslisted with: GEOL 353
Prerequisite(s): GEOL 111G and GEOG 111G.

GEOG 357. Climatology
3 Credits
Elements and controls of climate. Energy and hydrologic cycles, general circulation, climate classification, distribution of climate types, microscale effects, applications. Same as AGRO 357, SOIL 357.
Prerequisites: MATH 120.

GEOG 361V. Economic Geography
3 Credits
The geographic relationships of supply and demand resources, population, and transportation. Site analysis and decision-making in different economic systems and cultures and how these decisions affect the environment and the location of economic activities.

GEOG 363V. Cultural Geography
3 Credits
The world's diverse cultural landscapes. Emphasis on the connections between social, political, religious, and agricultural patterns and the impact of societies on the natural environment.

GEOG 365V. Urban Geography
3 Credits
The global historical development of urban areas, as well as the changing functions of today's cities. A comparison between the North American city system and cities in Europe, Asia, and South America, including the development of the city form, the internal spatial organization of commercial, residential, and industrial areas, and socio-economic and political factors.

GEOG 373. Introduction to Remote Sensing
4 Credits (3+3P)
Introduction to the theory, techniques, and applications of remote sensing. Topics include electromagnetic radiation; remote sensing systems; remote sensing of the biosphere, hydrosphere, atmosphere, lithosphere, and cultural landscapes. Course includes lectures and also labs focused on the basic analysis and interpretation of remote sensing products. Taught with GEOG 573. May be repeated up to 4 credits.
GEOG 381. Cartography and Geographic Information Systems  
4 Credits (3+3P)  
Design and construction of thematic maps. Introduction to cartographic principles in lecture. Emphasis on map-making using GIS software in the labs. Taught with GEOG 571. May be repeated up to 4 credits.  

GEOG 382. Aerial Photo Interpretation  
3 Credits (2+3P)  
Introduction to use and analysis of aerial photographs. Emphasis on physical features and cultural patterns.  

GEOG 401. Internship/Co-op  
1-3 Credits (1-3)  
Provides an opportunity whereby students work with a local, regional, or federal agency, or private sector firm on applied geographic work, under the supervision of an agency or firm professional and a geography faculty member. Consent of instructor required.  

GEOG 435. Environmental Planning  
3 Credits  
Exploration of planning tools that advance the management of land and water resources, meeting current societal needs, while also minimizing damage to nature and society. Class activities include applied exercises that explore contemporary planning issues, including land conservation, natural hazards, biophysical analysis, water resource management, Federal land issues, and remediation of Superfund sites. Crosslisted with: GEOG 535.  

GEOG 441. System Design for Geographic Information Science and Technology (GIS&T)  
3 Credits  
A critical aspect of GIS is its ability to provide the necessary products within the organization within which it is implemented. This is an in-depth analysis of currently accepted planning methodologies designed to create a successful implementation of GIS inside organizations. Taught with GEOG 581.  
Prerequisite(s): GEOG 481 or consent of instructor.  

GEOG 452. Landscape Ecology  
4 Credits (3+2P)  
Analysis of the structure, function and change of natural and anthropogenic landscapes. Patches, corridors, matrix and network, spatial organization, landscape dynamics, and role of disturbance in overall functioning of landscapes. Role of landscape heter. Taught with GEOG 552.  
Prerequisite(s): Either GEOG 351, BIOL 301, or other basic ecology course or consent of instructor.  

GEOG 455. Southwest Environments  
3 Credits  
The U.S. Southwest: physical and human geography, coupled human-environment interactions, causes and consequences of environmental issues, and implications for sustainable development. Taught with GEOG 555. May be repeated up to 3 credits. Consent of Instructor required.  

GEOG 457. Transportation Geography  
3 Credits  
Nature and distribution of land, air and water transport facilities and their importance in regional development.  
Prerequisite: GEOG 120G or consent of instructor.  

GEOG 472. Soil Morphology and Classification  
4 Credits (2+2P)  
Same as SOIL 472. May be repeated up to 4 credits. Crosslisted with: SOIL 472.  
Prerequisite(s): SOIL 252.  

GEOG 473. Advanced Remote Sensing  
4 Credits (3+3P)  
Introduction to advanced topics in digital image processing, analysis, interpretation, and visualization. Topics include geometric and radiometric correction, image enhancement, image classification, change detection, and accuracy assessment. Lectures focus on the discussion of advanced remote sensing concepts, techniques, and applications; labs are applications-oriented. Taught with GEOG 573. May be repeated up to 4 credits.  

GEOG 481. Fundamentals of Geographic Information Science and Technology (GIS & T)  
4 Credits (3+3P)  
Fundamentals of computer-based systems which organize, analyze, and present spatially referenced data. Taught with GEOG 578.  
Prerequisite(s): GEOG 281 or GEOG 381.  

GEOG 482. Geodatabase Design  
3 Credits (2+3P)  
A practical introduction to designing geobases. The course takes you through the eleven steps of geodatabase design divided into four stages: thematic characterization; developing the database elements, relationships and properties; capture and collection; and finally, implementation and documentation. Taught with GEOG 572.  
Prerequisite(s): Georg 481 or consent of instructor.  

GEOG 483. Field Explorations in Geography  
3 Credits  
A field-based class where students complete exercises in physical, human, and environmental geography in the Southwest. May be offered as a two-week intensive class where students are away from Las Cruces and camping; or may be offered with weekend field trips depending on the instructor. A lab fee for transportation and other expenses is required. Taught with GEOG 583. May be repeated up to 3 credits.  

GEOG 488. GIS and Water Resources  
3 Credits  
Explores a range of GIS tools, routines, and data structures and then applies them to a range of research questions and management issues in the area of Water Resources. The class has both a lecture and laboratory component, and students will have opportunities to explore a range of GIS tools in formal lab exercises and a project in the student’s area of interest. Crosslisted with: GEOG 588.  

GEOG 491. Special Topics  
1-3 Credits  
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits. Consent of instructor required.  

GEOG 492. GIS&T Applications and Modeling  
3 Credits  
Group oriented class in which students conduct an applied research project in GIS application or modeling area of choice and conduct focused library research. Taught with GEOG 521  
Prerequisite(s): GEOG 481 or Consent of Instructor.
GEOG 493. Special Problem Research
1-3 Credits
For advanced and exceptional students. Research, and preparation of a paper in some phase of geography. A maximum of 6 credits may be earned. Consent of instructor required.

GEOG 495. Directed Readings
1-3 Credits
Individual study through selected readings. A maximum of 6 credits may be earned. Consent of instructor required.

GEOG 501. Research Design and History of Geographic Thought
3 Credits
Understanding and application of the research process, including conceptualization and definition of a research problem, study designs, data sources, data collection, and report writing in development of geographic thought.

GEOG 521. GIS & T Applications and Modeling
3 Credits
Group oriented class in which students conduct an applied research project in a GIS application or modeling area of choice and conduct focused library research. Taught with GEOG 492.

GEOG 535. ENVIRONMENTAL PLANNING
3 Credits
Exploration of planning tools that advance the management of land and water resources, meeting current societal needs, while also minimizing damage to nature and society. Class activities include applied exercises that explore contemporary planning issues, including land conservation, natural hazards, biophysical analysis, water resource management, Federal land issues, and remediation of Superfund sites. Crosslisted with: GEOG 435.

GEOG 552. Landscape Ecology
4 Credits (3+2P)
Analysis of the structure, function and change of natural and anthropogenic landscapes. Patches, corridors, matrix and network, spatial organization, landscape dynamics, and role of disturbance in overall functioning of landscapes. Role of landscape heterogeneity in landscape management. Taught with GEOG 452.

GEOG 553. Geomorphology
3 Credits (2+3P)
Examination of the principle theories and concepts of landform creation; exploration of the roles of structure, processes, climate, and time in the formation of various types of landforms. Taught with GEOG 353.

GEOG 555. Southwest Environments
3 Credits
The U.S. Southwest: physical and human geography, coupled human-environment interactions, causes and consequences of environmental issues, and implications for sustainable development. Taught with GEOG 455. May be repeated up to 3 credits.

GEOG 557. Fundamentals of Biogeography
3 Credits
Floristic and physiognomic characteristics of the Earth’s major ecosystems and their distributions; ecosystem dynamics, evolution, and physical environment; field and laboratory techniques including remote sensing. Taught with GEOG 351.

GEOG 571. Cartography and Geographic Information Systems
4 Credits (3+3P)
Graduate level design and construction of thematic maps. Introduction to cartographic principles in lecture. Emphasis on map-making using GIS software in the labs. Taught with GEOG 381. May be repeated up to 4 credits.

GEOG 572. Geodatabase Design
3 Credits (2+3P)
Graduate level introduction to designing geodatabases. The course takes you through the eleven steps of geodatabase design divided into four stages: thematic characterization; developing the database elements, relationships and properties; capture and collection; and finally implementation and documentation. Taught with GEOG 482. Consent of instructor required.

GEOG 573. Introduction to Remote Sensing
4 Credits (3+3P)
Graduate level introduction to the theory, techniques, and applications of remote sensing. Topics include electromagnetic radiation; remote sensing systems; remote sensing of the biosphere, hydrosphere, atmosphere, lithosphere, and cultural landscapes. Course includes lectures and also labs focused on the basic analysis and interpretation of remote sensing product. Taught with GEOG 373. May be repeated up to 4 credits.

GEOG 578. Fundamentals of Geographic Information Science and Technology (GIS & T)
4 Credits (3+3P)
Graduate level fundamentals of computer-based systems that organize, analyze, and present spatially referenced data. Taught with GEOG 481.

GEOG 581. System Design for Geographic Information Science and Technology (GIS & T)
3 Credits
A critical aspect of GIS is its ability to provide the necessary products within the organization within which it is implemented. This is an in-depth analysis of currently accepted planning methodologies designed to create a successful implementation of GIS inside organizations. Taught with GEOG 441.

GEOG 582. Advanced Remote Sensing
4 Credits (3+3P)
Graduate level introduction to advanced topics in digital image processing, analysis, interpretation, and visualization. Topics include geometric and radiometric correction, image enhancement, image classification, change detection, and accuracy assessment. Lectures focus on the discussion of advanced remote sensing concepts, techniques, and applications; labs are applications-oriented. May be repeated up to 4 credits.

GEOG 583. Field Explorations in Geography
3 Credits
A graduate level field-based class where students complete exercises in physical, cultural, and environmental geography in the Southwest. May be offered as a two-week intensive class where students are away from Las Cruces and camping; or may be offered with weekend field trips depending on the instructor. A lab fee for transportation and other expenses is required. May be repeated up to 3 credits.
GEOG 585. Advanced Spatial Analysis
3 Credits (3+2P)
Introduction to basic spatial and aspatial descriptive statistics, statistical analysis of point and area patterns, critical review of quantitative research in geography, and exploration of advanced spatial analysis routines including cluster analysis, hot/cold spot analysis, and spatially weighted regression.
Prerequisite(s): STAT 251 or A ST 311; or consent of instructor.

GEOG 588. GIS and Water Resources
3 Credits
This is a graduate level class that explores a range of GIS tools, routines, and data structures and then applies them to a range of research questions and management issues in the area of Water Resources. The class has both a lecture and laboratory component, and students will have opportunities to explore a range of GIS tools in formal lab exercises and a project in the student's area of interest. Crosslisted with: GEOG 488.

GEOG 595. Directed Readings
1-3 Credits
Advanced individual study through selected readings. May be repeated for a maximum of 6 credits.

GEOG 596. Residency
3-12 Credits
A contractual learning experience in the public or private sector under the supervision of a field supervisor and two faculty members. Restricted to majors. PR/U grading only.

GEOG 598. Selected Topics
1-3 Credits
Readings, discussions, lectures or laboratory studies of selected geographic themes. May be repeated for unlimited credit.

GEOG 599. Master's Thesis
12 Credits
Supervised individual study of a student's thesis topic. May be repeated for an unlimited number of credits.

Name: Geography Office
Office Location: Breland Hall rm 137
Phone: (575) 646-3509
Website: http://geography.nmsu.edu

Geographic Information Science and Technology - Graduate Minor

The Department of Geography offers a minor in Geographic Information Science and Technology (GIS&T), and this minor is available for all graduate students. To earn a minor in GIS&T, the following courses are required, combining for a total of 14 credits. Students may not take any of these courses S/U, and students must earn a grade of at least B- in all of these classes.

Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 573</td>
<td>Introduction to Remote Sensing</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 578</td>
<td>Fundamentals of Geographic Information Science and Technology (GIS &amp; T)</td>
<td>4</td>
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<tr>
<td>Select 6 credits from the following:</td>
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<tr>
<td>GEOG 521</td>
<td>GIS &amp; T Applications and Modeling</td>
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<tr>
<td>GEOG 571</td>
<td>Cartography and Geographic Information Systems</td>
<td></td>
</tr>
<tr>
<td>GEOG 572</td>
<td>Geodatabase Design</td>
<td></td>
</tr>
<tr>
<td>GEOG 581</td>
<td>System Design for Geographic Information Science and Technology (GIS &amp; T)</td>
<td></td>
</tr>
<tr>
<td>GEOG 582</td>
<td>Advanced Remote Sensing</td>
<td></td>
</tr>
<tr>
<td>GEOG 588</td>
<td>GIS and Water Resources</td>
<td></td>
</tr>
<tr>
<td>GEOG 598</td>
<td>Selected Topics</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 14

Geographic Information Science and Technology - Undergraduate Minor

The Department of Geography offers a minor in Geographic Information Science and Technology (GIS&T); this option applies for non-geography majors only. To earn a minor in GIS&T, the following courses are required. Note: A grade of C- or better is required for all courses taken for the minor. Students may not take any of these courses S/U.

Departmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 373</td>
<td>Introduction to Remote Sensing</td>
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</tr>
<tr>
<td>GEOG 381</td>
<td>Cartography and Geographic Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 481</td>
<td>Fundamentals of Geographic Information Science and Technology (GIS &amp; T)</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 482</td>
<td>Geodatabase Design</td>
<td>3</td>
</tr>
<tr>
<td>Select 6-7 credits from the following:</td>
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<td></td>
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<tr>
<td>GEOG 441</td>
<td>System Design for Geographic Information Science and Technology (GIS&amp;T)</td>
<td>6</td>
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<tr>
<td>GEOG 473</td>
<td>Advanced Remote Sensing</td>
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<tr>
<td>GEOG 488</td>
<td>GIS and Water Resources</td>
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<tr>
<td>GEOG 492</td>
<td>GIS&amp;T Applications and Modeling</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 21-22

Geography - Bachelor of Science

The department offers two concentrations for the major in Geography, please see below for more information.

Concentration: Geographic Information Science and Technology (GIS & T)

The Geographic Information Science and Technology (GIS&T) Concentration offers a solid foundation in geographic thought and human and physical geography, and provides students with advanced knowledge and skills in spatial analysis and modeling through the use of geographic information systems and remote sensing tools and concepts. Preparation for advanced studies is also provided.

Departmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 111G</td>
<td>Geography of the Natural Environment</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 112G</td>
<td>World Regional Geography</td>
<td>3</td>
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<tr>
<td>or GEOG 120G</td>
<td>Culture and Environment</td>
<td></td>
</tr>
<tr>
<td>GEOG 281</td>
<td>Map Use: Reading, Analysis and Interpretation</td>
<td>3</td>
</tr>
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</table>

Total Credits 14

Requirements

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<td>GEOG 111G</td>
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<td>or GEOG 120G</td>
<td>Culture and Environment</td>
<td></td>
</tr>
<tr>
<td>GEOG 281</td>
<td>Map Use: Reading, Analysis and Interpretation</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 14
Select 6-7 credits from the following: 6-7
GEOG 441 System Design for Geographic Information Science and Technology (GIS&T)
GEOG 473 Advanced Remote Sensing
GEOG 488 GIS and Water Resources
GEOG 491 Special Topics
GEOG 492 GIS&T Applications and Modeling
Select 9-10 credits from the following: 9-10
Physical Geography (PG)
GEOG 351 Fundamentals of Biogeography
GEOG 353 Geomorphology
GEOG 357 Climatology
GEOG 452 Landscape Ecology
Human Geography (HG)
GEOG 361V Economic Geography
GEOG 363V Cultural Geography
GEOG 365V Urban Geography
GEOG 467 Transportation Geography
Human Environment Geography (HEG)
Select one from the following: 3
GEOG 325V New Mexico and the American West
GEOG 326 U.S. National Parks
GEOG 328V Geography of Latin America
GEOG 331V Europe
GEOG 483 Field Explorations in Geography
Non-Departmental Requirements
Select one from each of the following 3 categories: 3
Choose a Statistics class
A ST 251G Statistics for Business and the Behavioral Sciences (or)
STAT 251G Statistics for Business and the Behavioral Sciences (or)
A ST 311 Statistical Applications
ENGL 218G Technical and Scientific Communication
or ENGL 318G Advanced Technical and Professional Communication
MATH 142G Calculus for the Biological and Management Sciences
or MATH 190G Trigonometry and Precalculus
Second Language Requirement 4-18
Electives
Select sufficient electives to total 120 credits, including 48 upper-division credits. 51
Total Credits 107-123
1 Select either one Physical Geography (PG) class and two Human Geography (HG) classes, OR two Physical Geography (PG) classes and one Human Geography (HG) class.

Second Language Requirement
Option 1
Complete up to 112 (for non-native speakers; this course may require a 111 course as a prerequisite); or up to 113 (for heritage speakers)
Option 2
Complete six additional upper division credits in Geography beyond the major requirements.

Concentration: Human/Environment Relationships (HER)
The Human Environment Relationships Concentration offers a solid foundation in geographic thought and geospatial analysis and provides students with advanced knowledge and skills for assessing human and environmental systems and the coupled and complex interactions between people and the environment. Preparation for advanced graduate studies is also provided.

Departmental Requirements
GEOG 111G Geography of the Natural Environment 4
GEOG 112G World Regional Geography 3
GEOG 120G Culture and Environment 3
GEOG 281 Map Use: Reading, Analysis and Interpretation 3
GEOG 381 Cartography and Geographic Information Systems 4
GEOG 455 Southwest Environments 3
Human Geography (HG)
Select two from the following: 6
GEOG 361V Economic Geography
GEOG 363V Cultural Geography
GEOG 365V Urban Geography
GEOG 467 Transportation Geography
Physical Geography (PG)
Select 6-7 credits from the following: 6-7
GEOG 351 Fundamentals of Biogeography
GEOG 353 Geomorphology
GEOG 357 Climatology
GEOG 452 Landscape Ecology
Human-Environment Geography (HEG)
Select two from the following: 6
GEOG 325V New Mexico and the American West
GEOG 326 U.S. National Parks
GEOG 328V Geography of Latin America
GEOG 331V Europe
GEOG 483 Field Explorations in Geography
Non-Departmental Requirements
ENGL 218G Technical and Scientific Communication
or ENGL 318G Advanced Technical and Professional Communication
MATH 121G College Algebra 3
Select one from the following: 3

A ST 251G Statistics for Business and the Behavioral Sciences (or)
STAT 251G Statistics for Business and the Behavioral Sciences (or)
A ST 311 Statistical Applications

Second Language Requirement 4-18
Electives
Select sufficient electives to total 120 credits, including 48 upper-division credits.

Total Credits 105-120

1 HER students will also take one more class from the Human, Physical, or Human Environment Geography class areas.

Second Language Requirement
Option 1
Complete up to 112 (for non-native speakers; this course may require a 111 course as a prerequisite); or up to 113 (for heritage speakers)

Option 2
Complete six additional upper division credits in Geography beyond the major requirements.

Geography - Master of Applied Geography

The basic requirement for the Master of Applied Geography is a minimum of 30 graduate credits, including 6 thesis credits and a successful thesis defense. Students choosing the thesis option are required to file a digital copy of the thesis and thesis data that will be archived on the Departmental Website and the Departmental server. A non-thesis option requires 36 graduate credits with a minimum of 3 credits of professional residency and an approved final residency report. Students choosing the non-thesis option are required to file a digital copy of their residency report that will be archived on the Departmental Website and the Departmental server. All candidates must maintain an overall GPA of 3.00 or higher. All candidates must also receive a grade of B or better in the following required courses:

- GEOG 501 Research Design and History of Geographic Thought
- GEOG 585 Advanced Spatial Analysis
- One graduate-level GIS&T course, either prior to entering the program or before graduation.

A total of at least 15 credits must be earned in courses numbered 500 and above, and no more than 9 credits of the 30 (thesis option) or 36 (non-thesis option) can be earned outside of geography.

Geography - Undergraduate Minor

The Department of Geography offers a minor in Geography to interested undergraduate students from departments outside of Geography. To earn a minor in Geography, the following courses are required. Note: A grade of C- or better is required for all courses taken for the minor. Students may not take any of these courses S/U.

Departmental Requirements

- GEOG 111G Geography of the Natural Environment 4
- GEOG 112G World Regional Geography 3
- or GEOG 120G Culture and Environment

Select 3-4 credits from the following: 3-4

- GEOG 281 Map Use: Reading, Analysis and Interpretation
- GEOG 381 Cartography and Geographic Information Systems
- GEOG 481 Fundamentals of Geographic Information Science and Technology (GIS & T)

Physical Geography (PG)

Select one from the following: 3-4

- GEOG 351 Fundamentals of Biogeography
- GEOG 353 Geomorphology
- GEOG 357 Climatology
- GEOG 452 Landscape Ecology

Human Geography (HG)

Select one from the following: 3

- GEOG 361V Economic Geography
- GEOG 363V Cultural Geography
- GEOG 365V Urban Geography
- GEOG 467 Transportation Geography

Human-Environment Geography (HEG)

Select one from the following: 3

- GEOG 325V New Mexico and the American West
- GEOG 326 U.S. National Parks
- GEOG 328V Geography of Latin America
- GEOG 331V Europe
- GEOG 483 Field Explorations in Geography

Total Credits 19-21

Geological Sciences

Undergraduate Program Information

Students may follow one of three courses of study in geology. The first track is a BS in Geology with the option in Geological Sciences. This is a traditional geology curriculum, in which students take geology classes, augmented with calculus, physics, and chemistry. The second track is a BS in Geology with the option in Earth and Environmental Systems. Students take geology classes, augmented with a variety of environmental, economic, and political classes. The third track is a BS in Geography with the option in Earth Science Education. Students take geology and education classes, and are certified to teach science at New Mexico middle and high schools after completing the BS and one year of graduate work in the College of Education.

Undergraduate Research Certificates are presented at the department's annual awards ceremony.

The Department of Geological Sciences also cooperates with the Department of Physics in offering a BS degree in physics with a
concentration in geophysics. Requirements are listed in the Department of Physics (p. 387) section of this catalog.

**Graduate Program Information**

The Department of Geological Sciences offers graduate study leading to the Master of Science degree in geology. Admission to the program is in accord with the general regulations of the Graduate School. The Graduate Record Examination (verbal, quantitative, and analytical writing only) is required.

**Degrees for the Department**

Geology - Bachelor of Science (p. 303)

Geology - Master of Science (p. 305)

**Minors for the Department**

Geology - Undergraduate Minor (p. 306)

**Professor, Nancy J. McMillan, Department Head**

**Professors** Amato, McMillan; **Associate Professor** Ramos; **Assistant Professors** Burgette, Hampton, Johnson; **Adjunct Professors** Davis, Witcher; **Emeritus Faculty** Giordano, Lawton, Mack


**GEOL 111G. Introductory to Geology**

4 Credits (3+3P)

Covers the fundamental principles of physical geology, including the origin of minerals and rocks, geologic time, rock deformation, and plate tectonics. May be repeated up to 4 credits.

**GEOL 212G. The Dynamic Earth**

4 Credits (3+3P)

Introduction to earth systems. Geology and the solid earth, geologic time and earth history, water and the world oceans, atmosphere and weather, the solar system. Community Colleges only.

**GEOL 220. Special Topics**

1-3 Credits

Specific subjects to be announced in the Schedule of Classes. Community Colleges only. May be repeated for a maximum of 12 credits. May be repeated up to 12 credits.

**GEOL 295. Environmental Geology**

3 Credits

Earth processes that affect humans and their works, properties of rocks and soils, use and application of environmental geologic data.

**GEOL 305V. Fossils and the Evolution of Life**

3 Credits

Examination of the fossil record within the context of geologic time. Special emphasis on critical evaluation of possible terrestrial and extraterrestrial causes for the evolution of plants and animals and for periods of mass extinction.

**GEOL 310. Mineralogy**

3 Credits (2+3P)

Crystallography and the physical and chemical aspects of minerals. **Prerequisite(s):** GEOL 111G and CHEM 111G.

**GEOL 312. Optical Mineralogy**

3 Credits (2+3P)

Principles of optical mineralogy as applied to the identification and characterization of rock-forming minerals. **Prerequisite or Corequisite:** GEOL 310.

**GEOL 320. Special Topics**

1-3 Credits

Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

**GEOL 335V. Earthquakes, Volcanoes, Hurricanes, and Floods: The Role of Natural Hazards in Civ Past and Present**

3 Credits

This class will provide an introduction to geologic hazards and natural disasters, their effects on society and the attempts at preparation and mitigation for these events. Hazards to be covered include earthquakes, volcanic eruptions, floods, landslides, hurricanes, tsunamis and others.

**GEOL 353. Geomorphology**

3 Credits

Same as GEOG 353.

**GEOL 360. General Geochemistry**

3 Credits

The chemistry of the earth and its parts, with emphasis on geochemical systems and cycles, distribution of the elements, and mineral equilibria. Crosslisted with: CHEM 360 **Prerequisite(s):** CHEM 111G or CHEM 110G.

**GEOL 399. Igneous and Metamorphic Petrology**

3 Credits (2+3P)

Mineralogical composition, classification, and genesis of igneous and metamorphic rocks. **Prerequisite(s):** GEOL 312 for geology majors, GEOL 310 for majors other than geology.

**GEOL 401. Geology Colloquium**

1 Credit

Presentations by visiting speakers and students. May be repeated up to 6 credits.

**GEOL 420. Stratigraphy and Sedimentology**

3 Credits (2+3P)

Identification and interpretation of sedimentary rocks with emphasis on classification, deposition, and stratal geometry. **Prerequisite:** GEOL 310.

**GEOL 424. Soil Chemistry**

3 Credits

Same as SOIL 424, CHEM 424.

**GEOL 434. Tectonics of Sedimentary Basins**

3 Credits

Origin of sedimentary basins with emphasis on subsidence mechanisms, geometry of basin fill, depositional systems and tectonic setting. Course includes two off-campus field trips. Crosslisted with: GEOL 534. **Prerequisite(s):** GEOL 420.
GEOL 441. Tutorial Geology
2 Credits (1+3P)
Participation in teaching lower-division laboratories and conducting tutorial sessions. May be repeated for a total of 4 credits.
Prerequisite: junior or above standing and nomination by faculty.

GEOL 444. GIS for Geology
3 Credits
Prerequisite(s): GEOL 420 or equivalent or consent of instructor.

GEOL 449. The Geological Profession
1 Credit
Investigation of graduate school and employment opportunities, writing the resume, conduct at interviews, and ethics of the profession. Also outcomes assessment exit exams. For graduating seniors only.

GEOL 452. Geohydrology
4 Credits (3+2P)
Origin, occurrence, and movement of fluids in porous media assessment of aquifer characteristics. Development and conservation of ground water resources, design of well fields. Crosslisted with: C E 452 and E S 452.
Prerequisite(s): Junior or senior.

GEOL 455. Undergraduate Research
1-3 Credits
Geological research and field projects for the advanced student. May be repeated for a total of 6 credits. May be repeated up to 6 credits. Consent of instructor required.
Prerequisite(s): Consent of instructor.

GEOL 465. Isotope Geochemistry
3 Credits
Geochemistry of stable and radiogenic isotopes and its application to a wide range of problems in the earth and planetary sciences.
Prerequisite(s): CHEM 112G, GEOL 360, GEOL 399.

GEOL 470. Structural Geology
3 Credits (2+3P)
Deformation of rocks of the earth. Prerequisite: GEOL 310

GEOL 471. Volcanology
3 Credits
Identification and interpretation of volcanic deposits (including air fall, ash flow tuffs, surges, lava flows), with focus on how the characteristics of these deposits can reveal eruption styles and eruption dynamics. Other topics covered include: magma migration and storage, volcanic hazards, volcano monitoring and volcanoes and climate. Crosslisted with: GEOL 571.
Prerequisite(s): GEOL 399.

GEOL 475. Geology of Mineral Resources
3 Credits (2+3P)
Introduction to ore deposits and industrial rocks and minerals; genesis, mining methods, estimation of reserves, exploration, and economic aspects of selected commodities.
Prerequisite: GEOL 399.

GEOL 477. Special Problems
1-3 Credits
Selected advanced topics of current interest or importance. May be repeated for a total of 6 credits.
Prerequisite: consent of instructor.

GEOL 478. Petroleum Systems and Stratigraphy
3 Credits (2+3P)
Sedimentation, stratigraphy, depositional environments, and tectonics in relation to the occurrences and exploration of hydrocarbons. Course includes two off-campus field trips. May be repeated up to 3 credits.
Prerequisite(s): GEOL 420.

GEOL 479. Environmental Soil Chemistry
3 Credits
Same as SOIL 479.

GEOL 480. Seminar
1-3 Credits
Supervised study of a subject not covered by regular courses. For organized group meetings treating selected advanced topics. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

GEOL 482. Zuhl Collection Internship
1-3 Credits (1-3)
Applied experience working with the Zuhl Collection of rocks, minerals, fossils, and petrified wood, supervised by the Director of the Zuhl Collection. Activities include tours, display development, research on aspects of the collection, and other work in the museum. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: GEOL majors.

GEOL 490. Field Geology
3 Credits
Mapping, instrumentation, and interpretation of geology in the field.
Prerequisites: either GEOL 420 and GEOL 470.

GEOL 491. Tectonic Evolution of North America
3 Credits
Current ideas regarding the plate-tectonic evolution of North America from Archean through Holocene time, emphasizing the use of regional stratigraphy and structural geology to interpret mountain building, magmatism, and basin development.
Prerequisites: GEOL 111G, GEOL 399, GEOL 420 and GEOL 470.

GEOL 495. Geology Field Camp
4 Credits
Three week intensive summer course. Geologic mapping in a site-based setting, emphasizing spatial relations, cross-section construction, and preparation of geologic reports. Prerequisite: GEOL 490

GEOL 499. Senior Thesis
1-3 Credits
Writing a formal paper describing original geologic research conducted under supervision of a faculty advisor. Restricted to majors.
Prerequisite: consent of instructor.

GEOL 501. Geology Colloquium
1 Credit
Presentations by visiting speakers and graduate students.

GEOL 520. Selected Topics
1-3 Credits
Selected topics in geology. May be repeated for unlimited credit.
Prerequisites: graduate standing and consent of instructor.

GEOL 534. Tectonics of Sedimentary Basins
3 Credits
Origin of sedimentary basins with emphasis on subsidence mechanisms, geometry of basin fill, depositional systems and tectonic setting. Course includes two off-campus field trips. Restricted to: GEOL majors.
Prerequisites: GEOL 420 or equivalent or consent of instructor.
GEOL 544. GIS FOR GEOLOGY
3 Credits
Prerequisite(s): GEOL 470 or equivalent.

GEOL 553. Applied Geomorphology
3 Credits (2+3P)
Same as GEOG 553.

GEOL 562. Analytical Geochemistry
3 Credits
Techniques used to determine the major element, trace element, and isotopic composition of rocks and minerals and the determination of mineral structure.

GEOL 565. Isotope Geochemistry
3 Credits
Trace element partitioning and isotopic systematics applied to problems in petrology and ore genesis.

GEOL 567. Global Geochemical Systems
3 Credits
Generation of major element, trace element, and isotopic signatures of igneous rocks in different tectonic settings and propagation or destruction of those signatures by sedimentary and metamorphic processes.

GEOL 571. Volcanology
3 Credits
Identification and interpretation of volcanic deposits (including air fall, ash flow tuffs, surges, lava flows), with focus on how the characteristics of these deposits can reveal eruption styles and eruption dynamics. Other topics covered include: magma migration and storage, volcanic hazards, volcano monitoring and volcanoes and climate. Crosslisted with: GEOL 471.
Prerequisite(s): GEOL 399 or equivalent.

GEOL 578. Petroleum Systems and Stratigraphy
3 Credits (2+3P)
Sedimentation, stratigraphy, depositional environments and tectonics in relation to the occurrence and exploration of hydrocarbons. Course includes two off-campus field trips.
Prerequisite(s): GEOL 420.

GEOL 582. Plate Tectonics
3 Credits
Plate tectonics as a fundamental model for geological activity on a dynamic earth. Focuses on plate tectonic theory development and mechanisms, plus modern analogs of ancient processes.

GEOL 585. Geochronology
3 Credits
The principles, analytical methods, and interpretation of the most common geochronologic methods.

GEOL 598. Special Research Programs
1-3 Credits
Investigations into contemporary geological problems. May be repeated for unlimited credit.
Prerequisites: graduate standing and consent of instructor.

GEOL 599. Master’s Thesis
15 Credits
Thesis research.

Name: Nancy J. McMillan (nmcmilla@nmsu.edu), Department Head
**Concentration: Earth and Environmental Systems**

The concentration in geological sciences provides students with scientific insight as a foundation for careers in environmental earth science, environmental policy and resource management. Qualified students are also prepared for graduate study in these areas. This concentration does not prepare students for graduate study in the geological sciences; these students should follow the curriculum in the Geological Sciences Concentration.

**Departmental Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>GEOL 111G</td>
<td>Introductory to Geology</td>
<td>4</td>
</tr>
<tr>
<td>or HON 219G</td>
<td>Earth, Time, and Life</td>
<td></td>
</tr>
<tr>
<td>GEOL 305V</td>
<td>Fossils and the Evolution of Life</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 310</td>
<td>Mineralogy</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 335V</td>
<td>Earthquakes, Volcanoes, Hurricanes, and Floods: The Role of Natural Hazards in Civ Past and Present</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 360</td>
<td>General Geochemistry</td>
<td>3</td>
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<tr>
<td>GEOL 399</td>
<td>Igneous and Metamorphic Petrology</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 420</td>
<td>Stratigraphy and Sedimentology</td>
<td>3</td>
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<tr>
<td>GEOL 449</td>
<td>The Geological Profession</td>
<td>1</td>
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<tr>
<td>GEOL 470</td>
<td>Structural Geology</td>
<td>3</td>
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<tr>
<td>GEOL 491</td>
<td>Tectonic Evolution of North America</td>
<td>3</td>
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**Elective Requirements**

Select 9 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>GEOL 295</td>
<td>Environmental Geology</td>
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<tr>
<td>GEOL 312</td>
<td>Optical Mineralogy</td>
<td></td>
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<tr>
<td>GEOL 353</td>
<td>Geomorphology</td>
<td></td>
</tr>
<tr>
<td>GEOL 424</td>
<td>Soil Chemistry</td>
<td></td>
</tr>
<tr>
<td>or GEOL 479</td>
<td>Environmental Soil Chemistry</td>
<td></td>
</tr>
<tr>
<td>GEOL 434</td>
<td>Tectons of Sedimentary Basins</td>
<td></td>
</tr>
<tr>
<td>GEOL 452</td>
<td>Geohydrology</td>
<td></td>
</tr>
<tr>
<td>GEOL 465</td>
<td>Isotope Geochemistry</td>
<td></td>
</tr>
<tr>
<td>GEOL 475</td>
<td>Geology of Mineral Resources</td>
<td></td>
</tr>
<tr>
<td>GEOL 478</td>
<td>Petroleum Systems and Stratigraphy</td>
<td></td>
</tr>
<tr>
<td>GEOL 480</td>
<td>Seminar</td>
<td></td>
</tr>
<tr>
<td>GEOL 495</td>
<td>Geology Field Camp</td>
<td></td>
</tr>
<tr>
<td>GEOL 499</td>
<td>The Geological Profession</td>
<td></td>
</tr>
<tr>
<td>C E 357</td>
<td>Soil Mechanics</td>
<td></td>
</tr>
<tr>
<td>SOIL 252</td>
<td>Soils</td>
<td></td>
</tr>
</tbody>
</table>

**Nondepartmental Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
<td>3</td>
</tr>
<tr>
<td>AG E 337V</td>
<td>Natural Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>or AG E 384V</td>
<td>Water Resource Economics</td>
<td></td>
</tr>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 120G</td>
<td>Culture and Environment</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 381</td>
<td>Cartography and Geographic Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 211GL</td>
<td>General Physics I Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

Select 8 credits from two semesters of a foreign language (111, 112) or high school equivalent (2 years)

Select 2 from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOVT 324</td>
<td>Environmental Policy</td>
<td></td>
</tr>
<tr>
<td>GOVT 343</td>
<td>Congress and the Legislative Process</td>
<td></td>
</tr>
<tr>
<td>GOVT 395</td>
<td>Law and Society</td>
<td></td>
</tr>
<tr>
<td>GOVT 399</td>
<td>New Mexico Law</td>
<td></td>
</tr>
</tbody>
</table>

Select sufficient electives, including those selected to satisfy the college and university requirements, to total 120 credits, of which 48 must be upper-division (300 or above).

**Total Credits**

119-120

---

1 May not be taken S/U and a grade of C- or better must be earned.

2 CHEM 115 Principles of Chemistry I and CHEM 116 Principles of Chemistry II: Preferred

Students must work closely with their advisors in order to plan programs that allow them to meet all requirements and earn sufficient upper-division credit.
Students must work closely with their advisors in order to plan programs that allow them to meet all requirements and earn sufficient upper-division credit.

**Concentration: Earth Science Education**

The concentration in earth science education is a collaboration between the Department of Geological Sciences and the Department of Curriculum and Instruction in the College of Education. In this option, students earn a Secondary Licensure as well as a BS in Geology, and become qualified to teach the Broad Sciences at the middle and high school levels. Students take one year of graduate classes in the College of Education to complete the Secondary Licensure.

**Departmental Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 111G</td>
<td>Introductory to Geology</td>
<td>4</td>
</tr>
<tr>
<td>or HON 219G</td>
<td>Earth, Time, and Life</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 305V</td>
<td>Fossils and the Evolution of Life</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 310</td>
<td>Mineralogy</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 335V</td>
<td>Earthquakes, Volcanoes, Hurricanes, and Floods: The Role of Natural Hazards in Civilization Past and Present</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 360</td>
<td>General Geochemistry</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 399</td>
<td>Igneous and Metamorphic Petrology</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 420</td>
<td>Stratigraphy and Sedimentology</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 444</td>
<td>GIS for Geology</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 449</td>
<td>The Geological Profession</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 470</td>
<td>Structural Geology</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 491</td>
<td>Tectonic Evolution of North America</td>
<td>3</td>
</tr>
</tbody>
</table>

**Nondepartmental Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR 105G</td>
<td>The Planets</td>
<td>4</td>
</tr>
<tr>
<td>or ASTR 110G</td>
<td>Introduction to Astronomy</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 111GL</td>
<td>Natural History of Life Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 313</td>
<td>Structure and Function of Plants</td>
<td>3</td>
</tr>
<tr>
<td>or BIOL 322</td>
<td>Zoology</td>
<td>2</td>
</tr>
<tr>
<td>C EP 105G</td>
<td>Human Growth and Behavior</td>
<td>3</td>
</tr>
<tr>
<td>or C EP 210</td>
<td>Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I ²</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 115</td>
<td>Principles of Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II ²</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 116</td>
<td>Principles of Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>EDLT 368</td>
<td>Integrating Technology with Teaching</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 315</td>
<td>Multicultural Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 381</td>
<td>Secondary Field Experience</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 215G</td>
<td>Engineering Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 212G</td>
<td>General Physics II</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 216G</td>
<td>Engineering Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 211GL</td>
<td>General Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>or PHYS 215GL</td>
<td>Engineering Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 212GL</td>
<td>General Physics II Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>or PHYS 216GL</td>
<td>Engineering Physics II Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

Select 8 credits from two semesters of a foreign language (111, 112) or high school equivalent (2 years)

**Secondary Teaching Licensure**

To earn the Secondary Teaching Licensure, students must complete these courses and pass the NMTA Basic Skills, NMTA General Knowledge, and NMTA Content Knowledge Licensure Exams:

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 505</td>
<td>Classroom Management</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 509</td>
<td>Teaching Methods Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 510</td>
<td>Internship/Student Teaching</td>
<td>6</td>
</tr>
<tr>
<td>EDUC 563</td>
<td>Teaching Science at the Middle and High School Level</td>
<td>3</td>
</tr>
<tr>
<td>RDG 514</td>
<td>Content Area Literacy</td>
<td>3</td>
</tr>
<tr>
<td>SPED 480</td>
<td>Secondary Curriculum, Methods, and Materials for Special Education in a Diverse Society</td>
<td>3</td>
</tr>
</tbody>
</table>

**Geology - Master of Science**

A candidate for a master’s degree must complete a minimum of 30 graduate credits, including a minimum of 6 credits for thesis (GEOL 599 Master’s Thesis). No more than 5 thesis credits may be taken in any one semester. Early selection of a research advisor is encouraged. A thesis proposal must be approved by the advisor and the candidate’s committee before registering for thesis credits. At least 15 credits must be earned in courses numbered 500 or above, and at least 15 credits must be earned in geology. Students are expected to participate in the department’s colloquium each semester. The department offers excellent laboratory facilities for research in mineralogy, igneous petrology, geochemistry, stratigraphy, geochronology, and sedimentology. Available are a large, fully equipped rock preparation laboratory, mineral separation laboratory, plus computer, geochemical and petrographic labs. Major equipment includes a Gemeni heavy mineral separation table, X-Ray Fluorescence Spectrometry (XRF), Laser-Induced Breakdown Spectroscopy (LIBS), a class 1000 clean lab, Thermal Ionization Mass Spectrometry (TIMS) and Laser-Ablation Multi-Collector Inductively Coupled Plasma Mass Spectrometry (LA-MC-ICP-MS). The department maintains its own fleet of field vehicles. Also available are computing facilities that include an HP color plotter and GIS system. Financial support is available to graduate students in geology through teaching and research assistantships and...
A student cannot earn a BS in Geology and also earn a minor in Geology.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 111G</td>
<td>Introductory to Geology</td>
<td>4</td>
</tr>
<tr>
<td>or HON 219G</td>
<td>Earth, Time, and Life</td>
<td></td>
</tr>
<tr>
<td>GEOL 305V</td>
<td>Fossils and the Evolution of Life</td>
<td>3</td>
</tr>
<tr>
<td>Select 12 credits from the following:</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>GEOL 295</td>
<td>Environmental Geology</td>
<td></td>
</tr>
<tr>
<td>GEOL 310</td>
<td>Mineralogy</td>
<td></td>
</tr>
<tr>
<td>GEOL 312</td>
<td>Optical Mineralogy</td>
<td></td>
</tr>
<tr>
<td>GEOL 335V</td>
<td>Earthquakes, Volcanoes, Hurricanes, and Floods: The Role of Natural Hazards in Civ Past and Present</td>
<td></td>
</tr>
<tr>
<td>GEOL 353</td>
<td>Geomorphology</td>
<td></td>
</tr>
<tr>
<td>GEOL 360</td>
<td>General Geochemistry</td>
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<td>GEOL 399</td>
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<td>Tectonics of Sedimentary Basins</td>
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<td>GEOL 444</td>
<td>GIS for Geology</td>
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<tr>
<td>GEOL 465</td>
<td>Isotope Geochemistry</td>
<td></td>
</tr>
<tr>
<td>GEOL 470</td>
<td>Structural Geology</td>
<td></td>
</tr>
<tr>
<td>GEOL 475</td>
<td>Geology of Mineral Resources</td>
<td></td>
</tr>
<tr>
<td>GEOL 477</td>
<td>Special Problems (variable credit)</td>
<td></td>
</tr>
<tr>
<td>GEOL 478</td>
<td>Petroleum Systems and Stratigraphy</td>
<td></td>
</tr>
<tr>
<td>GEOL 480</td>
<td>Seminar (variable credit)</td>
<td></td>
</tr>
<tr>
<td>GEOL 490</td>
<td>Field Geology</td>
<td></td>
</tr>
<tr>
<td>GEOL 491</td>
<td>Tectonic Evolution of North America</td>
<td></td>
</tr>
<tr>
<td>GEOL 495</td>
<td>Geology Field Camp</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits** 19

1 Courses with Geology prerequisites other than GEOL 111G Introductory to Geology or HON 219G Earth, Time, and Life.

**Government**

**Undergraduate Program Information**

The study of government and political science blends the strengths of a liberal arts education while preparing students for a career in their field. Career opportunities can include positions in: federal, state, and local government; public administration and public service; and in public policy analysis.

The government major program calls for a thorough preparation in the study of government as described below with the opportunity for those interested in specific careers to concentrate in one of the subfields:

- American government and politics,
- public law,
- public administration and policy,
- comparative politics,
- political theory and
- international relations.

The department also offers a supplementary major in law and society, which is supportive of law-related careers.

A government minor program involving 18 credits of course work is also offered. A subfield minor or a general minor may be selected. In addition, the department participates in an interdisciplinary minor in Contemporary Social Studies.

**Graduate Program Information**

The Department of Government offers two degrees:

- the Master of Arts (MA) in government and
- the Master of Public Administration (MPA) and
- a graduate minor in Security Studies.

The programs are designed to prepare students both for diverse careers in the public sector and for further training at the doctoral level. The MPA program is accredited by the Network of Schools of Public Policy, Affairs and Administration (NASPAA), a distinction held by fewer than one-quarter of MPA programs nationwide. The MPA program offers joint degrees

- with the Department of Criminal Justice (MPA/MCJ) and
- with the Department of History (MPA/ MA in Public History).

Students in a joint degree program can earn two master’s degrees with fewer credits than would be required to earn those degrees independently.

**Admission**

Prospective graduate students in either the MA or MPA should demonstrate a 3.0 grade point average for the second half of their undergraduate course work. For students with a GPA of less than 3.0, GRE scores are required, though this requirement may be waived if the undergraduate degree was awarded more than five years before applying. Applicants to either program are required to submit an application online. See instructions at: http://prospective.nmsu.edu/graduate/apply/index.html. Applications include three letters of recommendation, a writing sample, and a personal statement concerning their interest in pursuing a graduate degree. Additional information concerning program requirements and the admission process can be obtained from either the department’s MA chair or MPA director. Under exceptional circumstances the department may exempt students from the minimal requirements.

Application for admission to the Graduate School should clearly indicate the program in which the student wishes to enroll. Applications for admission to the MPA program are reviewed twice a year, once in the Fall semester and once in the Spring semester.

Students interested in a joint degree option must apply and be accepted in to the two departments separately, and indicate their interest on their applications in one of the joint degree programs.

**General Requirements**

Students in both the MA and MPA programs select either a thesis or non-thesis option. Students planning on continuing their studies in a doctoral program or wishing to establish expertise related to a specific career objective are strongly encouraged to select the thesis option. The non-thesis option is suggested for students desiring immediate employment or seeking to enhance their current employment situations. Course work outside the department must have prior advisor approval to ensure a well-
integrated program of study. Complete information on the requirements for either program should be obtained directly from the department. Most MA and MPA courses are offered in the evening.

**Minors**

The Department of Government offers a general undergraduate Government minor and specialized sub field minors. In addition, the department participates in an interdisciplinary minor in Contemporary Social Studies with History and other departments.

A student cannot earn both a B.A. in Government and a general minor in Government. Government majors may pursue a subfield minor in the department, however, they cannot double count any upper division courses in Government toward the minor.

**Degrees for the Department**

**Government - Bachelor of Arts (p. 313)**

**Law and Society - Supplemental Major (p. 314)**

**Government - Master of Arts (p. 314)**

**Public Administration - Master of Public Administration (p. 315)**

**MPA-MCJ Program - Dual Degree (p. 315)**

**MPA-MA Public History Program - Dual Degree (p. 315)**

**Minors for the Department**

**American Government and Politics - Undergraduate Minor (p. 313)**

**Comparative Politics - Undergraduate Minor (p. 313)**

**International Relations - Undergraduate Minor (p. 314)**

**Political Theory - Undergraduate Minor (p. 315)**

**Public Administration - Undergraduate Minor (p. 316)**

**Public Law - Undergraduate Minor (p. 316)**

**Contemporary Social Studies - Undergraduate Minor (p. 313)**

**Government - Undergraduate Minor (p. 314)**

**Security Studies - Graduate Minor (p. 316)**

**Professor, Neil Harvey, Department Head**

*Professors* Butler, Harvey, Slaton; *Associate Professors* Medina, Rosendorf; *Assistant Professors* Conner, Hirschauer; *College Professor* Seckler; *Emeritus Professors* Baker, Lapid, Taggart, Winn

N. Harvey, Ph.D., Department Head (Essex) – Mexican politics, comparative politics, Latin America; N. Baker, (emeritus) Ph.D. (Tulane) – public law, American politics, presidency; G. Butler, Ph.D., (Catholic) – political theory, American politics; T. Conner, Ph.D., (Oklahoma) – public administration, Native American politics, public budgeting; S. Hirschauer, Ph.D., (Old Dominion University) – international relations, security studies, gender, migration and identity, comparative politics; Y. Lapid, (emeritus) Ph.D., (Columbia) – international relations theory, comparative foreign policy, international organizations; C. Medina (Univ. Colorado Denver) Ph.D., – public administration, public policy, education policy, qualitative methods; N. Rosendorf, Ph.D., (Harvard) international relations, cultural diplomacy, US foreign policy; K. Seckler, J.D. (Univ. of New Mexico)- Law and Society.

Mexico state and local government, US Supreme Court, US and NM Constitutions; C. Slaton, Ph.D., (Hawaii) – American politics, American political thought, university and community engagement, public administration, conflict resolution; W. Taggart, (emeritus) Ph.D., (Florida State) – public administration, public policy, American politics; R. G. Winn, (emeritus), Ph.D., (Arizona State) – public administration, policy analysis, environmental policy

**GOVT 100G. American National Government**

3 Credits

Class critically explores political institutions and processes including: the U.S. constitutional system; legislative, executive and judicial processes; political parties, elections, media, policy making, civic participation, popular and group influence

**GOVT 101. Introductory Government Seminar**

1 Credit

Introduction to the government major. Designed to assist students in planning college experience and preparing for professional or advanced educational opportunities upon graduation. Graded: S/U. Restricted to: Main campus only.

**GOVT 110G. Introduction to Political Science**

3 Credits

This class covers fundamental concepts such as justice, sovereignty and power; political theories and ideologies; and government systems that range from democratic to authoritarian.

**GOVT 150G. American Political Issues**

3 Credits

Major contemporary problems of American society and their political implications.

**GOVT 160G. International Political Issues**

3 Credits

Current developments and issues in world politics.

**GOVT 201. Special Topics**

3 Credits

Specific topics to be announced in Schedule of Classes. Community Colleges only. May be repeated for a maximum of 12 credits.

**GOVT 300. Political Research Skills**

3 Credits

Introduction to methods of political analysis and fundamentals of research design, including basic methods for the collection and analysis of political data.

**GOVT 308. Preparing for Law School Admissions Test**

1 Credit

This workshop helps students prepare to take the Law School Admissions Test and apply for law school. Graded: S/U.

**GOVT 313. Model United Nations**

3 Credits

Issues related to the United Nations and international law/organizations through simulations, discussions and research projects. **Prerequisites:** GPA of 2.5 or better and consent of instructor.

**GOVT 314. Advanced Model UN**

3 Credits

Advanced topics, research and preparation for Model United Nations activities. Consent of instructor required. Restricted to: Main campus only.

**Prerequisite(s):** GOVT 313, minimum GPA 2.5.
GOVT 315. Politics and Film
3 Credits
Exploration of political themes, images, and representation in film and other media. May be repeated for a maximum of 6 credits under different subtitles.

GOVT 320. Domestic Policy
3 Credits
The course examines how U.S. public policy is made, including the players, politics, issues and power critical to the policy process. An interactive class that bridges theory and political action. Restricted to: Main campus only.

GOVT 321. Topics in Public Policy
3 Credits
Course examines issues in public policy. May be repeated under different subtitles.

GOVT 324. Environmental Policy
3 Credits
This introductory course explores environmental policy issues. Students study perspectives of policy-makers, political activists and policy analysts, and apply policy models to solving pressing environmental problems. Focus may be on U.S. or global concerns.

GOVT 325. Education Policy and Politics
3 Credits
Overview of current pressing policy issues and political debates on education in the U.S., including school choice, vouchers, accountability, and affirmative action. Multiple topics and perspectives covered, with political economy as the main approach.

GOVT 330. Introduction to Public Administration
3 Credits
What is public administration? Course examines public service, focusing on federal and state government. Issues include management and leadership, personnel, bureaucratic politics, organizational theory, personnel, budgeting and administrative law. Restricted to: Main campus only.

GOVT 331. Special Topics in Public Administration
3 Credits
Special topics in public administration. May be repeated for a maximum of 6 credits under different subtitles.

GOVT 335. Management of Nonprofit Organizations
3 Credits
This course provides an overview of a range of nonprofit management concerns and practices. Students will be challenged to assess their own theories of nonprofit accountability and excellence, while confronting critical issues facing the sector. Activities are designed to expand the management skills of students by offering analytical tools and knowledge, and providing opportunities to test the application of these skills.

GOVT 340. American State and Local Government
3 Credits
Development, structure, functions, and contemporary problems.

GOVT 341. Special Topics: American Politics
3 Credits
Course examines contemporary issues and trends in American government and politics. May be repeated under different subtitles.

GOVT 343. Congress and the Legislative Process
3 Credits
This class reviews the history, structure, membership, operation, power and culture of the American Congress. Restricted to: Main campus only.

GOVT 344. The American Presidency
3 Credits
A comprehensive overview of the U.S. presidency, including powers, electoral politics, decision-making styles, domestic and foreign policy, and relations with Congress, courts, media and interest groups.

GOVT 345. The Supreme Court
3 Credits
This class studies the history and operation of the Supreme Court, as well as landmark cases that have shaped American government and the Court.

GOVT 348. Political Parties and Interest Groups
3 Credits
Organization, principles, and functions of political parties and interest groups in the U.S.

GOVT 350. Special Topics in American Government
3 Credits
Special topics in American government. May be repeated for a maximum of 6 credits under different subtitles.

GOVT 351. Campaigns and Elections
3 Credits
Dynamics of campaigns and electoral politics, and their relationship to the formulation of public policy.

GOVT 353. Women, Politics and Administration
3 Credits
 Movements and strategies for affecting public policy; leadership as administrators and managers in public service agencies. Also explores the influence of feminism in changing women's roles socially, legally, and politically. Crosslisted with: W S 453

GOVT 354. American Indian Politics
3 Credits
Introduction to American Indian tribal governments, politics, policy, and administration; historical and contemporary leadership of Indian Nations; and the history and current status of American Indian-U.S. relations. Students learn about Native peoples' cultural responses, forms of resistance, and adaptations to colonization. Restricted to: Main campus only.

GOVT 360. International Relations
3 Credits
Introduction to world politics; fundamental international issues and problems.

GOVT 361. Special Topics in International Relations
3 Credits
Course examines contemporary issues in international relations. May be repeated under different subtitles.

GOVT 362. International Political Economy
3 Credits
Political factors in international economic relations; theories of political economy.

GOVT 364. National Security Policy
3 Credits
Evolution of U.S. national security policy; problems in defining national interests and related allocation of resources.

GOVT 366. American Foreign Policy
3 Credits
Formulation, content and rationale of current foreign policies of the U.S.
GOVT 367. Terrorism
3 Credits
An introductory course using an interdisciplinary framework to explore definitions, historical roots, contemporary manifestations and future trends in political terrorism.

GOVT 368. Fundamentals of Intelligence Studies
3 Credits
Introductory survey of the major theoretical approaches and substantive issues in intelligence studies.

GOVT 369. Nationalism, Ethnic Cleansing, and Genocide in 20th Century
3 Credits
Same as HIST 377.

GOVT 370. Comparative Politics
3 Credits
Introduction to functional approaches to comparing similarities and differences among political systems.

GOVT 371. Latin American Politics
3 Credits
Basic structure of politics in major Latin American countries; role of groups, including church, labor, and parties.

GOVT 372. Special Topics in Comparative Politics
3 Credits
Course examines contemporary issues in comparative politics. May be repeated under different subtitles. Restricted to: Main campus only.

GOVT 373. Resistance Movements in World Politics
3 Credits
Research on violent and non-violent resistance movements around the world. Focus on their origins, demands, ideologies, strategies and impacts in the post-Cold War context of economic globalization, US military power and new geopolitical dynamics.

GOVT 374V. The European City: History and Culture
3 Credits
Course presents the rich, complex history and cultures of European cities from ancient to modern times, lining these cities to crucial issues in European history.

GOVT 375. Self Determination and Minority Rights
3 Credits
Comparative study of ethnic relations, minority rights, identity, citizenship and political representation.

GOVT 378. U.S.-Mexico Border Politics
3 Credits
Comparative perspectives applied to the problems of the U.S.-Mexican border.

GOVT 379. Mexican Politics
3 Credits
Introduction to the politics and government of contemporary Mexico.

GOVT 380V. Contemporary World Political Ideologies
3 Credits
Introduction to the prevailing political ideologies in the modern world and the ways in which modern nations operating under one or more of these ideologies attempt to answer fundamental questions about the allocation and distribution of rights, liberties, and other things of value. In addition, the course work and discussions attempt to address recent political, social, and economic events in various areas of the world.

GOVT 381. Special Topics in Political Theory
3 Credits
Course explores special topics or theorists in political theory. May be repeated under different subtitles.

GOVT 382. Classical Political Thought
3 Credits
Analysis of main currents in political thought from ancient Greece and Rome to the high Middle Ages.

GOVT 383. Modern Political Thought
3 Credits
Historical and theoretical examination of political ideas and ideologies from Machiavelli to Nietzsche. Topics include liberalism, conservatism, romanticism, communism, and nihilism.

GOVT 384. Contemporary Political Thought
3 Credits
Examination of major currents in political theory from early twentieth century to the present. Includes positivism, fascism, neo-liberalism, and varieties of postmodernism.

GOVT 385. American Political Thought
3 Credits
Introduction to major American thinkers and historical currents from colonial time to the present.

GOVT 386. Political Economy
3 Credits
Analysis of political ideas concerning the role of the state in management of national economies, in both European and American contexts.

GOVT 387. Religion and Politics
3 Credits
Survey of major points of interaction between politics and religion in the U.S., using theoretical, historical, and institutional analysis.

GOVT 390. Special Topics in Public Law
3 Credits
Course examines various issues in public law. May be repeated under different subtitles.

GOVT 391. Constitutional Law
3 Credits
The class explores the reasoning and political context of the Supreme Court cases that define the distribution and limits of governmental powers and duties under the U.S. Constitution, including separation of powers and federalism. Restricted to: Main campus only.

GOVT 392. Civil Liberties
3 Credits
The course examines the reasoning and political context of major Supreme Court cases defining constitutional rights of free speech, religious liberty, free press and criminal procedural rights.

GOVT 394. Judicial Process
3 Credits
Class examines the structure, function and purpose of the American judicial system. Restricted to: Main campus only.

GOVT 395. Law and Society
3 Credits
Class critically explores the development, role and impact of law on our society, covering different theories of law, conceptions of justice and the values they reflect. These models are then applied to current legal issues. Not a class in legal reasoning, but one where students evaluate their beliefs about the legal system. Restricted to: Main campus only.
GOVT 396. International Law
3 Credits
Nature, growth, and scope of law of nations, rights and obligations of states in peace and war, current issues.

GOVT 399. New Mexico Law
3 Credits
New Mexico legal system, court structure and procedures; legal terms and concepts; constitutional, criminal, mass media, historical and social issues relating to New Mexico. Same as C J 399, HIST 399, JOUR 399, and SOC 399.

GOVT 405. Directed Readings
1-3 Credits
Individualized readings. Course subtitled. May be repeated for a maximum of 6 credits. Graded S/U. Consent of instructor required.

GOVT 406. Independent Study
1-3 Credits
Individualized research. Course subtitled. May be repeated for a maximum of 6 credits. Consent of instructor required.

GOVT 407. Workshop
1-6 Credits
Focus on skills related to careers in government and political science. Specific topics announced in the Schedule of Classes; may be repeated for a total of 6 credits. Only 3 credits apply toward government major or minor requirements. Graded S/U.

GOVT 410. Internship
1-12 Credits
Hands-on experience working with public agencies, political campaigns, elected officials & non-profits. May be repeated for a maximum of 12 credits; only 3 credits apply toward government major or minor requirements. Consent of instructor required. Graded: S/U.
Prerequisite(s): Completion of 12 government credits, 2.5 GPA, junior and above standing.

GOVT 411. Service Learning Experience
3 Credits
Experiential learning through a community service project. May be subtitled to reflect service activity. May be repeated for a total of 6 credits; only 3 credits apply toward government major or minor requirements.
Prerequisites: completion of 12 government credits, junior or above standing, and consent of instructor.

GOVT 412. Practicum in Student Government
3 Credits
Research of issues in student government. Consent of instructor required. Graded: S/U.
Prerequisite(s): Student government participation, completion of 12 GOVT credits, junior or senior standing.

GOVT 415. Senior Seminar
2 Credits
Review and integration of political skills acquired in the Government Department. Students will prepare a professional portfolio for entry into the workforce, advanced study, and civic participation. S/U Grading (S/U, Audit).

GOVT 465. Peru: From Incas to Inca Kola
3 Credits
Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalzation, and the drug trade. Same as ANTH 459 and HIST 459.

GOVT 468. Rebels, Guerrillas, and Terrorists in Modern Latin America
3 Credits
Explores history of rebels in Latin America. Examines guerilla struggles attaining national dimension. Focus on modern events, including Peru’s Shining Path, Columbia’s FARC, and Mexico’s Zapatistas. Same as HIST 331.

GOVT 469. Globalization
3 Credits
Analysis of the globalization process. Covers theories of globalization, the global economy, political globalization, global culture, transnational social movements, transnational migration and world labor market, global cities, and local-global linkages. Same as SOC 489.

GOVT 473. Germany
3 Credits
Political, social, and cultural developments from the eighteenth century to the present, with emphasis on the Nazi era. Same as HIST 383.

GOVT 474. European Politics
3 Credits
Politics in European countries, European integration, post-communist states, regionalism and border politics.

GOVT 493. Mass Communications Law
3 Credits
Same as JOUR 493 and COMM 493.

GOVT 502. Research Methods in Government
3 Credits
Contemporary methods of political analysis, including mathematical and statistical techniques and computer applications. MPA students must complete this class with a B- or better. MA students must complete either GOVT 502 or GOVT 503 with a B- or better.

GOVT 503. Qualitative Research Methods
3 Credits
An overview of qualitative research methods such as fieldwork, ethnography, content analysis, case studies, focus groups and grounded theory. Introduces students to epistemology (the study of knowledge) and to basic components of research design. Explores activist scholarship, ethical dilemmas in research, and software tools for computer assisted analysis. Especially useful for students preparing theses, dissertation, or other research projects. MA students must complete either GOVT 503 or GOVT 502 with a B- or better.

GOVT 505. Directed Readings
1-3 Credits
Selected topics in government. May be repeated for a total of 6 credits. Graded S/U.
Prerequisite: consent of instructor.

GOVT 510. Internship
1-6 Credits
Assignment with a public agency and research report. Only 3 credits apply toward degree requirements. Graded S/U.
Prerequisite: approval of graduate advisor.
GOVT 517. Selected Topics in Government
3 Credits
Selected issues which may cross sub-fields of the discipline. May be repeated for a total of 6 credits.

GOVT 519. Proseminar in Public Administration
3 Credits
Review of classic and contemporary theory and practice in public administration. Application of written and oral skills to the presentation and defense of essays on various aspects of public administration. To be completed with a B- or better.
Prerequisite(s): 30 credits of M.P.A.

GOVT 522. Public Sector Economics I
3 Credits
Same as AEEC 522.

GOVT 523. Public Sector Economics II
3 Credits
Same as AEEC 523.

GOVT 524. American Indian Politics
3 Credits
Introduction to American Indian tribal governments, politics, policy, and administration; historical and contemporary leadership of Indian Nations; and the history and current status of American Indian-U.S. relations. Students learn about Native peoples' cultural responses, forms of resistance, and adaptations to colonization.

GOVT 526. Women, Politics and Administration
3 Credits
Examination of women's participation in U.S. electoral politics as voters, candidates, and officeholders; their political activism in issue-based movements and strategies for affecting public policy; leadership as administrators and managers in public service agencies. Course also covers the influence of feminism in changing women's roles socially, legally, and politically.

GOVT 527. Issues in Public Management
3 Credits
Selected issues in public management. May be repeated under different subtitles for a total of 6 credits.

GOVT 530. Seminar in Public Policy
3 Credits
Survey of the political, administrative, and technical aspects of policy making in government. MA students taking Govt 530 as part of their core requirements must complete the class with a B- or better.

GOVT 535. Education Policy and Politics
3 Credits
Overview of current pressing policy issues and political debates on education in the U.S., including school choice, vouchers, accountability, and affirmative action. Multiple topics and perspectives covered, with political economy the main approach.

GOVT 536. Public Policy and Indigenous Communities
3 Credits
Indigenous communities are found throughout North, Central and South America. This course addresses the history, development and governance of these communities. Different sections of the course may choose to focus on different indigenous communities. All courses will consider the principles of governance internal to indigenous communities as well as the governing relationships between indigenous communities and modern states.

GOVT 537. Issues in Public Policy
3 Credits
Selected issues in public policy. May be repeated under a different subtitle for a total of 6 credits.

GOVT 540. Seminar in Public Administration
3 Credits
Survey course on the theory and practice of program, personnel, and financial management in government and the private, nonprofit sector. MA students taking Govt 540 as part of their core requirements must complete the class with a B- or better.

GOVT 541. Public Budgeting
3 Credits
Budgetary processes; budget classification, analysis, and evaluation. MPA students must complete this class with a B- or better.

GOVT 542. Public Sector Human Resources Management
3 Credits
Exploration of public personnel systems and practices, including job analysis, compensation, performance evaluation, recruitment, and labor-management relations. MPA students must complete this class with a B- or better.

GOVT 543. Skills Workshop
1-6 Credits
Focus on management of task skills in selected areas of public administration. Specific topics will appear in the Schedule of Classes; may be repeated for a total of 6 credits.

GOVT 544. Public Policy Analysis
3 Credits
Environment of policy analysis; various descriptive and quantitative designs for analyzing and evaluating public policy. Problems of policy analysis. MPA students must complete this class with a B- or better.
Prerequisite(s): GOVT 502 or consent of instructor.

GOVT 547. Government Organizations
3 Credits
Historical overview and present applications of organization theory in public management. MPA students must complete this class with a B- or better.

GOVT 548. Public Sector Leadership
3 Credits
Theories and styles of leadership.

GOVT 549. Ethics in Government
3 Credits
Examination of standards, perspectives, and issues for ethical decision-making in public agencies. MPA students must complete this class with a B- or better.

GOVT 550. Seminar in American Politics
3 Credits
Overview of American political institutions. Includes study of American constitutional theory; legislative, executive, and judicial functions and processes; political parties and interest groups; and public policy formulation. MA students taking Govt 550 as part of their core requirements must complete the class with a B- or better.

GOVT 553. Issues in American Politics
3 Credits
Selected issues in American Politics. May be repeated under a different subtitle for a total of 6 credits.
GOVT 560. Seminar in International Relations Theory
3 Credits
A critical overview of leading approaches and controversies in international relations theory. The purpose of the course is to introduce students to contending theoretical perspectives and conceptual frameworks that help make sense of contemporary world politics. MA students taking Govt 560 as part of their core requirements must complete the class with a B- or better.

GOVT 561. Nations and Soft Power
3 Credits
Course employs historical, theoretical and practical “best/worst practices” lenses to deal with key questions, such as how do the US and other states present themselves to the world? What are “soft power” and “national reputation management”? How does one build or damage a country’s image and “brand”? What are “public diplomacy” and “cultural diplomacy”, and how do they factor into the foreign relations of the US and other states?

GOVT 562. Advanced Issues in Security and Intelligence Studies
3 Credits
Selective issues in comparative security and intelligence studies.

GOVT 563. Issues in International Relations
3 Credits
Selected issues in international relations. May be repeated under a different subtitle for a total of 6 credits.

GOVT 564. Advanced National Security Policy
3 Credits
Major topical, theoretical, and regional issues in national security policy.

GOVT 566. Advanced Issues in American Foreign Policy
3 Credits
Major topical, theoretical, and regional issues in American foreign policy. May be repeated for a maximum of 6 credits under different subtitles.

GOVT 567. Terrorism and Political Violence
3 Credits
An advanced graduate course using an interdisciplinary framework to explore definitions, historical roots, contemporary manifestations and future trends in political terrorism. The course seeks to understand modern-day terrorism as a form of political violence.

GOVT 569. Advanced Issues in Globalization
3 Credits
Analysis of the globalization process. Covers theories of globalization; global economy; political globalization; global culture; transnational social movements; transnational migration and world labor market; global cities; local-global linkages. Same as SOC 589.

GOVT 570. Seminar in Comparative Politics
3 Credits
Examination of methods used for comparing various types of political entities. Investigation of criteria needed to examine a concept across cultures or national boundaries. MA students taking Govt 570 as part of their core requirements must complete the class with a B- or better.

GOVT 571. Seminar in Latin American Politics
3 Credits
Overview of the political structures of the Latin American region. Addresses a number of contemporary issues facing Latin American states, including interest groups, the church, labor, political parties, U.S.-Latin American relations, political development.

GOVT 573. Resistance Movements in World Politics
3 Credits
Advanced research on violent and non-violent resistance movements around the world. Focus on origins, demands, ideologies, strategies and impacts in the post-Cold War context of economic globalisation, US military power and new geopolitical dynamics.

GOVT 574. Contemporary Comparative Studies
3 Credits
Major topical, theoretical, and regional issues in international politics. May be repeated once.

GOVT 575. Issues in Comparative Politics
3 Credits
Selected issues in comparative politics. May be repeated under a different subtitle for a total of 6 credits.

GOVT 578. Seminar in the U.S.-Mexican Border
3 Credits
An analysis of the political environment along the United States-Mexico border and a survey of the literature available for a number of contemporary issues.

GOVT 579. Seminar in Mexican Politics
3 Credits
Advanced research on politics and government of Mexico.

GOVT 580. Seminar in Political Theory
3 Credits
Examination of major issues in political theory, including democracy, sovereignty, classical and modern traditions of thought. May be repeated with different subject matter. MA students taking GOVT 580 as part of their core requirements must complete the class with a B- or better.

GOVT 587. Seminar in Religion and Politics
3 Credits
Historical, theoretical and comparative analyses of the interaction between politics and religion.

GOVT 590. Seminar Public Law and Legal Systems
3 Credits
Focus on U.S. Constitutional Law and other national legal systems. MA students taking Govt 590 as part of their core requirements must complete the class with a B- or better.

GOVT 591. Law for Administrators
3 Credits
Case-law definitions of the legal roles and powers of public administrators.

GOVT 593. Issues in Public Law
3 Credits
Selected issues in public law. May be repeated under a different subtitle for a total of 6 credits.

GOVT 596. International Law
3 Credits
Nature, growth and scope of law of nations; rights and obligations of states in peace and war; current issues.

GOVT 598. Special Research Programs
1-3 Credits
Individual investigations either theoretical, analytical or experimental. Three credits may be taken per semester for a total of 6 credits for thesis students, and 9 credits for non-thesis students. Consent of instructor required.
American Government and Politics - Undergraduate Minor

Students pursuing a subfield minor may count a maximum of 3 credits in an independent studies course or an internship. Students may request permission to substitute courses between subfields, subject to approval of the Department of Government undergraduate committee.

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Total Credits: 18

The subfield series include courses in the 20/30 series (public administration and policy), 40/50 series (American government and politics), 60 series and HON 304V Dilemmas of War and Peace (international relations), 70 series (comparative politics), 80 series, including GOVT 380V Contemporary World Political Ideologies (political theory), and 90 series (public law).

Comparative Politics - Undergraduate Minor

Students pursuing a subfield minor may count a maximum of 3 credits in an independent studies course or an internship. Students may request permission to substitute courses between subfields, subject to approval of the Department of Government undergraduate committee.

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Total Credits: 18

The subfield series include courses in the 20/30 series (public administration and policy), 40/50 series (American government and politics), 60 series and HON 304V Dilemmas of War and Peace (international relations), 70 series (comparative politics), 80 series, including GOVT 380V Contemporary World Political Ideologies (political theory), and 90 series (public law).
Government - Master of Arts

The MA program provides general course work in each of the major fields of political science. Students may choose either the thesis option, under which they complete 30 credits of course work plus 6 thesis credits (GOVT 599 Master's Thesis), or the nonthesis option, with 30 credits of course work plus 6 hours of special research credit (GOVT 598 Special Research Programs) or 6 hours of approved internship credit (GOVT 510 Internship). Both the thesis and nonthesis options require a final oral examination; the non thesis option requires a written examination as well. The program provides a broad-based foundation in political science while allowing students to pursue specific areas of interest.

Requirements

Flexibility in planning a program of study is permitted to meet the educational needs of a diverse student population. Structured areas of emphasis are available in several topical areas, including Latin American and international affairs. Students may also take a graduate minor in Security Studies. Information on these areas and the graduate minor may be obtained from the Department of Government. No more than 9 credits taken outside the department will be counted toward the degree.

Required Courses

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Select 12 additional credits, of which at least 9 are upper division, including 3 upper division courses from different subfields.

Total Credits 18

The subfield series include courses in the 20/30 series (public administration and policy), 40/50 series (American government and politics), 60 series and HON 304V Dilemmas of War and Peace (international relations), 70 series (comparative politics), 80 series, including GOVT 380V Contemporary World Political Ideologies (political theory), and 90 series (public law).

International Relations - Undergraduate Minor

Students pursuing a subfield minor may count a maximum of 3 credits in an independent studies course or an internship. Students may request permission to substitute courses between subfields, subject to approval of the Department of Government undergraduate committee.

Required Courses

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Select 12 additional credits, of which at least 9 are upper division, including 3 upper division courses from the same subfield.

Total Credits 18

The subfield series include courses in the 20/30 series (public administration and policy), 40/50 series (American government and politics), 60 series and HON 304V Dilemmas of War and Peace (international relations), 70 series (comparative politics), 80 series, including GOVT 380V Contemporary World Political Ideologies (political theory), and 90 series (public law).

Law and Society - Supplemental Major

The Department of Government also coordinates a supplementary major in law and society that may be taken in addition to a regular major. The program is designed to allow students to combine law-related classes offered across a range of departments and disciplines. It is of particular interest to undergraduates interested in law school or who contemplate careers in fields closely related to the legal profession, such as government, politics, social work or law enforcement.

Requirements

The supplementary major consists of 24 credits chosen from the courses listed below. At least 18 credits must be earned in upper-division courses and 6 credits must be earned from listed courses outside the student's primary major. Candidates for the Law and Society degree must declare...
their supplementary major prior to completing the last 9 credits of the program.

Core Courses
Select three from the following: 9

- C J 205 Criminal Law
- GOVT 395 Law and Society
- GOVT 391 Constitutional Law
- GOVT 394 Judicial Process
- C J 306 Criminal Procedural Law
  or GOVT 392 Civil Liberties
  or JOUR 493/ HON 377V Mass Communications Law

Communication Skills
Select one from the following: 3

- COMM 351 Persuasion Theory and Practice
- ENGL 311G Advanced Composition
- PHIL 448 Writing Philosophy

Critical Thinking Skills
Select one from the following: 3

- GOVT 382 Classical Political Thought
- PHIL 211G Informal Logic
- PHIL 312 Formal Logic

Jurisprudence
Select one from the following: 3

- C J 307 Law of Evidence
- C J 424 Forensic Law
- GOVT 385 American Political Thought
- PHIL 376 Philosophy of Law
- PSY 330 Psychology and the Law
- SOC 391 Crime and Society

Legal Policy Issues
Select two from the following: 6

- BLAW 316 Legal Environment of Business
- BLAW 385V Consumers and the Law
- C J 250 Courts and the Criminal Justice System
- C J 332 Correctional Law
- C J/GOVT/ JOUR/HIST 399 New Mexico Law
- GOVT 345 The Supreme Court
- GOVT 387 Religion and Politics
- GOVT 390 Special Topics in Public Law
- GOVT 396 International Law
- HON 335V Legal Issues in Modern Society
- HRTM 304 Hospitality and Travel Law
- PHIL 100G Philosophy, Law and Ethics
- PHIL 320 Social and Political Philosophy
- SOC 392 Juvenile Delinquency

Total Credits 24

MPA-MA Public History Program - Dual Degree

The MPA-MA Public History Option Program requires completion of a minimum of 57 credits of approved course work from the Departments of Government and History, including completing internship credits in both programs. Interested applicants should consult with the MPA director or the director of the Public History Program for additional information.

MPA-MCJ Program - Dual Degree

The MPA-MCJ joint degree option requires completion of a minimum of 57 credits of approved course work from the Departments of Government and Criminal Justice. Students interested in this option should meet with the MPA director or criminal justice graduate advisor for additional information.

Political Theory - Undergraduate Minor

Students pursuing a subfield minor may count a maximum of 3 credits in an independent studies course or an internship. Students may request permission to substitute courses between subfields, subject to approval of the Department of Government undergraduate committee.

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The subfield series include courses in the 20/30 series (public administration and policy), 40/50 series (American government and politics), 60 series and HON 304V Dilemmas of War and Peace (international relations), 70 series (comparative politics), 80 series, including GOVT 380V Contemporary World Political Ideologies (political theory), and 90 series (public law).

Public Administration - Master of Public Administration

The MPA program is accredited by NASPAA. The MPA is designed to provide students with the managerial and analytical skills, in addition to ethical and professional values, necessary to meet the increased demand for skilled public administrators. Candidates who follow this professional program must complete a minimum of 42 credits, consisting of core courses, electives and either an internship or a thesis.

Requirements

Because students have divergent career goals, a thesis or internship option is offered. The thesis option requires an additional 18 credits of course work, 6 credits of thesis (GOVT 599 Master's Thesis), and a written examination covering the thesis and course work. The internship option also requires an additional 18 credits of course work, 3 credits of internship (GOVT 510 Internship), and a written examination covering the internship and course work. Students who fail their written examination must take an oral exam. As part of the course work, students selecting...
the internship option must take GOVT 519 Proseminar in Public Administration (3 credits that count toward the 42 total) during the latter part of their studies, and are required to earn a B- grade or higher in that course.

With approval, students may include up to 12 credits of relevant course work from other departments to be counted toward the total credits required for the MPA. These credits may be selected to form a graduate minor in another academic discipline.

Core Courses

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</thead>
<tbody>
<tr>
<td>GOVT 502</td>
<td>Research Methods in Government</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 541</td>
<td>Public Budgeting</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 542</td>
<td>Public Sector Human Resources Management</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 544</td>
<td>Public Policy Analysis</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 547</td>
<td>Government Organizations</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 549</td>
<td>Ethics in Government</td>
<td>3</td>
</tr>
</tbody>
</table>

Thesis Option

Select one from the following: 24

Thesis

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOVT 599</td>
<td>Master’s Thesis (6 credits)</td>
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</table>

Internship and Capstone Option 2

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOVT 510</td>
<td>Internship (3 credits)</td>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOVT 519</td>
<td>Proseminar in Public Administration (3 credits)</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 42

Candidates with inadequate preparation for graduate study in public administration may be required to take appropriate undergraduate and graduate courses as part of, or in addition to, a regular program of study. Applicants to the MPA program will be advised of any such requirements at the time of admission.

Public Administration - Undergraduate Minor

Students pursuing a subfield minor may count a maximum of 3 credits in an independent studies course or an internship. Students may request permission to substitute courses between subfields, subject to approval of the Department of Government undergraduate committee.

Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GOVT 100G</td>
<td>American National Government</td>
<td>3</td>
</tr>
<tr>
<td>or HON 249G</td>
<td>American Politics in a Changing World</td>
<td></td>
</tr>
<tr>
<td>GOVT 110G</td>
<td>Introduction to Political Science</td>
<td>3</td>
</tr>
<tr>
<td>or HON 248G</td>
<td>The Citizen and the State: Great Political Issues</td>
<td></td>
</tr>
</tbody>
</table>

Select 12 additional credits, of which at least 9 are upper division, including 3 upper division courses from the same subfield. 12

Total Credits 18

The subfield series include courses in the 20/30 series (public administration and policy), 40/50 series (American government and politics), 60 series and HON 304V Dilemmas of War and Peace (international relations), 70 series (comparative politics), 80 series, including GOVT 380V Contemporary World Political Ideologies (political theory), and 90 series (public law).

Public Law - Undergraduate Minor

Students pursuing a subfield minor may count a maximum of 3 credits in an independent studies course or an internship. Students may request permission to substitute courses between subfields, subject to approval of the Department of Government undergraduate committee.

<table>
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<tr>
<th>Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GOVT 100G</td>
<td>American National Government</td>
<td>3</td>
</tr>
<tr>
<td>or HON 249G</td>
<td>American Politics in a Changing World</td>
<td></td>
</tr>
<tr>
<td>GOVT 110G</td>
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<td>3</td>
</tr>
<tr>
<td>or HON 248G</td>
<td>The Citizen and the State: Great Political Issues</td>
<td></td>
</tr>
</tbody>
</table>

Select 12 additional credits, of which at least 9 are upper division, including 3 upper division courses from the same subfield. 12

Total Credits 18

The subfield series include courses in the 20/30 series (public administration and policy), 40/50 series (American government and politics), 60 series and HON 304V Dilemmas of War and Peace (international relations), 70 series (comparative politics), 80 series, including GOVT 380V Contemporary World Political Ideologies (political theory), and 90 series (public law).

Security Studies - Graduate Minor

Requirements

Select three from the following: 9

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOVT 468</td>
<td>Rebels, Guerrillas, and Terrorists in Modern Latin America</td>
<td></td>
</tr>
<tr>
<td>GOVT 549</td>
<td>Ethics in Government</td>
<td></td>
</tr>
<tr>
<td>GOVT 560</td>
<td>Seminar in International Relations Theory</td>
<td></td>
</tr>
<tr>
<td>GOVT 561</td>
<td>Nations and Soft Power</td>
<td></td>
</tr>
<tr>
<td>GOVT 562</td>
<td>Advanced Issues in Security and Intelligence Studies</td>
<td></td>
</tr>
<tr>
<td>GOVT 564</td>
<td>Advanced National Security Policy</td>
<td></td>
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<tr>
<td>GOVT 566</td>
<td>Advanced Issues in American Foreign Policy</td>
<td></td>
</tr>
<tr>
<td>GOVT 567</td>
<td>Terrorism and Political Violence</td>
<td></td>
</tr>
<tr>
<td>GOVT 569</td>
<td>Advanced Issues in Globalization</td>
<td></td>
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<tr>
<td>GOVT 573</td>
<td>Resistance Movements in World Politics</td>
<td></td>
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<tr>
<td>GOVT 574</td>
<td>Contemporary Comparative Studies</td>
<td></td>
</tr>
<tr>
<td>GOVT 596</td>
<td>International Law</td>
<td></td>
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</tbody>
</table>

Total Credits 9

Additional Courses

Other graduate courses may become available during the year which may be substituted for the above listed courses. Consideration may be made on a case-by-case basis.
History

Undergraduate Program Information
An undergraduate degree in history prepares students for careers in: teaching; law; public service; management; journalism; education; communications; travel counseling; and library, museum and archival staff work. Students master skills including the ability to read critically, to formulate arguments, to conduct historical research, and to synthesize arguments and create novel interpretations.

Graduate Program Information
The Department of History offers graduate work leading to the Master of Arts degree. In addition to fulfilling the basic requirements for admission to the Graduate School, applicants must present undergraduate passage of at least 12 credits in history with grades of B or higher, including 6 upper division history credits. Those lacking this preparation must normally make up deficiencies before beginning graduate course work. Candidates who choose a course of study requiring a foreign language will be responsible for their own language preparation.

Students applying for admission to the graduate program in history are required to submit an application form and a transcript to the Graduate School and a strong writing sample, three letters of recommendation ideally from History faculty members at NMSU or other institutions, and a two-to-three page statement of purpose to the Department of History, approximately four months in advance of the desired enrollment date. Applicants for graduate assistantships and fellowships must submit a letter of application, a transcript, and three letters of recommendation to the department by February 15 for the fall semester, and by October 15 for the spring semester. Students who are not applying for graduate assistantships and fellowships may apply at any time for acceptance into the graduate program.

Degrees for the Department
History - Bachelor of Arts (p. 327)
History - Master of Arts (p. 328)
Public History and Public Administration - Joint M.A. Degree (p. 329)

Minors for the Department
Contemporary Social Studies - Undergraduate Minor (p. 326)
History - Undergraduate Minor (p. 329)
History - Graduate Minor (p. 327)

Professors Bronstein, Hammond, Horodowich, Hunner, Malamud
Associate Professors Brooks, Garcia-Bryce, Orzoff, Assistant Professors Kopp, College Professors E. Masson, Tollefson, Pitcaithley, Schneider-Hector


HIST 101G. Roots of Modern Europe
3 Credits
Economic, social, political, and cultural development from earliest times to about 1700.

HIST 102G. Modern Europe
3 Credits
Economic, social, political, and cultural development from 1700 to the present.

HIST 110G. Making History
3 Credits
General introduction to history: how historians carry out research and develop interpretations about the past.

HIST 111G. Global History to 1500
3 Credits
Global economic, social, political and cultural developments to 1500. Thematic approach.

HIST 112G. Global History Since 1500
3 Credits
Global economic, social, political and cultural developments since 1500. Thematic approach.

HIST 201G. Introduction to Early American History
3 Credits
History of the United States to 1877, with varying emphasis on social, political, economic, diplomatic, and cultural development.

HIST 202G. Introduction to Recent American History
3 Credits
History of the United States since 1877, with varying emphasis on social, political, economic, diplomatic, and cultural development.

HIST 211G. East Asia to 1600
3 Credits
History of China, Korea, Vietnam, and Japan from earliest times through the sixteenth century. Emphasis on cultural and political developments and their social and economic contexts, and the interaction between East Asian societies.

HIST 212G. East Asia since 1600
3 Credits
History of China, Korea, Vietnam, and Japan from the sixteenth through the twentieth centuries. Emphasis on internal development of each country, as well as the social and political impact of Western Imperialism, and the emergence of each country’s unique version of modern society.

HIST 221G. Islamic Civilizations to 1800
3 Credits
History of Islamic civilizations to 1800.

HIST 222G. Islamic Civilizations since 1800
3 Credits
History of Islamic civilizations since 1800.

HIST 261. New Mexico History
3 Credits
Economic, political, and social development of New Mexico from exploration to modern times. Community Colleges only. May be repeated for a maximum of 12 credits.
HIST 300. Special Topics
1-9 Credits (1-9)
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 18 credits.

HIST 302V. Science in Modern Society
3 Credits
The social impact of scientific activity and thought from Newton to the present. The growth of modern scientific institutions; the political and social context of modern science. ENGL 111G recommended.

HIST 304. The Global Cold War
3 Credits
Survey of the global history of the Cold War. The emergence of the USSR and US as global superpowers, their involvement in the end of the European great-power empire, the rise of petropolitics and the nuclear era, modern terrorism, and the creation of the First, Second and Third Worlds all have their roots in the Cold War. Although the Iron Curtain ran through Europe, with the Berlin Wall considered its main front, the Cold War’s impact was not limited to Europe. Proxy wars were fought all over the world; the globe became a set or arenas of contestation. Students will carefully read historical documents as well as textbooks and literary works; in addition to close analysis of different kinds of sources, we will explore different kinds of historical writing.

HIST 309. American Indian History I
3 Credits
Cultural and social change from before contact with Europeans to 1840.

HIST 310. American Indian History II
3 Credits
Federal Indian policy, tribal histories, and the emergence of Pan-Indianism from 1840 to present.

HIST 311V. Colonial Latin America
3 Credits
Social, political, and economic development from Columbus to the Wars of Independence. Research paper required.

HIST 312V. Modern Latin America
3 Credits
Post-revolutionary developments in the nineteenth and twentieth centuries; the role of Latin America in world affairs and the Inter-American system. Research paper required.

HIST 313. Making the American West
3 Credits
Development of the American West from 1803 to 1900 with emphasis on conquest, federal and corporate roles in western development, environmental change, and the Mythic West. Includes meetings outside regular class time to view feature-length films.

HIST 315. From the Wild West to the Atomic West
3 Credits
Explores the transformation of the West with particular attention to the roles of race, class, gender and culture. Includes meetings outside regular class time to view feature-length films.

HIST 316. History of Women in the American West
3 Credits
Experiences and interactions among Native American, Spanish/Mexican, immigrant, and Anglo-American women in the American West from 1500 to the present. Same as WS 316.

HIST 318. History of Egypt
3 Credits
History of Egypt from ancient times to the present.

HIST 321. History of Korea
3 Credits
Social, political, and cultural history of Korea from earliest times through twentieth century. Emphasis on the interaction between Korean traditions and influences from China and the West.

HIST 323. Cultural History of Later Imperial China
3 Credits
Covers art and literature of China from the Tang Dynasty (618-907) through the eighteenth century. Developments in cultural theory and practice are traced in the context of the social and economic changes fostering an understanding of Chinese cultural history and its legacy in East Asia today.

HIST 323 L. Splendora of Imperial China
1 Credit
This course consists of a FLIP trip to China, Spring 2014 which will explore the significant sites of imperial Chinese culture by spending 14 days traveling in China. Crosslisted with: ART 311 L and HIST 323.

HIST 324. History of Modern Terrorism in the Middle East and Europe
3 Credits
Historical analysis of the motives, methods, organization, and actions of terrorist groups.

HIST 325. History of the Arab-Israeli Conflict
3 Credits
History of the causes, course, and consequences of the Arab-Israeli conflict.

HIST 329. History of Egypt
3 Credits
History of Egypt from ancient times to the present.

HIST 330V. Introduction to Religious Studies
3 Credits
Provides an overview of old and new methods and theories for the study of religion. Exposure to the ways groups of people in diverse cultural systems construct and change their religious traditions to serve practical and meaningful ends. Same as SOC 330V and ANTH 330V.

HIST 331. Rebels, Guerrillas, and Terrorists in Modern Latin America
3 Credits
Explores history of rebels in Latin America. Examines guerilla struggles attaining national dimension. Focus on modern events, including Peru’s Shining Path, Colombia’s FARC, and Mexico’s Zapatistas. Same as GOVT 468.

HIST 334. Art and Life in Renaissance Italy
3 Credits
Examines how Italian Renaissance textual and visual culture offered Europe new ways of seeing and portraying itself, 1350-1550. Topics include: Florence, Venice, Rome, Leonardo, Michelangelo, Titian, humanism, the Medici, and republican and courtly culture. Same as ART 444.

HIST 338. World War I
3 Credits
Cultural, social, and intellectual background and impact of World War I. Military and diplomatic events of the war. Consequences of the war.

HIST 339. World War II
3 Credits
Social, cultural and political aspects of World War II, in addition to traditional military events. Emphasis on U.S. involvement.
HIST 340. American Economic History
3 Credits
The rise of big business and organized labor, increasing price rigidities, and growing government intervention. Same as ECON 340.

HIST 341. American Agricultural History
3 Credits
From Colonial times to the present, with emphasis upon historical development, politics, and legislation, especially in recent times.

HIST 342. Early American Military History
3 Credits
Emphasis on American wars up to and including the Civil War, and on the factors contributing to the development of modern military systems.

HIST 343. Recent American Military History
3 Credits
Emphasis on American wars since the Civil War, and on factors contributing to the development of modern military systems.

HIST 346. The Jacksonian Era 1800-1840
3 Credits
Jeffersonian period, War of 1812. Social, political, and economic history of the Jacksonian era.

HIST 347. Civil War Era 1840-1877
3 Credits
Mexican-American War, development of secession, American Civil War, Reconstruction.

HIST 353. Colonial Mexico
3 Credits
Covers major social, political, economic and cultural topics including pre-Columbian civilizations, early European incursions and indigenous responses, economic systems and labor exploitation, religion and spirituality, and resistance to colonial rule. Sixteenth to nineteenth centuries.

HIST 354. Modern Mexico
3 Credits
Examines interactions of peasants, women, indigenous peoples, and economically/politically dominant groups within the Mexican state from 1810 to the present. Assesses the contentious relationship between Mexico and the United States, focusing on the Mexican-U.S. border.

HIST 356. The Mexican Revolution
3 Credits
Examines the history of modern Mexico through the lens of the Mexican Revolution, 1910-1920. Course covers military, political, social, cultural and economic developments that shaped Mexico during and after the Revolution.

HIST 361. Afro-American History I
3 Credits
African background, slave trade, slavery; Civil War and Reconstruction; free blacks in a white society to about 1900.

HIST 362. Afro-American History II
3 Credits
Black Americans in the United States in the twentieth century; segregation; black leaders, organizations, methods and goals; white reaction; the struggle for equality.

HIST 365. Cold War Europe
3 Credits
Course deals with the Cold War’s bipolar international climate as well as the individual paths charted by each European nation in response. Events, leaders, thinkers, ideas and developments will all be featured.

HIST 366V. British Imperialism
3 Credits
Survey of the activities of the British empire from the 16th century through the 20th century, with emphasis on Ireland, North America and India. Assesses the impact of imperial activities on British domestic politics, culture and social history, and the process and impact of decolonization.

HIST 367. Mexican-Americans in the United States
3 Credits
Emigration; reception; impact upon society, politics, economics, and culture.

HIST 368. Teaching History
3 Credits
Philosophical and practical issues of teaching history are explored. Designed to help prospective teachers at all levels clarify their views about studying history. A variety of pedagogical strategies for teaching history are explored.

HIST 369. History of Latinos in the United States
3 Credits
Development of Latino communities since 1500 in what is today the U.S. Emphasis on 1846 to present, and on Mexican Americans, Puerto Ricans, and Cuban Americans. Major themes: race, colonialism, immigration, nationalism, class, culture, gender, and politics.

HIST 371. Ancient Greece
3 Credits
Social, cultural, and political history of Greece from the Minoan to Hellenistic periods.

HIST 372. The Roman World
3 Credits
Republic and Empire; Rome as a world power; institutional, cultural, and intellectual contributions; decline and fall.

HIST 373. Islam and the West: Cultural Contacts, Conflicts and Exchanges
3 Credits
Examines interactions, encounters and cross-fertilization between the Islamic world and the West from the seventh to the twenty-first centuries. Course includes origins of Islam, relationships between Islam, Judaism, and Christianity, and concludes with the post 9/11 present. May be repeated up to 3 credits.

HIST 374V. The European City: History and Culture
3 Credits
Course presents the rich, complex history and cultures of European cities from ancient to modern times, linking these cities to crucial issues in European history. Crosslisted with HON 374V, GEOG 374V, GOVT 374V.

HIST 376V. The European City: History and Culture
3 Credits
Course presents the rich, complex history and cultures of European cities from ancient to modern times, linking these cities to crucial issues in European history. Crosslisted with HON 374V, GEOG 374V, GOVT 374V.

HIST 377. History of Asia
3 Credits
Examines interactions, encounters and cross-fertilization between the Islamic world and the West from the seventh to the twenty-first centuries. Course includes origins of Islam, relationships between Islam, Judaism, and Christianity, and concludes with the post 9/11 present. May be repeated up to 3 credits.

HIST 377V. The European City: History and Culture
3 Credits
Course presents the rich, complex history and cultures of European cities from ancient to modern times, linking these cities to crucial issues in European history. Crosslisted with HON 374V, GEOG 374V, GOVT 374V.

HIST 378. European History Since 1450
3 Credits
Survey of European history since 1450 with emphasis on the period 1848-1945. May be repeated up to 3 credits.

HIST 382. Modern Russia
3 Credits
Domestic policies and foreign relations from mid-nineteenth century to the present with emphasis on the Soviet period.
HIST 383. Germany
3 Credits
Political, social, and cultural developments from the eighteenth century to the present, with emphasis on the Nazi era. Same as GOVT 473.

HIST 385. The Spanish Borderlands
3 Credits
Examines historical relationships between Native American and Hispanic peoples in northern Mexico, American Southwest and other border regions from 1500s to 1821.

HIST 386. New Mexico History
3 Credits
Economic, political and social development of New Mexico from exploration to modern times.

HIST 387. Spain
3 Credits
From pre-Roman times to the modern era.

HIST 388. Women in Europe I
3 Credits
The roles of women and constructions of gender in medieval and early modern Europe, 1100 - 1550. Examines how conceptions of gender and sexuality both shaped and were shaped by political and social transformations in European history. Same as W S 388.

HIST 390V. The Holocaust
3 Credits
The attack upon European Jews by Adolf Hitler and the National Socialist Party in Germany and occupied Europe from his accession to chancellor in 1933 until the end of the Third Reich in 1945.

HIST 391. Twentieth Century World History
3 Credits
Includes globalization; imperialism; World Wars I and II and the changing roles of Europe: the Cold War; decolonization; the rise and collapse of Communism; new social and intellectual movements; and the growing roles of East Asia, India, Latin America, Africa and the Middle East. Thematic examples.

HIST 392. Tudor-Stuart England, 1485-1715
3 Credits
British history from 1485-1715, including the development of the monarchy and Parliament, the Protestant Reformation, the English Civil War and Restoration, and culture and society.

HIST 394. Victorian and Edwardian Britain, 1815-1914
3 Credits
Evolution of constitutional monarchy; industrialism and imperialism; repose and reform; increased influence of an intellectual elite and the emergence of the Labor Party.

HIST 395. From Rule Britannia to Cool Britannia: Twentieth-Century Britain
3 Credits
Edwardian Era, World War I; Reconversion, the 1926 General Strike; the Great Depression and appeasement; Churchill and the war against Nazi Germany; nationalization and the Welfare State.

HIST 397. Introduction to Public History
3 Credits
Surveys how historians do history in museums, archives, government agencies, and in communities. Hands-on experience provides students a better understanding of history and how historians work outside of the classroom. Seminar project required.

HIST 398. Historians and History
3 Credits
General historiography and philosophy of history; historical methodology, research, and writing; bibliographical aids and their uses. May be repeated up to 3 credits. Restricted to: HIST majors.

HIST 399. New Mexico Law
3 Credits
Same as GOVT 399, CJ 399, JOUR 399, and SOC 399.

HIST 400. Special Topics
1-9 Credits (1-9)
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 18 credits.

HIST 401. Environmental History
3 Credits
Seminar discusses how the natural environment and people have shaped each other, and how people have perceived and imagined the natural world. May focus upon one specific topic or area. Course includes a field trip outside regular class times.

HIST 402. Special Topics in European History
3 Credits
Special topics in European history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 403. Special Topics in Middle Eastern History
3 Credits
Special topics in Middle Eastern history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 404. Special Topics in Asian History
3 Credits
Special topics in Asian history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 405. Special Topics in United States History
3 Credits
Special topics in United States history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 406. Special Topics in United States History
3 Credits
Special topics in United States history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 408. Cultures of Africa
3 Credits
Explores the rich history and cultural diversity of the continent of Africa. The course first examines the historical processes that have shaped modern Africa, including the evolution of modern humans in Africa, the origins of agriculture and pastoralism, the formation of indigenous African states, the slave trade, and European colonialism. The course also looks at contemporary African societies, including hunter-gatherer, pastoral, and farming/fishing peoples. In addition, contemporary issues facing modern Africa such as famine and agricultural policy, the status of women, and environmental changes such as deforestation are discussed. Crosslisted with: ANTH 404

HIST 410. New Mexico History for Educators
3 Credits
Course provides content and innovative techniques for teachers of New Mexico history. Covers pre-contact Native American history through Spanish Colonial and Mexican periods through the twentieth century.
HIST 411. Making the American West
3 Credits
This seminar course explores the history of disease, dying, death and funeral practices, and may include such topics as the social and cultural histories of murder, suicide, epidemics, death in wartime, the death penalty, and/or the corpse. The class may be taught with a different national or chronological focus in different semesters. Crosslisted with: HIST 513.

HIST 412. Travel Writing
3 Credits
Explores how writers describe their travels with an emphasis on the history of a place. Semester paper required. Crosslisted with: HIST 512.

HIST 413. Native American History
3 Credits
Seminar explores the history of Native Americans, including tribal conflicts, interactions with Europeans and Euro-Americans, land loss, degradation of natural resources, federal Indian policy, pan-Indian movements, cultural resistance and revitalization, and modern tribal economies.

HIST 415. Western American History
3 Credits
Seminar explores the development of the American West with emphasis on conquest, federal and corporate impact on the West, environmental changes, and the mythic West. Includes extra class meetings to view feature-length films.

HIST 417. The Mongol Empire
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 517.

HIST 419. Central Asia
3 Credits
An introduction to the political, cultural and social history of the Central Asian region from pre-history to the present, including coverage of the empires of the Mongols, Tamerlane and their successors. Crosslisted with: HIST 519.

HIST 420. History of Women and Gender
3 Credits
Seminar discusses the position of women and the roles of both sexes in a specific historical and geographic setting. Course emphasizes the ways in which women and gender were both central to and fundamentally affected by all political and social transformations in history.

HIST 423. The History of Food
3 Credits
Considers the history of the production and consumption of food in the West from the Neolithic Age to the present with an emphasis on the historical relationships between food, gender, social class, social identity and nationalism. Crosslisted with: HIST 523.

HIST 424. History of Art, Thought and Literature
3 Credits
Seminar discusses a variety of artistic and literary expressions in their historical contexts and focuses on the ways in which cultural forms both reflect and construct the broader historical trends that surround them.

HIST 425V. History of Magic and Witchcraft in Medieval and Renaissance Europe
3 Credits
Examines history of popular and scientific beliefs about magic and witchcraft in medieval and early modern Europe. Includes origins of occult Western sciences; Arabic sources of medieval magic; the occult sciences in scholasticism; witchcraft and scholasticism; witchcraft and medieval theology, witch hunts of the 16th and 17th centuries; and the decline of belief in magic and witchcraft. Emphasis on boundaries that defined and separated magic, science, and religion in Western thought from late antiquity through the Scientific Revolution. Crosslisted with: HON 425.

HIST 428. History of Terrorism in Modern Europe and the Middle East
3 Credits
Analyzes causes, methods, and consequences of terrorism in Europe and the Middle East from the Reign of Terror in the French Revolution to Al-Qaeda, Hamas and Hezbollah in the contemporary Middle East and beyond.

HIST 431. History of Race and Ethnicity
3 Credits
Seminar explores the historical social construction of race and ethnicity, and their relationship to other systems of social difference such as class and gender. Course will examine popular and academic theories of race and ethnicity as well as historical concrete effects of racial and ethnic differences in society.

HIST 432. United States Labor History to 1877
3 Credits
Seminar discussions explore United States labor and working-class history to 1877, including such topics as pre-industrial and industrial labor, slavery, debt peonage, indentured servitude, and housework. May explore the history of labor organization, working-class culture and leisure activities, and responses to labor issues by the state.

HIST 433. United States Labor History Since 1877
3 Credits
Seminar discussions explore United States labor and working-class history since 1877, including such topics as industrial labor, debt peonage, and housework. May explore the history of labor organization, working-class culture and leisure activities, and responses to labor issues by the state.

HIST 434. Urban History
3 Credits
Seminar discusses cities as complex catalysts for cultural, political, and scientific development, both within cities themselves and more broadly for their nations and regions. Course deals with such topics as the relationship between social organization and physical space; city development, morphology and dynamics; and the cultural and intellectual history of cities.

HIST 435. History of War and Revolution
3 Credits
Seminar covers historical dynamics of violent social, political, and economic transitions. May focus upon a particular war or upheaval, such as World War II or the French Revolution, or may examine more generic characteristics of conflict and radical change across many historical examples. Extensive readings in scholarly literature. Research projects relating to specific course contents.
HIST 436. Nations and Nationalism
3 Credits
Seminar examines major theories of nationalism from the nineteenth century to the twenty-first century. Course includes nationalist case studies, from liberal nationalist state-building to ethnic cleansing in the Balkans.

HIST 438. Antiquity and Modernity
3 Credits
Seminar explores links between earlier and more recent historical periods. Examples may include the Renaissance rediscovery of ancient Rome or the early modern Chinese reassessment of its classical Confucian heritage. Readings include ancient sources and the modern reception of such works, and the scholarly assessment of these processes. Individual research projects required in areas of student interests.

HIST 443. The Cold War in Latin America
3 Credits
Seminar discusses Latin American political history during the Cold War. Course focuses on how Latin Americans (individuals, parties, militaries, states) acted in an increasingly politicized arena defined by growing United States concerns over Cuban and Soviet influence in the area.

HIST 448. Nuclear Nation
3 Credits
Explores post-World War II history and the impact atomic energy has had on the United States and the world.

HIST 449. Readings
1-3 Credits
Individual study of selected readings and problems. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

HIST 453. Cuba: Colony to Castro
3 Credits
Economic, social, and political development of Cuba and other colonies and nations in the Caribbean with emphasis on recent events.

HIST 455. Brazil
3 Credits
Economic, social, and political development of Brazil since independence. The influence of Brazil in the international arena.

HIST 459. Peru: From Incas to Inca Kola
3 Credits
Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalization, and the drug trade. Same as ANTH 459 and GOVT 465.

HIST 471. China through the Ming Dynasty
3 Credits
History of China from origins to Ming dynasty, (1368-1644). Cultural and political development with emphasis on social and economic contexts and long term trends.

HIST 472. China in the Modern World
3 Credits
History of China from seventeenth through twentieth centuries. Rise and fall of the Manchu Qing dynasty, internal dynamics of social and political change in nineteenth and twentieth centuries, impact of Western Imperialism, and development of the Peoples Republic since 1949.

HIST 473. History of Japan
3 Credits
History of Japan through twentieth century. Political and cultural developments and their social and economic contexts. Chinese influence on early Japan, rise of Samurai and Shogunate, impact of Western Imperialism, and emergence of modern Japan.

HIST 474. Gender in East Asian History
3 Credits
Examines the position of women and the social roles of both sexes in traditional China and Japan, and traces the changes taking place in those societies in the course of modernization in the last century and a half. Scholarly literature and works of Chinese and Japanese literature in translation and cinema used. Same as W S 474.

HIST 475. History of the Global Political Economy
3 Credits
Traces development of global systems of economic interaction and the rise of European military and political dominance in the 18th and 19th centuries. Emphasis on East and South Asian roles in early modern history, and on challenges to European dominance in the 20th and 21st centuries.

HIST 479. Oral History
3 Credits
Oral history through readings, discussions, and interviews. Semester project required that includes an interview and transcript.

HIST 481. Time Traveling Through New Mexico's Past
3 Credits
Teaches historians and educators how to make history come alive. Semester project includes role playing characters and activities from a past era with local schools and museums.

HIST 483. Historic Preservation
3 Credits
Study of community development, the historic preservation movement, and the built environment. Field project.

HIST 486. Interpreting Historic Places for the Public
3 Credits
Explores historic site interpretation, the scholarship and philosophy of historic interpretation, and the nature of heritage interpretation for historic places.

HIST 489. Projects in History
3 Credits
Individual projects in history. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

HIST 500. Special Topics
1-9 Credits (1-9)
Specific subjects to be announced in the Schedule of Classes. Graduate research paper required. May be repeated for a maximum of 12 credits.

HIST 503. The Jacksonian Era, 1800-1840
3 Credits
Jeffersonian period, War of 1812. Social, political, and economic history of the Jacksonian era. Graduate research paper required.

HIST 504. Civil War Era, 1840-1877
3 Credits
Mexican-American War, development of secession, American Civil War, Reconstruction. Graduate research paper required.
HIST 507. The History of Food
3 Credits
Considers the history of the production and consumption of food in the West from the Neolithic Age to the present, with an emphasis on the historical relationships between food, gender, social class, social identity and nationalism. Crosslisted with: HIST 423.

HIST 508. Environmental History
3 Credits
Seminar discusses how the natural environment and people have shaped each other, and how people have perceived and imagined the natural world. May focus upon one specific topic or area. Course includes a field trip outside regular class times.

HIST 509. Native American History
3 Credits
Seminar explores the history of Native Americans, including tribal conflicts, interactions with Europeans, and Euro-Americans, land loss, degradation of natural resources, federal Indian policy, pan-Indian movements, cultural resistance and revitalization, and modern tribal economies.

HIST 510. New Mexico History for Educators
3 Credits
Course provides advanced content and innovative techniques for teachers of New Mexico history. Covers pre-contact Native American history through Spanish Colonial and Mexican periods through the twentieth century.

HIST 511. Making the American West
3 Credits
Development of the American West from 1803 to 1900, with emphasis on conquest, federal and corporate roles in western development, environmental change, and the mythic West. Includes extra class meetings to view feature-length films. Graduate research paper required.

HIST 512. Travel Writing
3 Credits
Explores how writers describe their travels with an emphasis on the history of a place. Semester paper required. Crosslisted with: HIST 412.

HIST 513. American Social and Cultural History to 1900
3 Credits
This seminar course explores the history of disease, dying, death and funeral practices, and may include such topics as the social and cultural histories of murder, suicide, epidemics, death in wartime, the death penalty, and/or the corpse. The class may be taught with a different national or chronological focus in different semesters. Crosslisted with: HIST 411.

HIST 514. History of Latinos in the United States
3 Credits
Development of Latino communities since 1500 in what is today the United States. Emphasis on 1846 to present, and on Mexican Americans, Puerto Ricans, and Cuban Americans. Major themes: race, colonialism, immigration, nationalism, class, culture, gender, and politics. Graduate research paper required.

HIST 515. U.S. Immigration from the Caribbean since 1868
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 516. History of Latinos in the United States
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 517. From the Wild West to the Atomic West
3 Credits
Explores the transformation of the West, with particular attention to the roles of race, class, gender, and culture. Includes extra class meetings to view feature-length films. Graduate research paper required.

HIST 518. History of Women in the American West
3 Credits
An introduction into the political, cultural and social history of the Central Asian region from pre-history to the present, including coverage of the empires of the Mongols, Tamerlane and their successors. Crosslisted with: HIST 419.

HIST 519. History of Women and Gender
3 Credits
Seminar discusses the position of women and the roles of both sexes in specific historical and geographic setting. Course emphasizes the ways in which women and gender were both central to and fundamentally affected by all political and social transformations in history.

HIST 520. Art, Thought and Literature
3 Credits
Seminar discusses a variety of artistic and literary expressions in their historical contexts and focuses on the ways in which cultural forms both reflect and construct the broader historical trends that surround them.

HIST 521. History of Magic and Witchcraft in Medieval and Renaissance Europe
3 Credits
Examines history of popular and scientific beliefs about magic and witchcraft in medieval and early modern Europe. Includes origins of occult Western sciences; Arabic sources of medieval magic; the occult sciences in scholasticism; witchcraft and scholasticism; witchcraft and medieval theology, witch hunts of the 16th and 17th centuries; and the decline of belief in magic and witchcraft. Emphasis on boundaries that defined and separated magic, science, and religion in Western thought from late antiquity through the Scientific Revolution.

Prerequisite: HIST 101G.

HIST 522. Labor History
3 Credits
Seminar discussions explore labor and working-class history, including such topics as pre-industrial labor, slavery, debt peonage, indentured servitude, and housework. May explore the history of labor organization, working-class culture and leisure activities, and responses to labor issues by the state.

HIST 523. History of Terrorism in Modern Europe and the Middle East
3 Credits
Advanced analyses of causes, methods, and consequences of terrorism in Europe and the Middle East from the Reign of Terror in the French Revolution to Al-Qaeda, Hamas, and Hezbollah in the contemporary Middle East and beyond.

HIST 524. Antiquity and Modernity
3 Credits
Seminar explores link between earlier and more recent historical periods. Examples may include the Renaissance rediscovery of ancient Rome or the early Chinese reassessment of its classical Confucian heritage. Readings include ancient sources and the modern reception of such works, and the scholarly assessment of these processes. Individual research projects required in areas of student interests.
HIST 535. War and Revolution
3 Credits
Seminar covers historical dynamics of violent social, political and economic transitions. May focus upon a particular war or upheaval, such as World War II or the French Revolution, or may examine more generic characteristics of conflict and radical change across many historical examples. Extensive readings in scholarly literature. Research projects relating to specific course contents.

HIST 536. Nations and Nationalism
3 Credits
Seminar examines major theories of nationalisms from the nineteenth to the twenty-first centuries. Course includes nationalist case studies, from liberal nationalist state-building to ethnic cleansing in the Balkans.

HIST 538. Special Topics in European History
3 Credits
Advanced special topics in European history to be announced in the schedule of classes. May be repeated for a maximum of 12 credits.

HIST 540. Special Topics in Middle Eastern History
3 Credits
Advanced special topics in Middle Eastern history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 541. Intellectual History of Modern Europe
3 Credits
Culture and ideas in Europe from 1600 to the present, from the Scientific Revolution to Postmodernism, including ideas and their expression in science, art, literature, and politics. Graduate research paper required.

HIST 543. Special Topics in Asian History
3 Credits
Advanced special topics in Asian history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 544. Special Topics in Latin American History
3 Credits
Advanced special topics in Latin American history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 545. Special Topics in United States History
3 Credits
Advanced special topics in United States history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 546. World War I
3 Credits
Cultural, social, and intellectual background and impact of World War I. Military and diplomatic events of the war. Consequences of the war. Graduate research paper required.

HIST 547. World War II
3 Credits
Social, cultural and political aspects of World War II, in addition to traditional military events. Emphasis on U.S. involvement. Graduate research paper required.

HIST 548. Nuclear Nation
3 Credits
Explores post-World War II history and the impact that atomic energy has had on the United States and the world.

HIST 549. Graduate Readings
1-3 Credits
Individual study of selected readings and problems. May be repeated for a maximum of 6 credits.

HIST 549 L. Splendors of Imperial China
1 Credit
This course consists of a FLIP trip to China, Fall 2014 which will explore the significant sites of imperial Chinese culture by spending 14 days traveling in China. Consent of Instructor required. Crosslisted with: HIST 323 L and ART 511 L.

HIST 551. Colonial Mexico
3 Credits
Political, economic, and social development from the Aztecs to 1821. Graduate research paper required.

HIST 552. Modern Mexico
3 Credits
From independence to the present, with emphasis on the Revolution. Graduate research paper required.

HIST 553. Cuba: Colony to Castro
3 Credits
Economic, social, and political development of Cuba and other colonies and nations in the Caribbean, with emphasis on recent events. Graduate research paper required.

HIST 555. Brazil
3 Credits
Economic, social, and political development of Brazil since independence. The influence of Brazil in the international arena. Graduate research paper required.

HIST 557. The Mexican Revolution
3 Credits
Origins, causes, and scope of the Mexican Revolution, including leading personalities, with emphasis on the U.S.-Mexican border. Graduate research paper required.

HIST 559. Peru: From Incas to Inca Kola
3 Credits
Crosslisted with: ANTH 559 and GOVT 565

HIST 560. History of Egypt
3 Credits
Advanced study of history of Egypt from ancient through modern times. Includes the study of Egypt’s interactions with the Middle East and the West, as well as its legacy for both civilizations.

HIST 561. Islam and the West: Cultural Contacts, Conflicts and Exchanges
3 Credits
Examines interactions, encounters and cross-fertilization between the Islamic world and the West from the seventh to the twenty-first centuries. Course includes origins of Islam, relationships between Islam, Judaism, and Christianity, and concludes with the post 9/11 present.

HIST 566. British Imperialism
3 Credits
Survey of the activities of the British empire from the 16th century through the 20th century, with emphasis on Ireland, North America and India. Assesses the impact of imperial activities on British domestic politics, culture and social history, and the process and impact of decolonization.
HIST 568. Urban History
3 Credits
Seminar discusses cities as complex catalysts for cultural, political, and scientific development, both within cities themselves and more broadly for their nations and regions. Course deals with such topics as the relationship between social organization and physical space; city development, morphology and dynamics; and the cultural and intellectual history of cities.

HIST 570. The Cold War in Latin America
3 Credits
Seminar discusses Latin American political history during the Cold War. Course focuses on how Latin Americans (individuals, parties, militaries, states) acted in an increasingly politicized arena defined by growing United States concerns over Cuban and Soviet influence in the area.

HIST 571. China through the Ming Dynasty
3 Credits
History of China from origins to Ming Dynasty, 1368-1644. Cultural and political development with emphasis on social and economic contexts and long term trends. Research paper required.

HIST 572. China in the Modern World
3 Credits
Covers the history of China from 17th through 20th centuries. Rise and fall of the Manchu Qing dynasty, internal dynamics of social and political change in the 19th and 20th centuries, impact of Western imperialism, and development of the Peoples Republic since 1949. Research paper required.

HIST 573. History of Japan
3 Credits
Covers the history of Japan through the 20th century. Political and cultural developments and their social and economic contexts. Chinese influence on early Japan, rise of Samurai and Shogunate, impact of Western imperialism, and the emergence of modern Japan. Research paper required.

HIST 574. Gender in East Asian History
3 Credits (3+2P)
Examines the position of women and the social roles of both sexes in traditional China and Japan, and traces the changes taking place in those societies in the course of modernization in the last century and a half. Scholarly literature and works of Chinese and Japanese literature (in translation) and cinema used. Same as W S 574.

HIST 575. History of the Global Political Economy
3 Credits
Traces development of global systems of economic interaction and the rise of European dominance in the 18th and 19th centuries. Emphasis on East and South Asian roles in early modern history, and on challenges to European dominance in the 20th and 21st centuries.

HIST 576. The Holocaust
3 Credits
Advanced study of the attack on European Jews by Adolf Hitler and the National Socialist Party in Germany and occupied Europe from his accession as chancellor in 1933 until the end of the Third Reich in 1945.

HIST 578. Modern Russia
3 Credits
Domestic policies and international relations from the mid-nineteenth century to the present with emphasis on the Soviet experience.

HIST 579. Oral History
3 Credits
Oral history through readings, discussion, and interviews. Course project required that includes an interview and transcription.

HIST 580. Graduate Research Projects
1-6 Credits (1-6)
Intensive investigation of a selected area of history, including the completion of a research paper or a public history project. Consent of instructor required.

HIST 581. Time Traveling Through New Mexico's Past
3 Credits
Instructs historians and educators on how to make history come alive. Semester project includes role playing characters and activities from a past era with local schools and museums.

HIST 582. History and Memory
3 Credits
Seminar examines the interplay of memory and history. Explores how various nations and people construct the narratives of their past.

HIST 583. Advanced Historic Preservation
3 Credits
Covers the community development, the historic preservation movement, and the built environment. Field project and additional graduate work.

HIST 585. Public History Internship
3 Credits
Individual project in an area of public history, including a final written report. Research project required. May be repeated for a maximum of 9 credits.

Prerequisite: consent of instructor.

HIST 586. Interpreting Historic Places for the Public
3 Credits
Advanced study of historic site interpretation, the scholarship and philosophy of historic interpretation, and the nature of heritage interpretation for historic places.

HIST 587. United States Labor History to 1877
3 Credits
Seminar discussions explore United States labor and working-class history to 1877, including such topics as pre-industrial and industrial labor, slavery, debt peonage, indentured servitude and housework. May explore the history of labor organization, working-class culture and leisure activities, and responses to labor issues by the state.

HIST 588. United States Labor History since 1877
3 Credits
Seminar discussions explore United States labor and working-class history since 1877, including such topics as pre-industrial and industrial labor, slavery, debt peonage, indentured servitude and housework. May explore the history of labor organization, working-class culture and leisure activities and responses to labor issues by the state.

HIST 590. Reading Seminar: Borders, Boundaries and Frontiers
3 Credits
Explores questions and issues concerning different kinds of borders, boundaries and frontiers. Introduces relevant theoretical literature and considers specific places and times through case studies, including U.S.-Mexico border. Restricted to students in HIST program.

HIST 591. Reading Seminar: Modernity and its Discontents
3 Credits
Examines the problem of modernization and the meaning of becoming and being modern, including positive and negative effects on individuals, cultures, environments and societies.
HIST 592. Reading Seminar: Nature and Society
3 Credits
Considers how humans and nature have reshaped each other, how people have perceived nature, how different cultures have understood their relationships to nature, and how social groups and nations have struggled over natural resources. Takes a comparative, transnational approach.

HIST 593. Reading Seminar: History, Myth and Memory
3 Credits
Course analyzes the complex and often contested process of writing national histories, creating national heroes, and forging collective memories. Students assess written texts, memorials, parades and celebrations.

HIST 594. Public History Seminar
3 Credits
Introduction to the discipline of public history, including its methodology and literature. Fieldwork is required.

HIST 596. Research Seminar
3 Credits
Research seminar teaches students the process of conducting original historical research with primary source documents. Students will then use these research skills to produce a polished chapter or article-length manuscript. Restricted to HIST majors.

HIST 597. Public History Article
1-9 Credits (1-9)
Researching and writing an article suitable for publication about a student's public history internship or other topic of interest within the field of public history.

HIST 598. Craft of History: Historical Theories, Methods, and Criticism (f)
3 Credits
Introduction to historical theories, methodologies, criticism, and skills essential to graduate study in history. Required for all history graduate students; restricted to history majors.

HIST 599. Master's Thesis
15 Credits
Thesis.

Name: Mary Holguin, Department Secretary
Office Location: Breland Hall Room 237
Phone: (575) 646-4601
Website: http://history.nmsu.edu/

Contemporary Social Studies - Undergraduate Minor

This minor focuses on world issues since 1900. Students must pass one course taken from each of the five departments listed below, plus an additional course taken from any of the five areas or a course that is approved by the Department of History, with grades of C- or higher. Courses must not be taken on an S/U basis unless they are automatically S/U for all students. Students may substitute an appropriate subtitled special topics course, an independent readings or projects course, or an Honors course in any area with the permission of the head of the department offering the courses in that area.

Requirements

Criminal Justice

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>C J 322</td>
<td>Organized Crime</td>
</tr>
<tr>
<td>C J 451</td>
<td>Border Violence and Justice</td>
</tr>
<tr>
<td>C J 452</td>
<td>Upper World Crime</td>
</tr>
<tr>
<td>C J 453</td>
<td>Women and Justice</td>
</tr>
</tbody>
</table>

Geography

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>GEOG 325V</td>
<td>New Mexico and the American West</td>
</tr>
<tr>
<td>GEOG 328V</td>
<td>Geography of Latin America</td>
</tr>
<tr>
<td>GEOG 331V</td>
<td>Europe</td>
</tr>
<tr>
<td>GEOG 363V</td>
<td>Cultural Geography</td>
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<tr>
<td>GEOG 365V</td>
<td>Urban Geography</td>
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Government

Select one from the following:

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>GOVT 324</td>
<td>Environmental Policy</td>
</tr>
<tr>
<td>GOVT 343</td>
<td>Congress and the Legislative Process</td>
</tr>
<tr>
<td>GOVT 344</td>
<td>The American Presidency</td>
</tr>
<tr>
<td>GOVT 345</td>
<td>The Supreme Court</td>
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<tr>
<td>GOVT 354</td>
<td>American Indian Politics</td>
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<tr>
<td>GOVT 360</td>
<td>International Relations</td>
</tr>
<tr>
<td>GOVT 366</td>
<td>American Foreign Policy</td>
</tr>
<tr>
<td>GOVT 371</td>
<td>Latin American Politics</td>
</tr>
<tr>
<td>GOVT 378</td>
<td>U.S.-Mexico Border Politics</td>
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<tr>
<td>GOVT 391</td>
<td>Constitutional Law</td>
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<tr>
<td>GOVT 392</td>
<td>Civil Liberties</td>
</tr>
<tr>
<td>GOVT 394</td>
<td>Judicial Process</td>
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<tr>
<td>GOVT 469</td>
<td>Globalization</td>
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History

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>HIST 302V</td>
<td>Science in Modern Society</td>
</tr>
<tr>
<td>HIST 331</td>
<td>Rebels, Guerrillas, and Terrorists in Modern Latin America</td>
</tr>
<tr>
<td>HIST 338</td>
<td>World War I</td>
</tr>
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<td>HIST 339</td>
<td>World War II</td>
</tr>
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<td>HIST 356</td>
<td>The Mexican Revolution</td>
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<tr>
<td>HIST 362</td>
<td>Afro-American History II</td>
</tr>
<tr>
<td>HIST 365</td>
<td>Cold War Europe</td>
</tr>
<tr>
<td>HIST 382V</td>
<td>Modern Russia</td>
</tr>
<tr>
<td>HIST 383</td>
<td>Germany</td>
</tr>
<tr>
<td>HIST 390V</td>
<td>The Holocaust</td>
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<td>HIST 391</td>
<td>Twentieth Century World History</td>
</tr>
<tr>
<td>HIST 395</td>
<td>From Rule Britannia to Cool Britannia: Twentieth-Century Britain</td>
</tr>
<tr>
<td>HIST 433</td>
<td>United States Labor History Since 1877</td>
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<tr>
<td>HIST 448</td>
<td>Nuclear Nation</td>
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<tr>
<td>HIST 481</td>
<td>Time Traveling Through New Mexico's Past (twentieth century topics only)</td>
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Sociology

Select one from the following:

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>SOC 361V</td>
<td>Social Issues in the Rural Americas</td>
</tr>
<tr>
<td>SOC 371</td>
<td>Race and Ethnic Relations</td>
</tr>
<tr>
<td>SOC 374V</td>
<td>Comparative Family Systems</td>
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<tr>
<td>SOC 375</td>
<td>Social Inequality</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
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<td>SOC 376V</td>
<td>Social Change</td>
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<td>SOC 381</td>
<td>Individual and Society</td>
</tr>
<tr>
<td>SOC 392</td>
<td>Juvenile Delinquency</td>
</tr>
<tr>
<td>SOC 430</td>
<td>Comparative Global Family Systems</td>
</tr>
<tr>
<td>SOC 459</td>
<td>Advanced Issues in Sex and Gender</td>
</tr>
<tr>
<td>SOC 465V</td>
<td>Environmental Sociology</td>
</tr>
<tr>
<td>SOC 470</td>
<td>Sociology of Latinos/as in the United States</td>
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<tr>
<td>SOC 474</td>
<td>Sociology of Organizations</td>
</tr>
<tr>
<td>SOC 477</td>
<td>Sociology of Education</td>
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<tr>
<td>SOC 479</td>
<td>Sociology Perspectives on the U.S.- Mexico Border</td>
</tr>
<tr>
<td>SOC 489</td>
<td>Globalization</td>
</tr>
</tbody>
</table>

Select an additional course from any of the five areas above or a course approved by the Department of History. with grades of C- or higher

**Total Credits:** 18

### History - Bachelor of Arts

The undergraduate history major consists of at least 42 credits in the major field, 24 credits of which must be numbered 300 or above. All courses must be passed with grades of C- or higher, and none may be taken on an S/U basis. Electives must be carefully selected by the student and approved by a Department of History advisor so that the student's program is well tailored to individual goals. All majors must be advised prior to registration.

Among the upper-division courses that majors take, one or more (in addition to HIST 398 Historians and History) must require a research-based paper or papers. In fulfilling their research requirements, majors must write one research-based paper or papers which together total at least 20 pages.

**Departmental Requirements**

Select two from the following:

- HIST 101G & HIST 102G Roots of Modern Europe and Modern Europe
- HIST 111G & HIST 112G Global History to 1500 and Global History Since 1500
- HIST 201G & HIST 202G Introduction to Early American History and Introduction to Recent American History
- HIST 211G & HIST 212G East Asia to 1600 and East Asia since 1600
- HIST 221G & HIST 222G Islamic Civilizations to 1800 and Islamic Civilizations since 1800
- HIST 311V & 311V Colonial Latin America and Colonial Latin America
- HIST 398 Historians and History 1

Select at least one undergraduate seminar from the following:

- HIST 401 Environmental History
- HIST 413 Native American History
- HIST 415 Western American History
- HIST 420 History of Women and Gender
- HIST 424 History of Art, Thought and Literature
- HIST 431 History of Race and Ethnicity
- HIST 432 United States Labor History to 1877
- HIST 433 United States Labor History Since 1877
- HIST 434 Urban History
- HIST 435 History of War and Revolution
- HIST 436 Nations and Nationalism
- HIST 438 Antiquity and Modernity
- HIST 443 The Cold War in Latin America

Select six additional 3-credit upper division History courses, at least 1 of which must be a course numbered 400 or above.  

Second Language Requirement at the 212/214 level or the 300-level  

**Electives**

Select sufficient electives to bring total credits to 120, including 48 upper-division credits.

**Total Credits:** 120

1. Should be taken in junior year after consultation with advisor. Course prerequisite is ENGL 311G Advanced Composition.
2. No more than nine upper division credits (with exception of HIST 398 Historians and History) may be from any particular field of History. Students may count additional credits in a particular field of History if they pass more than the minimal number of required upper division credits for the degree.
3. Majors must pass a total of 18 upper division History credits (not including HIST 311V Colonial Latin America, HIST 312V Modern Latin America, and HIST 398 Historians and History) with at least 6 at the 400 level.
4. Please see College of Arts and Sciences (p. 176) pages for discussion of the ways to pass this requirement.

### Secondary Licensure

History majors who are planning on pursuing certification as public school teachers should take the following six courses in preparation. These six courses will complete approximately half of the course work necessary for students to earn teaching licensure in New Mexico. After completing the undergraduate degree in History with a grade point average of 2.5 or above, the student should apply to the Graduate School for admission to the Department of Curriculum and Instruction and the Teacher Education Program in the College of Education to pursue the remaining courses needed to complete secondary licensure.

**Required Courses**

- EDUC 315 Multicultural Education 3
- EDLT 368 Integrating Technology with Teaching 3
- SPED 350 Introduction to Special Education in a Diverse Society 3
- EDUC 381 Secondary Field Experience 3
- EDUC 530 Exploration in Education 1 3

**Total Credits:** 15

1. Recommended for senior year or as a graduate student.

### History - Graduate Minor

...
Students may earn a graduate minor in History by passing the following courses:

Craft of History  
Select one from the following:  
- HIST 590 Reading Seminar: Borders, Boundaries and Frontiers  
- HIST 591 Reading Seminar: Modernity and its Discontents  
- HIST 592 Reading Seminar: Nature and Society  
- HIST 593 Reading Seminar: History, Myth and Memory  
Select two additional 3-credit 500-level and above courses  
Total Credits 12

Graduate students in History must maintain a 3.0 grade point average in their History courses. A graduate student earning a C or lower grade in one History course will receive a letter of warning. A graduate student earning two or more C or lower grades in History courses or whose History grade point average falls below 3.0 will be removed from the History graduate program. Students must earn at least one B or higher grade in a seminar during their first year in the graduate program, and must take at least one seminar during each year in which they are enrolled in the program. If a graduate student receives one U (Unsatisfactory) grade on his/her thesis or internship, the student will receive a written warning, and if a student received two or more U grades on his/her thesis or internship, the student will be removed from the program.

### History - Master of Arts

#### Thesis Program

Thirty-six credits (27 of which must be at the 500 level) are required for the thesis program:

Select at least 3 credits from Public History courses above the 500 level  
Select four History Graduate Seminars including the following:  
Craft of History seminar  
Select two from the following:  
- HIST 590 Reading Seminar: Borders, Boundaries and Frontiers  
- HIST 591 Reading Seminar: Modernity and its Discontents  
- HIST 592 Reading Seminar: Nature and Society  
- HIST 593 Reading Seminar: History, Myth and Memory  
HIST 596 Research Seminar  
Select a maximum of 6 credits in related fields outside the Department of History  
Select 9 credits at the 500-level or above in the Department of History  
HIST 599 Master's Thesis  
Total Credits 36

With permission of the graduate advisor, a maximum of 6 credits may be taken in related fields from courses numbered 450 and above outside the Department of History.

A student choosing the thesis program must receive permission for his/her thesis by passing a thesis proposal defense after earning 12 graduate credits in History. The department will provide guidelines for the thesis defense. A student choosing the thesis program must pass a final oral examination over graduate course work and the thesis. All graduate students will be required to present a research paper in a public forum approved by the department's Graduate Director.

#### Public History Concentration

Thirty-six credits (27 of which must be at the 500 level) are required for the Public History concentration:

Select four History Graduate Seminars including the following:  
Public History Seminar  
Craft of History Seminar  
Research Seminar  
Select one from the following:  
- HIST 590 Reading Seminar: Borders, Boundaries and Frontiers  
- HIST 591 Reading Seminar: Modernity and its Discontents  
- HIST 592 Reading Seminar: Nature and Society  
- HIST 593 Reading Seminar: History, Myth and Memory  
HIST 585 Public History Internship  
Select a maximum of 9 credits (450-and-above) outside the Department of History  
Preparation of an article of scholarly quality  
Select 9 credits from courses numbered 500 and above in the Department of History  
Total Credits 36

Students in the Public History concentration must collectively pass 18 credits of nonpublic history courses, including the nonpublic history seminars noted above. They must collectively pass 18 credits in public history, which must include the public history seminar, the internship, and the article. The scholarly article is developed through work in the internship and will be of peer reviewed journal quality. The public history credits may include a maximum of 9 graduate level (450-and-above) credits outside the Department of History with permission of the Director of the Public History Program. A student choosing the Public History concentration must pass an article proposal defense about the proposed scholarly article during the first semester after completion of the internship. The department will provide guidelines for the article defense. A student choosing the Public History specialization must give a public presentation of a portfolio that includes his/her work and the scholarly article, and must pass an oral examination over graduate course work, the internship, and the article. Students who receive a Master's degree in this track will have a specialization in Public History added to their transcripts.
## Dual Track M.A. (Public History AND Thesis)

Students choosing to pursue both the thesis track and Public History concentration must complete the course hours required for the public history concentration, perform an internship, and defend the proposed thesis before undertaking it using guidelines provided by the department, present the public history portfolio at a public presentation, complete the thesis, and defend their course work, thesis and public history portfolio at a final oral examination. In order to satisfactorily complete both programs, such students would complete 39 credits, including three hours of internship credit and six hours of thesis work.

Select four History Graduate Seminars including the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public History Seminar</td>
<td>3</td>
</tr>
<tr>
<td>Craft of History Seminar</td>
<td>3</td>
</tr>
<tr>
<td>Research Seminar</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 590</td>
<td>Reading Seminar: Borders, Boundaries and Frontiers</td>
</tr>
<tr>
<td>HIST 591</td>
<td>Reading Seminar: Modernity and its Discontents</td>
</tr>
<tr>
<td>HIST 592</td>
<td>Reading Seminar: Nature and Society</td>
</tr>
<tr>
<td>HIST 593</td>
<td>Reading Seminar: History, Myth and Memory</td>
</tr>
<tr>
<td>HIST 585</td>
<td>Public History Internship</td>
</tr>
</tbody>
</table>

Select a maximum of 9 credits (450-and above) outside the Department of History.

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 590</td>
<td>Preparation of an article of scholarly quality</td>
</tr>
<tr>
<td>HIST 592</td>
<td>Select 3 credits at the 500 level from courses in the Department of History</td>
</tr>
<tr>
<td>HIST 599</td>
<td>Master’s Thesis</td>
</tr>
</tbody>
</table>

Total Credits 36

## History - Undergraduate Minor

A student may not earn both a bachelor’s degree in the Department of History and a minor in History.

### Requirements

Select two from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 101</td>
<td>Roots of Modern Europe</td>
</tr>
<tr>
<td>HIST 102</td>
<td>Modern Europe</td>
</tr>
<tr>
<td>HIST 111</td>
<td>Global History to 1500</td>
</tr>
<tr>
<td>HIST 112</td>
<td>Global History Since 1500</td>
</tr>
<tr>
<td>HIST 201</td>
<td>Introduction to Early American History</td>
</tr>
<tr>
<td>HIST 202</td>
<td>Introduction to Recent American History</td>
</tr>
<tr>
<td>HIST 211</td>
<td>East Asia to 1600</td>
</tr>
<tr>
<td>HIST 212</td>
<td>East Asia since 1600</td>
</tr>
<tr>
<td>HIST 221</td>
<td>Islamic Civilizations to 1800</td>
</tr>
<tr>
<td>HIST 222</td>
<td>Islamic Civilizations since 1800</td>
</tr>
</tbody>
</table>

Select 12 credits in History (at least 9 credits are numbered 300 and above) 12

Total Credits 18

Note: All courses must be passed with grades of C- or above. No courses may be taken S/U.

## Public History and Public Administration - Dual M.A. Degree

The Department of History and the Department of Government offer a dual degree in which students who are accepted into both of these programs may simultaneously earn both a Master of Arts in History degree with the Public History specialization, and a Master of Public Administration degree. The dual degree requires 57 total credits, while students who pursued both degrees as separate degrees would need to pass at least 72 credits. Students earning the dual degrees must pass a joint oral examination after passing required courses and completing internship credits in both programs. Students interested in the dual degree program should consult with the Director of the Public History Program and the Director of the Master of Public Administration Program.

## Interdisciplinary Studies

### Undergraduate Program Information

The Interdisciplinary Studies Department extends New Mexico State University’s reach beyond traditional academic programs to provide educational opportunities for students to meet their academic, professional and personal learning goals. The Interdisciplinary Studies Department offers flexible degree programs in the Bachelor of Applied Studies and the Bachelor of Individualized Studies, giving students the opportunity to develop their own interdisciplinary studies program, appropriate to their unique educational and career goals.

The Interdisciplinary Studies Department also offers a Bachelor of Arts in Gender & Sexuality Studies and an Undergraduate Minor in Gender & Sexuality Studies. The Gender & Sexuality Studies Program at NMSU is an interdisciplinary program focusing on the study of women, gender and sexuality in a global context. Classes in Gender & Sexuality Studies focus on women, gender and other categorical differences, multicultural learning, critical thinking and the integration of theory and practice.

The Interdisciplinary Studies Department offers a new Undergraduate Minor in International Studies, an interdisciplinary program enabling students, regardless of their major area of study, to develop a broad understanding of the rapidly changing global environment by proving a curriculum that encompasses the social, political, cultural and economic forces at work in an increasingly interdependent world.

### Minors Recommended for BAS & BIS Majors

Students seeking a Bachelor of Applied Studies or the Bachelor of Individualized Studies degree are encouraged to complete one or more minors offered through various NMSU colleges. A minor is designated on a transcript and consists of a minimum of 18 credits, nine of which must be upper-division. Courses required to complete a minor may be in a single department or interdepartmental, are offered through various NMSU colleges, and are subject to availability. Students seeking to complete a minor must have the minor verified, prior to graduation, by the college academic department administering the minor. Specific requirements for minors may be obtained from the academic department administering a specific minor, the academic department’s college dean’s office, and in the college departmental listings of this catalog. Note: The College of
Business allows only the Business Administration minor for BAS and BIS majors.

Degrees for the Department

Applied Studies - Bachelor of Applied Studies (p. 333)
Gender & Sexuality Studies - Bachelor of Arts (p. 333)
Individualized Studies - Bachelor of Individualized Studies (p. 334)

Minor for the Department

Gender & Sexuality Studies - Undergraduate Minor (p. 334)
Gender & Sexuality Studies - Graduate Minor (p. 334)
International Studies - Undergraduate Minor (p. 335)

Professor, Patti Wojahn, Department Head
Professor, Laura A. Williams, Gender & Sexuality Studies Program Director

Professors C. Bejarano, J. Maupin, P. Wojahn; Associate Professors M. Hamzeh, M.C. Jonet; Assistant Professor L. Williams

W S 201G. Introduction to Women's Studies
3 Credits
Analysis of the status of women in society today and history and consequences of gender stratification and inequality from the perspectives of sociology, anthropology, psychology, political science, and other sciences.

W S 202G. Representing Women Across Cultures
3 Credits
Historical and critical examination of women's contributions to the humanities, with emphasis on the issues of representation that have contributed to exclusion and marginalization of women and their achievements. Crosslisted with: HON 218

W S 273. Sex and Gender
3 Credits
Same as SOC 273.

W S 316. History of Women in the American West
3 Credits
Experiences and interactions among Native American, Spanish/Mexican, immigrant, and Anglo-American women in the American West from 1500 to the present. Same as HIST 316.

W S 325. Topics in Feminist Philosophy
3 Credits
Same as PHIL 325.

W S 345. Victimization
3 Credits
Same as CJ 345.

W S 350. Special Topics
3 Credits
The topic of course will vary and will be indicated by subtitle. May be cross-listed with relevant courses at the 300-level from any specific department. May be repeated under different subtitle(s).

W S 356. Women and Politics
3 Credits
Political socialization of children; women's past and present participation in the public sphere; gender-related public policy issues.

W S 357. Gender and Society
3 Credits
Overview of issues related to gender including how gender is constructed and reproduced in our society. Gender is examined from social psychological and institutional perspectives. Same as SOC 357.

W S 359. Psychology of Women
3 Credits
Same as PSY 359.

W S 360. Masculinities Studies
3 Credits
Explores how contemporary American culture constructs manhood and masculinity. Interrogates ideas and enactments of masculinity, especially as they intersect with race/ethnicity, class, and sexuality. The class asks how sexuality, gender construction, and sex roles inform our understanding of masculinity, as well as how masculinity relates to social power.

W S 374V. Comparative Family Systems
3 Credits
Same as SOC 374V.

W S 380V. Women Writers
3 Credits
Same as ENGL 380V.

W S 381V. Women's Health Issues
3 Credits
Same as HL S 380V.

W S 382. Women in Mass Media
3 Credits
Same as JOUR 380.

W S 388. Women and Europe I
3 Credits
Same as HIST 388.

W S 397. Law and Sex
3 Credits
Sex-based discrimination and the impact of constitutional and statutory provisions and their judicial interpretations and executive orders and implementations. Same as GOVT 397.

W S 401. Women & Immigration
3 Credits (3)
Exploration of experiences of women immigrants as gender, race and class became increasingly important aspects of US immigration policies in the early 19th century. Explores role of gender in today's immigration experience.

W S 402. Transnational Feminisms
3 Credits (3)
Explores dimensions of gender, race, class, and sexuality in conjunction with nationalism, anti-capitalist struggles, religious fundamentalism, militarism, globalization, eco-critique, and the politics of resistance and social movements.

W S 403. Gender & Horror
3 Credits (3)
Explores cultural anxieties and crises through the genre of horror as they relate to issues of gender, sexuality, feminism, and race. Traces ways horror films represent and reconfigure notions of sexuality and gender and ways they reinforce and/or challenge social norms.
**WS 404. Arab-Muslim Feminisms**  
3 Credits  
Develops a historical understanding of arab-muslim feminisms and homosexuality in Islam. Explores and uses critical feminist theories, language, and methods to counter interlocking discourses of Islamophobia, gendering, and homophobia affecting arab-muslim women.

**WS 405. Alternative Genders and Sexualities**  
3 Credits  
Introduces students to cultural study in the academic fields of Gay, Lesbian, Bisexual, Transgender (GLBT) and Queer Studies. Examines academic texts as well as literature and film from different historical moments and social/ global sites.

**WS 406. Women and Human Rights**  
3 Credits  
Analysis of human rights violations and injustices as they relate to the lives of girls and women. Examines international political, legal, economic and socio-cultural implications of violence that target women and girls. Focusing on different countries, discusses social, political, economic, and human rights.

**WS 407. Gender and Graphic Narrative**  
3 Credits  
Examines graphic novels that disrupt stereotypical ideas about genre, gender, race, class sexuality, as well as common notions about comics. Considers texts that address underrepresented experiences.

**WS 408. Food and Representation**  
3 Credits  
Examines contemporary food writing as a way to study identity, social structures, and notions of acceptability. Explores how constructions of food shape bodies, desires, and notions of belonging.

**WS 411. Gender and Migration**  
3 Credits  
Explores multiple experiences of forced migration and displacement. Examines violence, structural dislocation, neoliberalism, globalization, economic collapse and civil war. Discusses local, regional and global responses to creating meaningful change in communities most affected by migration.

**WS 420. Girls, Women and Crime**  
3 Credits (3)  
Critical social science analysis of concepts of violence and justice as experienced by women impacted by the criminal justice system. Restricted to C J, W S majors. Crosslisted with: C J 420

**WS 422. Advanced Study in a Literary Form or Genre**  
3 Credits  
Same as ENGL 422. May be repeated for a maximum of 6 credits.

**WS 433. Women, Gender, and Culture**  
3 Credits  
Same as ANTH 433.

**WS 450. Special Topics**  
3 Credits  
The topic of course will vary and will be indicated by subtitle. May be cross-listed with relevant courses at the 400-level from any specific department. May be repeated under different subtitle(s).

**WS 451. Women's Studies Practicum**  
3 Credits  
Supervised field work in community setting relating to women. May be repeated for a maximum of 6 credits.  
Prerequisite: consent of instructor.

**WS 453. Women and Politics**  
3 Credits  
Crosslisted with: GOVT 353

**WS 454. Women Crossing Borders**  
3 Credits  
Experiences of women who cross class, race, cultural, national, or sexual borders including theories regarding women's Interactions across borders. Emphasis will vary with professor and discipline.

**WS 455. Feminist Research Methods**  
3 Credits  
Feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work.

**WS 459. Advanced Issues in Sex and Gender**  
3 Credits  
Same as SOC 459.

**WS 461. Women's Studies: Independent Study**  
3 Credits  
Individual study of selected topic and writing of research paper. May be repeated for a maximum of 6 credits.  
Prerequisite: consent of instructor.

**WS 465. Sex, Gender and the Body**  
3 Credits  
Examines forces at work in defining and differentiating gender, race, sexuality. How ideas about what is 'natural' and 'normal' for men and women shifted over time. Considers different discourses shaping embodied experiences and categories of identity.  
Prerequisite(s): None.

**WS 468. Global Sexualities**  
3 Credits  
Generates a global context to focus on sexual identity and orientation, sexual identity politics, romantic relationships, patterns of sexual behavior, sexual regulation and the impact of different cultures on individual sexualities. Taught with WS 568. Crosslisted with: SOC 468

**WS 469. Gender and Sexuality in Hispanic Film**  
3 Credits  
The study of gender and sexual orientation issues in relation to identity as portrayed in Hispanic cinema. Taught in Spanish but assignments accepted in English. Crosslisted with: SPAN 469

**WS 471. Seminar in Feminist Theory**  
3 Credits  
Current feminist theory. Topic changes by semester. Course subtitled in the Schedule of Classes. Prerequisite: None

**WS 474. Gender in East Asian History**  
3 Credits  
Same as HIST 474.

**WS 481. Hate Crimes and Hate Groups**  
3 Credits  
Explores the phenomenon of hate-motivated violence. Examines the hate crime laws, organized hate groups and social theories attempting to explain violent hate.
W S 507. Advanced Gender and Graphic Narrative
3 Credits
Advanced examination of graphic novels that disrupt stereotypical ideas about genre, gender, race, class sexuality, as well as common notions about comics. Considers texts that address underrepresented experiences.

W S 550. Special Topics
3 Credits
The topic of course will vary and will be indicated by subtitle. May be cross-listed with relevant courses at the 500-level from any specific department. May be repeated under different subtitle(s).

W S 554. Advanced Issues in Women Crossing Borders
3 Credits
Experiences of women who cross class, race, cultural, national, or sexual borders including theories regarding women's interactions across borders.

W S 555. Advanced Feminist Research Methods
3 Credits
Advanced feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work.

W S 557. Advanced Gender and Graphic Narrative
3 Credits
Advanced examination of graphic novels that disrupt stereotypical ideas about genre, gender, race, class sexuality, as well as common notions about comics. Considers texts that address underrepresented experiences.
W S 567. Global Sexualities
3 Credits
Generates a global context to focus on sexual identity and orientation, sexual identity politics, romantic relationships, patterns of sexual behavior, sexual regulation and the impact of different cultures on individual sexualities. Taught with W S 468. Crosslisted with: SOC 568

W S 569. Gender and Sexuality in Hispanic Film
3 Credits
The study of gender and sexual orientation issues in relation to identity as portrayed in Hispanic cinema. Taught in Spanish but assignments are accepted in English. Crosslisted with: SPAN 569

W S 571. Advanced Seminar in Feminist Theory
3 Credits
Current feminist theory. Topic changes by semester. Course subtitled in the Schedule of Classes.

W S 574. Gender in East Asian History
3 Credits
Same as HIST 474 with differentiated assignments for graduate students. Required for graduate credit.

W S 582. Gender and Popular Culture
3 Credits
Intensive study of the representations of gender in popular culture. Examines the historical, aesthetic, and cultural contexts of these representation and the various critical and theoretical lenses we use to understand them. Repeatable under different subtitles. Crosslisted with: ENGL 582

W S 584. Women's Literature
3 Credits
Intensive study of literature by women, in particular historical, aesthetic, cultural, or intellectual contexts. Repeatable under different subtitles. Crosslisted with: ENGL 581

Name: Patti Wojahn, IDS Department Head
Office Location: Breland Hall 259A
Phone: (575) 646-4396
IDS Website: http://idsas.nmsu.edu/
Gender & Sexuality Studies Website: http://genders.nmsu.edu/

To Declare a BAS
Students entering the BAS program are required to:

• Have an Associate of Applied Science or a similar degree from a regionally accredited institution
• Have completed the English and Mathematics Basic Skills Requirements of NMSU (see Regulations - Basic Academic Skills (p. 53))
• Declare the BAS degree by the last date to drop with a "W" in a student's final semester of study (see the NMSU Academic Calendar for date)

Degree Requirements

• Complete the total number of credits as determined by your academic advisor (Note: a maximum of 30 credit hours in course subjects offered by the NMSU College of Business may be counted towards the degree).
• Pass all courses approved with a grade of C- or higher

To graduate from the Bachelor of Applied Studies program, you must:

• Complete a minimum of 120 credit hours (or more, depending on your program of study)
• Complete a minimum of 48 credit hours of upper-division courses (300-499 level) including six hours of Viewing a Wider World from two separate colleges at NMSU
• Complete a minimum of 36 upper-division credit hours beyond General Education Core requirements with a grade of C- or better
• Complete the university's general education core requirements (at least 35 credit hours of approved New Mexico Common Core courses)
• Not have completed the requirements, or be a candidate, for another baccalaureate degree

Gender and Sexuality Studies - Bachelor of Arts

Note: Women's Studies has changed its name to Gender & Sexuality Studies. Its course prefix (W S) remains the same but will soon change to the prefix GNDR. Many course titles will be changing as well to reflect the broader focus on genders and sexualities.

Gender & Sexuality Studies is an interdisciplinary program focusing on the study of women, gender and sexuality in a global context from multiple disciplinary perspectives. Classes in Gender & Sexuality Studies explore the relations, practices, theories, and institutions concerning gender and other interesting categories of identity and difference. The Gender & Sexuality Studies Program also works collaboratively with other academic units to cross-list a range of courses. The benefits of a Gender & Sexuality Studies degree include strong critical-thinking and analytical skills developed in a student-centered environment that encourages independent thought; as well as insights into questions of gender, sexuality, race and ethnicity, class, ability, nation and power. Graduates of Gender & Sexuality Studies find successful careers in a range of fields including the advocacy, arts, business, counseling, education, health care, media, politics and law, social work, psychology and sports. The Gender & Sexuality Studies program offers a major and a minor, described below.

Degree requirements for the major include

• 9 credit hours of required Gender & Sexuality Studies courses;
• 9 credit hours of Gender & Sexuality Studies electives; and
• 18 credit hours from a number of cross-listed courses offered both by Gender & Sexuality Studies and by other programs/departments.
• The total credit hour requirement for the major is 36 credit hours with 21 hours at the upper division level. All requirements must be completed with a grade of C- or higher.

**Required Core Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>W S 201G</td>
<td>Introduction to Women's Studies</td>
<td>3</td>
</tr>
<tr>
<td>or W S 202G</td>
<td>Representing Women Across Cultures</td>
<td>3</td>
</tr>
<tr>
<td>W S 455</td>
<td>Feminist Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>or W S 465</td>
<td>Sex, Gender and the Body</td>
<td>3</td>
</tr>
<tr>
<td>W S 471</td>
<td>Seminar in Feminist Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives**

Select three from the following: 9

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>W S 401</td>
<td>Women &amp; Immigration</td>
</tr>
<tr>
<td>W S 402</td>
<td>Transnational Feminisms</td>
</tr>
<tr>
<td>W S 403</td>
<td>Gender &amp; Horror</td>
</tr>
<tr>
<td>W S 450</td>
<td>Special Topics</td>
</tr>
<tr>
<td>W S 454</td>
<td>Women Crossing Borders</td>
</tr>
</tbody>
</table>

Electives from upper division W S and cross-listed courses 18

**Total Credits** 36

---

**Gender and Sexuality Studies - Graduate Minor**

Gender & Sexuality focuses on the intersectional study of women, gender, race, sexuality, and other categories of identity and difference in national and global contexts. The Gender and Sexuality Studies minor complements other graduate programs such as Anthropology, Art, Communication Studies, Criminal Justice, Education, English, Government, History, Psychology, Public Health Sciences, Social Work, Sociology, and many others.

The purpose of the Gender and Sexuality Studies Minor is to:

1. Enable students to develop a documented emphasis of their academic training in the field of Gender and Sexuality studies.
2. Develop specialized knowledge through the interdisciplinary curriculum offered by Gender and Sexuality Studies.
3. Explore how gender and sexuality functions within societies.
4. Apply and integrate ideas and knowledge about the intersectional study of gender and sexuality into diverse academic fields.

**Master’s and Doctoral minor candidates:**

Required Core Course

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>W S 571</td>
<td>Advanced Seminar in Feminist Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

**For a Doctoral Degree minor candidate:**

9 additional credit hours from upper level Gender & Sexuality Studies courses or courses cross-listed with Women's Studies and other departments/programs are required. (9 credit hours total)

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**Gender and Sexuality Studies - Undergraduate Minor**

A minor in Gender & Sexuality Studies consists of 18 credit hours of approved course work in Gender & Sexuality Studies of which at least 12 are upper division (300 level or above).

**Required Core Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>W S 201G</td>
<td>Introduction to Women's Studies</td>
<td>3</td>
</tr>
<tr>
<td>or W S 202G</td>
<td>Representing Women Across Cultures</td>
<td>3</td>
</tr>
<tr>
<td>W S 471</td>
<td>Seminar in Feminist Theory</td>
<td>3</td>
</tr>
<tr>
<td>Select one from the following: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W S 401</td>
<td>Women &amp; Immigration</td>
<td></td>
</tr>
<tr>
<td>W S 402</td>
<td>Transnational Feminisms</td>
<td></td>
</tr>
<tr>
<td>W S 403</td>
<td>Gender &amp; Horror</td>
<td></td>
</tr>
<tr>
<td>W S 450</td>
<td>Special Topics</td>
<td></td>
</tr>
<tr>
<td>W S 454</td>
<td>Women Crossing Borders</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits** 18

Note: A student may not earn a bachelor’s degree in Gender & Sexuality Studies and also earn a minor in Gender & Sexuality Studies.

---

**Individualized Studies - Bachelor of Individualized Studies**

The Bachelor of Individualized Studies (BIS) prepares students for 21st century challenges. The degree was created to serve students desiring an academic degree not already offered at NMSU. Students served by the BIS are those with extensive, comprehensive or eclectic academic and career interests. Self-motivated and self-directed students work closely with an advisor to select classes each semester with the intent of graduating in a timely manner. Recommended and chosen courses should be organized to meet the unique educational needs of the student, be it professional advancement within an existing career, academic preparation for graduate or professional programs, designing a strategy for career change or efficiently utilizing prior university credits to complete a Bachelor Degree.

A well-designed individualized curriculum emphasizes the value of approaching complex issues from multiple perspectives, equipping students with the requisite critical and analytical skills to become effective problem solvers in their chosen field of study or career. Each student should select courses designed to integrate academic and career goals into a cohesive degree program.

Extensive flexibility in program design implies increased individual responsibility for the BIS student. BIS students must be active
participants in their academic experience, simultaneously pursuing a skill-set demonstrating:

- Coherent expression of ideas in writing;
- Capacity to conduct systematic and objective inquiry within their program of study;
- Ability to tolerate ambiguity within the design and implementation of a program of study;
- Proactive communication with the academic advisor;
- Commitment to effective follow-through on tasks related to program of study design and implementation.

To Declare a BIS

Students entering the BIS degree program work in consultation with a BIS advisor and complete a series of courses building on the applicant’s existing coursework and complementing the applicant’s education or career goals.

Deadline for Declaring BIS Major: Students must declare the BIS degree by the last date to drop with a “W” in a student’s final semester of study (see NMSU Academic Calendar for date).

Degree Requirements

- Complete the total number of credits as determined by your academic advisor and reflected in your Program of Study. (Note: a maximum of 30 credit hours in courses offered by the NMSU College of Business may be counted towards the degree, inclusive of courses used to satisfy NMSU General Education Core Requirements)
- Complete a minimum of 120 credit hours. (Note: total credits earned may exceed 120 dependent upon the developed Program of Study).
- Complete a minimum of 48 credit hours of upper-division courses (courses numbered 300 – 499) including six credit hours of Viewing a Wider World curriculum from two separate colleges at NMSU.
- Complete a minimum of 36 upper-division credit hours beyond the NMSU General Education Core Requirements with a grade of C- or better.
- Complete the University’s General Education Core Requirements (minimum of 35 credit hours of approved New Mexico Common Core courses).
- Student may not have completed the requirements, or be a candidate, for another baccalaureate degree at NMSU.

International Studies - Undergraduate Minor

A minor in International Studies consists of 18 credit hours of approved interdisciplinary course work of which at least 12 are upper division (300 level or above). No more than 3 credits of Independent Study may be applied to the minor and only 2 courses (6 credits) may be double counted with the course of the student’s major(s). Students must maintain a minimum 2.5 GPA.

Required Coursework

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 125G</td>
<td>Introduction to World Cultures</td>
<td>3</td>
</tr>
<tr>
<td>or AXED 480</td>
<td>International Agricultural Development</td>
<td></td>
</tr>
</tbody>
</table>

International Experience:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A S 350</td>
<td>Faculty Lead International Travel</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 330V</td>
<td>Magic, Witchcraft and Religion</td>
<td></td>
</tr>
<tr>
<td>ANTH 360V</td>
<td>Food and Culture Around the World</td>
<td></td>
</tr>
<tr>
<td>COMM 376</td>
<td>Communication and Culture</td>
<td></td>
</tr>
<tr>
<td>COMM 475</td>
<td>International Communication</td>
<td></td>
</tr>
<tr>
<td>ENGL 244G</td>
<td>Literature and Culture</td>
<td></td>
</tr>
<tr>
<td>HON 218</td>
<td>Women Across Cultures</td>
<td></td>
</tr>
<tr>
<td>PHIL 332</td>
<td>Ethics and Global Poverty</td>
<td></td>
</tr>
<tr>
<td>SOC 458V</td>
<td>Comparative Global Family Systems</td>
<td></td>
</tr>
<tr>
<td>SOC 489</td>
<td>Globalization</td>
<td></td>
</tr>
<tr>
<td>W S 202G</td>
<td>Representing Women Across Cultures</td>
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</tr>
<tr>
<td>W S 401</td>
<td>Women &amp; Immigration</td>
<td></td>
</tr>
<tr>
<td>W S 402</td>
<td>Transnational Feminisms</td>
<td></td>
</tr>
<tr>
<td>W S 433</td>
<td>Women, Gender, and Culture</td>
<td></td>
</tr>
<tr>
<td>W S 454</td>
<td>Women Crossing Borders</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
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<tr>
<td>GEOP 112G</td>
<td>World Regional Geography</td>
<td></td>
</tr>
<tr>
<td>GEOP 120G</td>
<td>Culture and Environment</td>
<td></td>
</tr>
<tr>
<td>GEOP 363V</td>
<td>Cultural Geography</td>
<td></td>
</tr>
<tr>
<td>HIST 111G</td>
<td>Global History to 1500</td>
<td></td>
</tr>
<tr>
<td>HIST 112G</td>
<td>Global History Since 1500</td>
<td></td>
</tr>
<tr>
<td>HIST 211G</td>
<td>East Asia to 1600</td>
<td></td>
</tr>
<tr>
<td>or HIST 212G</td>
<td>East Asia since 1600</td>
<td></td>
</tr>
<tr>
<td>HIST 221G</td>
<td>Islamic Civilizations to 1800</td>
<td></td>
</tr>
<tr>
<td>or HIST 222G</td>
<td>Islamic Civilizations since 1800</td>
<td></td>
</tr>
<tr>
<td>HIST 312V</td>
<td>Modern Latin America</td>
<td></td>
</tr>
<tr>
<td>HIST 474</td>
<td>Gender in East Asian History</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>COMM 458</td>
<td>Intercultural Communication and National Security</td>
<td></td>
</tr>
<tr>
<td>ECON 324V</td>
<td>Developing Nations</td>
<td></td>
</tr>
<tr>
<td>I B 317</td>
<td>International Marketing</td>
<td></td>
</tr>
<tr>
<td>I B 398</td>
<td>International Business and Economic Environments</td>
<td></td>
</tr>
<tr>
<td>I B 450</td>
<td>International Economics</td>
<td></td>
</tr>
<tr>
<td>I B 458</td>
<td>Comparative International Management</td>
<td></td>
</tr>
<tr>
<td>I B 475</td>
<td>International Finance</td>
<td></td>
</tr>
<tr>
<td>MGT 458</td>
<td>Comparative International Management</td>
<td></td>
</tr>
<tr>
<td>MKTG 317</td>
<td>International Marketing</td>
<td></td>
</tr>
<tr>
<td>GOVT 160G</td>
<td>International Political Issues</td>
<td></td>
</tr>
<tr>
<td>GOVT 313</td>
<td>Model United Nations</td>
<td></td>
</tr>
<tr>
<td>GOVT 335</td>
<td>Management of Nonprofit Organizations</td>
<td></td>
</tr>
<tr>
<td>GOVT 360</td>
<td>International Relations</td>
<td></td>
</tr>
<tr>
<td>GOVT 361</td>
<td>Special Topics in International Relations</td>
<td></td>
</tr>
<tr>
<td>GOVT 362</td>
<td>International Political Economy</td>
<td></td>
</tr>
<tr>
<td>GOVT 366</td>
<td>American Foreign Policy</td>
<td></td>
</tr>
<tr>
<td>GOVT 396</td>
<td>International Law</td>
<td></td>
</tr>
<tr>
<td>GOVT 469</td>
<td>Globalization</td>
<td></td>
</tr>
<tr>
<td>HON 340V</td>
<td>Indian Law and Policy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG E 315V</td>
<td>World Agriculture and Food Problems</td>
<td></td>
</tr>
<tr>
<td>ANSC 351V</td>
<td>Agricultural Animals of the World</td>
<td></td>
</tr>
</tbody>
</table>
Journalism and Mass Communications

Undergraduate Program Information

Studies in Journalism and Mass Communications prepares students for careers in mass media, including news/editorial (print and online), broadcasting, advertising, public relations and photojournalism. Students study these disciplines and learn the trends and changes in the industry, such as how they converge on the internet. The curriculum emphasizes the skills of gathering, evaluating and disseminating information and related skills. Students also are instructed in the theory, law, history and professional guidelines of mass media.

Degrees for the Department

Journalism and Mass Communications - Bachelor of Arts (p. 338)

Minors for the Department

Journalism and Mass Communications - Undergraduate Minor (p. 339)

Professor, Chung, Department Head

Associate Professors Berman, Lamonica, Mellen (http://web.nmsu.edu/~rpmellen); Assistant Professor Cardenas, Phillips; College Assistant Professor Miller, Perez; Professor Emeritus McClenehan, Thayer

Instructors Faire, B. Page, Porter, Tallman; News22 Director Miller; Spanish News22 Director Perez

JOUR 102. Grammar for Journalists

Instruction of basic grammar, spelling and punctuation. Required for all journalism students with an ACT English score below 25, SAT Verbal below 570, or students who have not taken ACT/SAT tests. Restricted to Las Cruces campus only.

JOUR 105G. Media and Society

3 Credits

Functions and organization of the mass media system in the United States; power of the mass media to affect knowledge, opinions, and social values; and the impact of new technologies.

JOUR 110. Introduction to Mass Media Writing

3 Credits (2+2P)

Preparation of copy for broadcasting, print, advertising, and public relations. Introduction to Web applications. Restricted to Las Cruces campus only.

Prerequisite(s): JOUR 102 or ACT score of 25 and above or SAT score of 570 and above.

JOUR 201. Introduction to Multimedia

3 Credits

Provides students with the basic skills to produce multimedia packages using text, photos, audio and video, as well as social media for professional purposes. Intensive hands-on class using editing software such as Adobe Premiere. Adobe Audition and Photoshop. May be repeated up to 3 credits.

Prerequisite(s): JOUR 110 or Consent.

JOUR 210. Newswriting for Print and Internet

3 Credits (2+2P)

Intensive laboratory practice in writing news for print media as well as Internet news sites. Restricted to Las Cruces campus only.

Prerequisite(s): JOUR 102 or ACT score of 25 and above or SAT score of 570 and above and JOUR 110.

JOUR 300. Introduction to Advertising

3 Credits

Role of IMC (integrated marketing communications) in marketing of goods, services, and organizations. Creative process, strategic planning, media, message design, consumer behavior, and social issues of IMC.

JOUR 302. Video Production

3 Credits

Classroom instruction on basic studio and single camera video productions, with focus on practical aspects of news production. Lab experience in camera basics, studio functions and digital video editing includes practical experience through crew assignments on the live student-produced newscast, News22, which airs on KRWG-TV, a PBS affiliate station. May be repeated up to 3 credits.

JOUR 306. Feature Writing for Magazines and Newspapers

3 Credits

The preparation of feature stories for magazines and newspapers. How to develop a variety of stories, research topics, interview sources, polish writing and market work. May be repeated for a maximum of 6 credits.

Prerequisite(s): JOUR 210 or consent of instructor.

JOUR 310. Intermediate Print Reporting

3 Credits

News writing and field reporting for print and Web applications. Instruction in community coverage, reporter responsibility, ethics and news values.

Prerequisite(s): JOUR 210.

JOUR 312. Advertising/Copywriting

3 Credits

Creative process, strategic thinking, and principles of advertising in execution of copy, storyboards, and layouts for clients.

Prerequisite(s): JOUR 110 or consent.
JOUR 314. Broadcast Reporting
3 Credits
Writing, editing, producing, announcing and reporting of TV and radio news. May be repeated up to 3 credits.
Prerequisite(s): JOUR 210 or Consent of Instructor.

JOUR 315. News 22
1-3 Credits (1-3)
Write, report, produce, anchor, shoot and edit video for live student television newscast airing on KRWG, public television for Southern New Mexico sports, weather, and news.
Prerequisite(s): JOUR 314 or JOUR 330 or instructor consent.

JOUR 317. News Editing
3 Credits
Extensive, directed practice in various aspects of computer editing for printed publication. Headline writing, copy editing, design, and layout.
Prerequisite(s): JOUR 210.

JOUR 319. Intro Photography
3 Credits
Introduction to photography emphasizing composition, basic camera technique, language of photography and storytelling. Photogoria journal emphasis. Basic camera and processing techniques and skills. May be repeated up to 3 credits.

JOUR 320. Photojournalism
3 Credits
Communication photography for magazine, news, advertising/public relations and other communication needs. Digital Photography, lighting techniques, photo-editing software, and web site skills. Students provide camera and flash. May be repeated up to 3 credits.
Prerequisite(s): JOUR 319 or Consent of instructor.

JOUR 321. Media Graphic Design
3 Credits
Concepts and design skills useful for all aspects of journalism - print media and newsletters, basics of Photoshop and introduction to Web design. May be repeated up to 3 credits.

JOUR 330. Electronic News Gathering
3 Credits (2+4P)
Overview of technical and aesthetic skills and journalism basics needed for shooting and editing on-location news productions. Single camera videography and nonlinear/digital editing.
Prerequisite(s): JOUR 302 or permission of instructor.

JOUR 350. History of Mass Media
3 Credits
Historical overview of mass media with emphasis on roots of journalism, technological developments, and American role in international media.

JOUR 374. Principles of Public Relations
3 Credits
Introduction to public relations as a communication process that builds relationships between organizations and their publics. Explores basic techniques, strategies, and tactics used in businesses, nonprofits, and in government.
Prerequisite(s): JOUR 110.

JOUR 377V. Mass Media Ethics
3 Credits
Philosophical and moral examination of problems relating to mass media. Use of case study method to analyze media situations; development of framework for media professionalism.

JOUR 380. Women and the Mass Media
3 Credits
Portrayal and participation of women in mass media from colonial to contemporary times. Same as W S 450.

JOUR 399. New Mexico Law
3 Credits
Same as C J 399, GOVT 399, HIST 399, and SOC 399.

JOUR 407. Media Internship
3 Credits
Paid supervised work with a mass communications organization. Students who take JOUR 407 may not take JOUR 408. 
Prerequisite: consent of internship coordinator.

JOUR 408. Media Practicum
1-3 Credits
Unpaid supervised work with a mass communications organization. May be repeated for a maximum of 3 credits.
Prerequisite: consent of internship coordinator.

JOUR 423. Advanced Digital Reporting
3 Credits
Advanced in-depth news reporting techniques utilizing multimedia and reliable sources. Internet publishing of professional quality journalism. Preparation of professional resumes and news clippings. May be repeated up to 3 credits.
Prerequisite(s): JOUR 310 or 306 or consent of instructor.

JOUR 425. Media Planning and Buying
3 Credits
Covers the principles of media planning for an IMC campaign and procedures for purchasing ad time or space.
Prerequisite(s): JOUR 300 or consent of instructor.

JOUR 427. Multimedia Publishing
3 Credits
Writing-based course stresses the online telling of a story in many ways: text, photography, slide shows, audio and video news gathering, editing and posting.
Prerequisite(s): JOUR 201.

JOUR 460. Public Relations Promotion in Sports
3 Credits
Examination of sports as a business and how public relations promotion is executed in professional sports franchises.
JOUR 476. Public Relations Campaigns
3 Credits
Utilizing the principles and techniques of public relations to research and develop a comprehensive plan for a long-term national, regional, or local campaign. May be repeated up to 3 credits. Restricted to: Restricted to Journalism majors.
Prerequisite(s): JOUR 210, JOUR 374.
JOUR 484. Public Opinion
3 Credits
Seminar on forces which help form public opinion; individual projects in attitude measurement; measuring effectiveness of mass communication.
JOUR 489. Mass Media Research
3 Credits
Examination of the role of empirical research in solving mass communication problems. Survey techniques, field studies, content analysis, data analysis.
JOUR 490. Advertising Campaigns
3 Credits
Capstone course utilizing all previous instruction to create and develop plans for a long-term national or local IMC (Integrated Marketing Communications) campaign. Consent of instructor required.
Prerequisite(s): JOUR 300 and 312 or consent of instructor.
JOUR 493. Mass Communications Law
3 Credits
Examination of legal issues relating to mass media in the United States. Invasion of privacy, libel, sedition, copyright, and advertising regulation. Same as COMM 493, GOVT 493.
JOUR 494. Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes.
JOUR 495. Mass Communication Theory
3 Credits
Theoretical approaches to mass communications. Examination of media effects, audiences, media socialization.
JOUR 499. Independent Study in Mass Communications
1-3 Credits
Individual study directed by consenting instructor with prior approval of department head. May be repeated for a maximum of 6 credits.
Prerequisites: 2.5 GPA and consent of instructor.

Name:

Office Location: Milton Hall Room 186
Phone: (575) 646-1034
Website: http://journalism.nmsu.edu/

Journalism and Mass Communication - Bachelor of Arts

Students must complete at least 72 hours of courses outside the department. Students are required to fulfill a Second Language equivalent to one year. Refer to the Arts & Sciences College Degree Requirements (p. 176) for specifics.

Core Requirements (Required of Majors)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOUR 102</td>
<td>Grammar for Journalists</td>
<td>2</td>
</tr>
<tr>
<td>JOUR 105G</td>
<td>Media and Society</td>
<td>3</td>
</tr>
<tr>
<td>JOUR 110</td>
<td>Introduction to Mass Media Writing</td>
<td>3</td>
</tr>
<tr>
<td>JOUR 201</td>
<td>Introduction to Multimedia</td>
<td>3</td>
</tr>
<tr>
<td>JOUR 210</td>
<td>Newswriting for Print and Internet</td>
<td>3</td>
</tr>
<tr>
<td>JOUR 493</td>
<td>Mass Communications Law</td>
<td>3</td>
</tr>
</tbody>
</table>

Advanced Requirements

Introductory Professional Courses
Select at least 3 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOUR 300</td>
<td>Introduction to Advertising</td>
<td>3</td>
</tr>
<tr>
<td>JOUR 302</td>
<td>Video Production</td>
<td></td>
</tr>
<tr>
<td>JOUR 310</td>
<td>Intermediate Print Reporting</td>
<td></td>
</tr>
<tr>
<td>JOUR 319</td>
<td>Intro Photography</td>
<td></td>
</tr>
<tr>
<td>JOUR 321</td>
<td>Media Graphic Design</td>
<td></td>
</tr>
<tr>
<td>JOUR 374</td>
<td>Principles of Public Relations</td>
<td></td>
</tr>
<tr>
<td>JOUR 407</td>
<td>Media Internship</td>
<td></td>
</tr>
<tr>
<td>JOUR 408</td>
<td>Media Practicum</td>
<td></td>
</tr>
</tbody>
</table>

Intermediate Professional Courses
Select at least 3 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOUR 306</td>
<td>Feature Writing for magazines and newspapers</td>
<td></td>
</tr>
<tr>
<td>JOUR 312</td>
<td>Advertising/Copywriting</td>
<td></td>
</tr>
<tr>
<td>JOUR 314</td>
<td>Broadcast Reporting</td>
<td></td>
</tr>
<tr>
<td>JOUR 315</td>
<td>News 22</td>
<td></td>
</tr>
<tr>
<td>JOUR 317</td>
<td>News Editing</td>
<td></td>
</tr>
<tr>
<td>JOUR 320</td>
<td>Photojournalism</td>
<td></td>
</tr>
<tr>
<td>JOUR 330</td>
<td>Electronic News Gathering</td>
<td></td>
</tr>
<tr>
<td>JOUR 425</td>
<td>Media Planning and Buying</td>
<td></td>
</tr>
<tr>
<td>JOUR 427</td>
<td>Multimedia Publishing</td>
<td></td>
</tr>
</tbody>
</table>

Advanced/ Capstone Professional Courses
Select at least one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOUR 412</td>
<td>Documentary Photojournalism</td>
<td></td>
</tr>
<tr>
<td>JOUR 414</td>
<td>RTV Scriptwriting/Performance</td>
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</tr>
<tr>
<td>JOUR 423</td>
<td>Advanced Digital Reporting</td>
<td></td>
</tr>
<tr>
<td>JOUR 476</td>
<td>Public Relations Campaigns</td>
<td></td>
</tr>
<tr>
<td>JOUR 490</td>
<td>Advertising Campaigns</td>
<td></td>
</tr>
</tbody>
</table>

Mass Communications Courses
Select at least 3 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOUR 350</td>
<td>History of Mass Media</td>
<td></td>
</tr>
<tr>
<td>JOUR 377V</td>
<td>Mass Media Ethics</td>
<td></td>
</tr>
<tr>
<td>JOUR 380</td>
<td>Women and the Mass Media</td>
<td></td>
</tr>
<tr>
<td>JOUR 460</td>
<td>Public Relations Promotion in Sports</td>
<td></td>
</tr>
<tr>
<td>JOUR 484</td>
<td>Public Opinion</td>
<td></td>
</tr>
<tr>
<td>JOUR 489</td>
<td>Mass Media Research</td>
<td></td>
</tr>
<tr>
<td>JOUR 494</td>
<td>Special Topics</td>
<td></td>
</tr>
<tr>
<td>JOUR 495</td>
<td>Mass Communication Theory</td>
<td></td>
</tr>
</tbody>
</table>
Journalism and Mass Communications - Undergraduate Minor

Students may not earn both a Bachelor of Arts in Journalism and Mass Communications and minor in Journalism and Mass Communications.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOUR 102 Grammar for Journalists</td>
<td>2</td>
</tr>
<tr>
<td>JOUR 105G Media and Society</td>
<td>3</td>
</tr>
<tr>
<td>JOUR 110 Introduction to Mass Media Writing</td>
<td>3</td>
</tr>
<tr>
<td>JOUR 210 Newswriting for Print and Internet</td>
<td>3</td>
</tr>
<tr>
<td>Upper division JOUR courses</td>
<td>9</td>
</tr>
<tr>
<td>Total Credits</td>
<td>18</td>
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</tbody>
</table>

1. JOUR 102 Grammar for Journalists: for those with ACT English score below 25 or SAT below 570. Students must pass JOUR 102 Grammar for Journalists or have an ACT score of 25+ or 570+ SAT score prior to enrolling in basic writing classes, such as JOUR 110 Introduction to Mass Media Writing, and higher writing-based JOUR courses. Note: students must pass JOUR 102 Grammar for Journalists or have an ACT score of 25+ or 570+ SAT score prior to enrolling in JOUR 110 Introduction to Mass Media Writing, and higher writing-based JOUR courses. Students must pass JOUR 102 Grammar for Journalists or have an ACT score of 25+ or 570+ SAT score prior to enrolling in JOUR 110 Introduction to Mass Media Writing, and higher writing-based JOUR courses.

Languages and Linguistics

Undergraduate Program Information

Programs of study in the Department of Languages and Linguistics prepare students for a diverse number of professions and provide them with critical skills that complement many careers in an increasingly interdependent and global marketplace. Students also increase their awareness of the important role language plays in human interaction on individual and global levels.

The major curriculum plans in each language include balanced groups of courses in language, linguistics, literature and culture. Students may choose to major, double major or minor in French, German or Spanish.

College Second Language Requirement

To meet the second language requirement, the student must do one of the following:

- Non-Heritage language speakers should complete the normal language course sequence: 111, 112, 211, 212. Students should enter the sequence at their proficiency level. Heritage language speakers should complete the 113, 213, 214 sequence. Students who successfully complete either SPAN 113 Spanish for Heritage Learners I or SPAN 213 Spanish for Heritage Learners II or SPAN 214 Spanish for Heritage Learners III may not take SPAN 111 Elementary Spanish I, SPAN 112 Elementary Spanish II, SPAN 211 Intermediate Spanish I or SPAN 212 Intermediate Spanish II for credit.

- Challenge the 212 level of Arabic, Chinese, French, German, Japanese, Latin or Spanish, or the 214 level of Portuguese, or Spanish for Heritage Speakers.

- Obtain college certification of completion of three consecutive years of one second language at the high school level with a grade of C- or higher.

- Obtain, from the head of the Department of Languages and Linguistics, certification of a working knowledge of a second language if such language is not taught at New Mexico State
University. The student must demonstrate reading, writing, listening and speaking skills in the language at a minimum of the 212 or equivalent level through examination.

- Obtain certification of a working knowledge of a Native American language from the American Indian program director or as attested by a Native American Elder.
- Pass an upper-division course (numbered 300 or above—does not include directed reading, independent study, practicum or Viewing a Wider World courses) taught in a second language by the Department of Languages and Linguistics.
- Pass C D 476 American Sign Language III with a grade of C- or better
- In the case of a foreign student who is required to take the TOEFL exam, the dean will automatically waive the second language requirement if the student scores 500 or above or the equivalent.
- ESL or English language may not be used to fulfill the language requirement.
- Students should satisfy the language requirement as soon as possible and take the necessary courses in the sequence indicated by the advisor.

Graduate Program Information

The Department of Languages and Linguistics offers a Master of Arts in Spanish, which may be completed through our program on the main campus or completely online. Students are asked to specialize in either linguistics or literature. For non-thesis students, a specialization consists of a minimum of 27 credit hours, for thesis students, a specialization consists of a minimum of 24.

Admission Requirements

Admission requirements include a BA in Spanish. An undergraduate Grade Point Average (GPA) of 3.0 or above, which includes at least 12 semester hours of upper-division undergraduate courses in Spanish with a GPA of at least 3.0. Students must also satisfy general requirements of the Graduate School and submit the proper electronic online application and transcripts at the Graduate School website. Students must also complete a secondary admission packet (also submitted online through the Graduate School electronic application portal), which should include:

- A current resume (C.V.) in Spanish
- Three (3) letters of recommendation from qualified professionals (written within the last six months), preferably from past professors, that address the applicant’s academic record.
- A writing sample in Spanish (critical or creative writing texts). If you do not have a six-page paper, you may submit multiple shorter works totaling six pages.
- A Language Evaluation Form (available for download at the departmental website) completed and signed by a qualified language evaluator. If you have an official ACTFL OPI rating certificate, this may be submitted in lieu of the Language Evaluation Form.
- An introductory letter in Spanish to include:
  - A brief biography of one or two paragraphs along with your goals and objectives for obtaining a Master’s degree in Spanish
  - A statement of interest in either the residential (on-campus) program or the online program
  - A statement of your prospective area of interest (Linguistics or Literature), and
  - Your declaration of interest in being considered for a Graduate Teaching Assistantship (this option is only available for the residential [on-campus] program).

Only completed applications will be reviewed. Again, all materials should be submitted via the Graduate School electronic application portal. No materials should be sent directly to the department. Applying to the program does not guarantee admission to the program. It is the applicant’s responsibility to ensure that all materials have been submitted correctly.

Application deadlines: September 15 for admission for the following Spring semester (which begins in January), and January 15 for admission for the following Fall semester (which begins in August). Students will be advised upon their formal acceptance into the program.

Department Requirements for a Minor in French, German, or Spanish

A minor requires 18 hours of course work in the target language.

Degrees for the Department

Foreign Languages - Bachelor of Arts (p. 347)
Chicano Studies - Supplementary Major (p. 347)
Latin American Studies - Supplementary Major (p. 349)
Linguistics - Supplementary Major (p. 350)
Spanish - Master of Arts (p. 350)

Minors for the Department

French - Undergraduate Minor (p. 348)
German - Undergraduate Minor (p. 348)
Linguistics - Undergraduate Minor (p. 350)
Spanish - Undergraduate Minor (p. 352)

Professor, Glenn W. Fetzer, Department Head

Professors Fouillade, Garcia, MacGregor-Mendoza, Pollack; Associate Professors Herrera, Waltemire; Assistant Professors Deshors, Moreno, Wheeler; College Professor Longwell; College Associate Professor Buchenau; College Assistant Professors Pedersen, Zollner

Longwell, Graduate Director, M.A. (New Mexico State University); J. M. Garcia, Ph.D. (Kansas); S. Herrera, Ph.D. (New Mexico); P. MacGregor-Mendoza, Ph.D. (Illinois-Urbana-Champaign); G. Moreno, Ph.D. (Arizona); B. Pollack, Ph.D. (California-Santa Barbara); M. Waltemire, Ph.D. (New Mexico); E. Wheeler, Ph.D. (California-Santa Barbara)

FREN 111. Elementary French I
4 Credits
French language for beginners.

FREN 112. Elementary French II
4 Credits
French language for beginners.

Prerequisite: C or better in FREN 111.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREN 211</td>
<td>Intermediate French I</td>
<td>3</td>
<td>C or better in FREN 112.</td>
</tr>
<tr>
<td>FREN 212</td>
<td>Intermediate French II</td>
<td>3</td>
<td>C or better in FREN 211.</td>
</tr>
<tr>
<td>FREN 216</td>
<td>Topics in French Culture and Civilization</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
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<tr>
<td>FREN 215</td>
<td>French Grammar</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
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<tr>
<td>FREN 315</td>
<td>Intermediate Conversation</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
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<tr>
<td>FREN 325</td>
<td>Introduction to French Linguistics</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
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<tr>
<td>FREN 330</td>
<td>French Phonetics</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
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<tr>
<td>FREN 360</td>
<td>French Cinema</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
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<tr>
<td>FREN 362</td>
<td>Contemporary French Culture</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
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<tr>
<td>FREN 365</td>
<td>Perspectives in French Culture</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 378</td>
<td>Studies in Francophone Cultures</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 381</td>
<td>Survey of French Literature I</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 382</td>
<td>Survey of French Literature II</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 385</td>
<td>French Civilization</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 386</td>
<td>Contemporary Women Writers in French</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 425</td>
<td>Advanced French Conversation</td>
<td>3</td>
<td>FREN 325 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 449</td>
<td>Special Problems</td>
<td>1-3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 451</td>
<td>Special Topics in French</td>
<td>1-3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 453</td>
<td>Independent Studies in French</td>
<td>1-3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 462</td>
<td>Advanced Contemporary French Culture</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
<tr>
<td>FREN 466</td>
<td>Introduction to French Linguistics</td>
<td>3</td>
<td>FREN 212 or consent of instructor.</td>
</tr>
</tbody>
</table>
FREN 471. The French Novel
3 Credits
Development of the novel and analysis of selected texts with emphasis on the nineteenth and twentieth centuries.
Prerequisite(s): FREN 212 or consent of instructor.

FREN 472. The French Short Story
3 Credits
Study and discussion of French short stories through the ages.
Prerequisite(s): FREN 212 or consent of instructor.

FREN 478. Studies in Francophone Cultures Around the World
3 Credits
Advanced studies of representative Francophone cultures through their history, literature, music and films.
Prerequisite(s): FREN 212 or consent of instructor.

FREN 486. Advanced Contemporary Women Writers in French
3 Credits
Advanced study of literary texts by contemporary women writers in France and the Francophone world; emphasizes the cultural contexts that have defined women’s relationship to writing. Selections will vary from year to year.
Prerequisite(s): FREN 212 or consent of instructor.

SPAN 101. Beginning Spanish Conversation
3 Credits
Beginning conversation and intensive oral practice for non-degree seeking students, and SPAN 111 and SPAN 112 students who desire additional conversational practice. This course does not count toward the NMSU second language requirement and is not open to native Spanish speakers without permission of instructor. Restricted to: Community colleges.

SPAN 111. Elementary Spanish I
4 Credits (4)
Spanish for beginners. Speaking, reading and writing. Not open to Spanish-speaking students except by consent of instructor. Prerequisite(s): language placement and/or assessment by departmental examination.

SPAN 112. Elementary Spanish II
4 Credits (4)
Spanish for beginners. Speaking and writing common interactions in predictable settings using basic vocabulary and verb tenses. Communicate in Spanish both orally and in writing sufficiently well so as to be able to make yourself understood by native speakers accustomed to dealing with non-native speakers. In spontaneous conversation and in writing, students will be able to produce a variety of sentences and form context appropriate to open-ended questions. Prerequisite(s): Not open to Spanish-speaking students except by consent of instructor. Prerequisite: language placement and/or assessment by departmental examination or a C- or better in SPAN 111.

SPAN 113. Spanish for Heritage Learners I
3 Credits
Emphasis on development of heritage Spanish language skills learned at home and/or in the community. Covers listening comprehension, development of vocabulary and cultural activities to help strengthen heritage language and culture. Students who have previously earned a C or better in SPAN 111 or SPAN 112 may not receive credit for this course.

SPAN 115. Elementary Spanish I for Hotel, Restaurant and Tourism Managers
4 Credits
Beginning Spanish for HRTM majors only. Will count towards HRTM degree language requirement. Does not count towards language requirement for other majors. Restricted to: Main campus only. Restricted to HRTM majors.

SPAN 211. Intermediate Spanish I
3 Credits (3)
Speaking, reading and writing. Not open to Spanish-speaking students except by consent of instructor. Prerequisite: language placement and assessment by departmental examination or C or better in SPAN 112.

SPAN 212. Intermediate Spanish II
3 Credits (3)
Speaking, reading and writing. Not open to Spanish-speaking students except by consent of instructor. Prerequisite: language placement and assessment by departmental examination or C or better in SPAN 211.

SPAN 213. Spanish for Heritage Learners II
3 Credits
Emphasis on development of heritage Spanish language skills learned at home and/or in the community. Covers spoken Spanish, reading activities and grammar skills to build on existing knowledge of the language.

SPAN 214. Spanish for Heritage Learners III
3 Credits
Continued development of heritage Spanish language skills learned at home and/or in the community. Emphasis on reading, writing and critical thinking skills. Review of grammar points will also be stressed in preparation for upper level courses.

SPAN 305. Topics in Hispanic Civilization
3 Credits (3)
Group study of selected topics focusing on Hispanic culture and civilization. Topics announced in the Schedule of Classes. May be repeated for a maximum of 6 credits. Prerequisite: SPAN 212 or SPAN 214 or consent of instructor.

SPAN 306. Special Topics
3 Credits
Group study of Spanish for specialized purposes (e.g. court interpreting, professional language for bilingual teachers, technical writing for the business community). Course subtitled in the Schedule of Classes. May be repeated for a maximum of 12 credits. Prerequisite: SPAN 212 or SPAN 214 or consent of instructor.

SPAN 312. Grammar for Heritage/Native Speakers of Spanish
3 Credits
For students who have been exposed to Spanish at home or in the community. Review of grammatical concepts and analysis of both spoken and written Spanish. Students cannot receive credit for both SPAN 312 and SPAN 313. Prerequisite(s): SPAN 212 or consent of instructor.
SPAN 313. Spanish Grammar
3 Credits
A review of the rules of Spanish grammar. Students cannot receive credit for both SPAN 312 and SPAN 313.
Prerequisite: SPAN 212 or SPAN 214 or consent of instructor.

SPAN 314. Spanish Composition
3 Credits
Development of written Spanish skills. Students cannot receive credit for both SPAN 314 and SPAN 315.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 315. Composition for Heritage/Native Speakers of Spanish
3 Credits
Discussions of history, and current political and cultural topics pertaining to the Hispanic world. Emphasis on development of writing skills in formal Spanish. Students cannot receive credit for both SPAN 314 and SPAN 315. Fulfills departmental requirement for SPAN 314.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 325. Advanced Conversation
3 Credits (3)
Intensive oral practice. Not open to heritage/native speakers of Spanish.
Prerequisite(s): SPAN 212 or consent of instructor.

SPAN 327. Spanish in the Community
3 Credits
Emphasis on use of Spanish outside the classroom in the local communities. Activities include but are not limited to oral histories, language mentoring in schools, assisting with cultural activities and language research.
Prerequisite(s): Basic communicative fluency in Spanish as determined by departmental advisor.

SPAN 340. Introduction to Spanish Linguistics
3 Credits
General aspects of Spanish linguistics: traditional, descriptive, historical and dialectal.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 350. Introduction to Chicano Studies
3 Credits
Covers Mexican-American life including language, history, education, politics and literature.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 352. Spanish in Social Contexts
3 Credits
The study of Spanish in the contexts of the societies in which it is spoken.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 353. Spanglish
3 Credits
Covers lexical borrowing, code choice, language loss and maintenance, and bilingual cognition.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 360. Introduction to Latin American Studies
3 Credits
Offers an introduction to topics in Latin American Studies including language, culture, literature, history, sociology and anthropology. Course is taught in English. Spanish majors and minors may receive credit towards degree requirements by submitting course work in Spanish (SPAN 312 or SPAN 313 recommended for SPAN majors or minors).

SPAN 361. US-Mexico Border Culture- Literature and /or Culture
3 Credits
Study of major authors and/or cultural trends in the U.S.-Mexico border. Selected subject to be identified by subtitle in the Schedule of Classes. May be repeated up to 6 credits.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 363. US-Hispanic Culture
3 Credits
Study of major artistic and cultural trends among US-Hispanics. Selected topics to be identified by subtitle in the Schedule of Classes. May be repeated for a total of 6 credits under a different subtitle.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 364V. Culture and Civilization of Mexico
3 Credits
Familiarization with culture, civilization and regions of Mexico. History, geography, art, literature, folklore, customs, economics and politics of each region. Impact of Mexican culture and civilization on the Southwest United States. Taught in English. Does not satisfy Arts and Sciences second language requirement.

SPAN 365V. Culture and Civilization of Spanish America
3 Credits
Familiarization with culture, civilization and regions of Spanish America. Study of history, geography, art, literature, folklore, customs, economics and politics of each region. Impact of Spanish American culture and civilization on the Southwest United States. Taught in English. Does not satisfy College of Arts and Sciences second language requirement.

SPAN 380. Introduction to Hispanic Literature
3 Credits
Works in Spanish, all genres and periods. How to read literature in all forms.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 385. Introduction to Chicano/US-Mexican Literature
3 Credits
Introduction to the study of major works by Chicano/US-Mexican authors.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 388. Contemporary Hispanic Literature
3 Credits
Study of Peninsular and Spanish-American literature from the 20th century to the present.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 393. Introduction to Translation and Interpretation
3 Credits
General aspects of translation and interpretation from English to Spanish and Spanish to English. Selected subject to be identified by subtitle in the Schedule of Classes. May be repeated up to 6 credits.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 399. Independent Studies in Literature, Language, or Culture
1-3 Credits
Individualized, self-paced projects for advanced students. Students must present formal proposal of study. May be repeated for a maximum of 6 credits.
Prerequisite: SPAN 312 and SPAN 313.

SPAN 410. Mitos y Leyendas Indigenas
3 Credits
Survey in Spanish language of indigenous poetry, myths and legends from Pre-Columbian times to present.
Prerequisite(s): SPAN 312 or SPAN 313.
SPAN 411. Creative Writing
3 Credits
Creative writing in Spanish.
Prerequisite(s): SPAN 314 or SPAN 315 and SPAN 380.

SPAN 412. Spanish-American Poetry
3 Credits
Study of major works by Spanish-American poets.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 413. Mexican Literature
3 Credits
Study of major works by Mexican authors.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 414. Spanish-American Women Writers
3 Credits
All genres of Spanish-American literature written by women.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 416. Nineteenth Century Spanish-American Literature
3 Credits
Study of major works by Spanish-American authors of the 19th century.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 417. Spanish-American Short Story
3 Credits
Study of major short stories by Spanish-American authors.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 418. Spanish-American Drama
3 Credits
Study of major works by Spanish-American dramatists.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 420. Hispanic Micro Fiction
3 Credits
Study of micro fiction works by Hispanic Authors and creative writing workshop related to micro fiction.
Prerequisite(s): SPAN 314 or SPAN 315 and SPAN 380.

SPAN 421. Culture and Literature of New Mexico
3 Credits
The study of the development and flourishing of New Mexican culture and literature.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 422. Literature of the Mexican Revolution
3 Credits
Study of Mexican authors dealing with the Mexican Revolution.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 424. Post-Modern Hispanic Literature
3 Credits
The study of Post-Modern experimental literary genres, from Post-boom to the present.
Prerequisite(s): SPAN 314 or SPAN 315.

SPAN 425. Conquest, Colonial and Indigenous Literatures
3 Credits
The study of literary and cultural works of the Spaniard Conquest and Latin American Indigenous cultures.
Prerequisite(s): SPAN 314 or SPAN 315.

SPAN 426. Spanish-American Novel
3 Credits
Study of major works by Spanish-American novelists.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 427. Chicano Literature
3 Credits
Study of Chicano/US-Mexican authors.
Prerequisite(s): SPAN 314 or SPAN 315.

SPAN 428. U.S. Latino Culture and Literature
3 Credits
The study of major works by Latino writers in the U.S.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 439. Topics in Applied Spanish Linguistics
3 Credits
Group study of selected topics to be identified by subtitle in the Schedule of Classes. May be repeated once under different subtitle for a maximum of 6 credits.
Prerequisite: SPAN 340.

SPAN 445. Dialectos del Espanol
3 Credits
In-depth exploration of Spanish dialects including their formal characteristics, historical formation and regional variation.
Prerequisite(s): SPAN 340 or SPAN 461.

SPAN 447. Hispanic Film
3 Credits
Study of major films from Spain and Spanish-America. Restricted to: Main campus only.

SPAN 448. U.S.-Hispanic Film
3 Credits
Study of major films about and/or by Hispanics of the U.S. Restricted to: Main campus only.

SPAN 449. Special Problems
1-3 Credits
Directed reading for graduate students in their specific fields to satisfy language requirement for master's or doctoral programs. May be repeated for a maximum of 6 credits.

SPAN 450. Mexican Cultures
3 Credits
Different aspects of Mexican Culture. Selected topic to be identified by subtitle in the Schedule of Classes. May be repeated for a total of 6 credits under a different subtitle.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 451. Hispanic Cultures
3 Credits
Issues in Hispanic cultures of the U.S., Spanish-America and Spain. Also focuses on U.S.-Mexico border culture. Selected topics to be identified by subtitle in the Schedule of Classes. May be repeated up to 6 credits.
Prerequisite(s): SPAN 314 or SPAN 315.

SPAN 457. Strategies for Teaching Spanish for Heritage/Native Speakers
3 Credits
Overview of the main theories, research, pedagogical approaches, assessment and practice concerning the teaching of Spanish to heritage learners and native speakers. Taught with SPAN 597.
Prerequisite(s): SPAN 314 or SPAN 315.

SPAN 460. Spanish Language Acquisition
3 Credits
Research and theories of acquisition of Spanish as a first or second language.
Prerequisite: LING 200 or SPAN 340, or consent of instructor.
SPAN 461. Introduction to Spanish Phonetics  
3 Credits  
An introduction to Spanish phonetics including basic dialectal variation and comparison with English.  
**Prerequisite:** SPAN 340.

SPAN 470. Methods for Teaching Literature to Spanish Heritage Learners  
3 Credits  
Current methods for teaching literature to Spanish for Heritage Learners (SHL).  
**Prerequisite(s):** SPAN 314 or SPAN 315 and SPAN 380.

SPAN 490. Special Topics  
3 Credits  
Selected topic to be identified by subtitle in the Schedule of Classes. May be repeated up to 6 credits.  
**Prerequisite(s):** SPAN 312 or SPAN 313.

SPAN 491. History of the Spanish Language  
3 Credits  
The development of Spanish from its origins.  
**Prerequisite(s):** SPAN 340.

SPAN 492. Structure of Spanish  
3 Credits  
Topics in Spanish linguistics including phonology, morphology, syntax and semantics.  
**Prerequisite(s):** SPAN 314 or SPAN 315 or SPAN 340.

SPAN 493. Studies in U.S. Spanish  
3 Credits  
Linguistic issues and studies of U.S. Spanish-speaking communities. Taught with SPAN 593.  
**Prerequisite(s):** SPAN 340.

SPAN 500. Methods of Research and Literary Criticism  
3 Credits  
Advanced methods of research and literary criticism.  

SPAN 507. Technology Enhanced Language Learning  
3 Credits  
Strategies for enhancing language learning with emerging technologies. Course is taught in Spanish.  

SPAN 508. Teaching Literature with Technology  
3 Credits  
Strategies and techniques for enhancing the teaching of all literature genres using emerging technologies. Course is taught in Spanish. Co/  
**Prerequisite(s):** SPAN 507, and/or consent of instructor.

SPAN 509. Teaching Culture with Technology  
3 Credits  
Strategies and techniques for enhancing the teaching of culture using emerging technologies. Course is taught in Spanish. Co/  
**Prerequisite(s):** SPAN 507, and/or consent of instructor.

SPAN 510. Assessing the National Standards  
3 Credits  
Analysis of the National Standards for Foreign Language Learning (the 5 Cs) in the 21st Century. Course will also cover the Integrated Performance Assessment as applied to the national standards. Other assessments will be reviewed to evaluate effectiveness in all levels of Spanish language classrooms.

SPAN 512. Contemporary Spanish-American Poetry  
3 Credits  
Readings and interpretation of Spanish-American poetry from the 20th century to the present.

SPAN 520. Hispanic Micro Fiction  
3 Credits  
Advanced study of micro fiction works by Hispanic Authors and creative writing workshop related to micro fiction.

SPAN 521. Advanced Culture and Literature of New Mexico  
3 Credits  
The advanced study of the development and flourishing of New Mexican culture and literature.

SPAN 528. Advanced U.S. Latino Culture and Literature  
3 Credits  
The advanced study of major works by Latino writers in the U.S.

SPAN 540. Introduccion a la Linguistica  
3 Credits  
Introduces students to the foundational topics of linguistic study with particular reference given to the Spanish language: properties of language and communication, morphology, syntax, phonetics, phonology, language variation and change.  
**Prerequisite(s):** Eligibility to take graduate level courses.

SPAN 545. Advanced Dialectos del Espanol  
3 Credits  
Advanced research of Spanish dialects including their formal characteristics, historical formation and regional variation.

SPAN 547. Advanced Hispanic Film  
3 Credits  
Advanced study of major films from Spain and Spanish-America. Restricted to: Main campus only.

SPAN 548. Advanced U.S.-Hispanic Film  
3 Credits  
Advanced study of major films about and/or by Hispanics of the U.S. Restricted to: Main campus only.

SPAN 551. Advanced Hispanic Cultures  
3 Credits  
Advanced study on Hispanic cultures of the U.S., Spanish-America and/or Spain. Selected topic to be identified by subtitle. Taught with SPAN 451. May be repeated up to 6 credits.

SPAN 552. Advanced Literature of the Mexican Revolution  
3 Credits  
Study of Mexican authors dealing with the Mexican Revolution. Restricted to: Main campus only.

SPAN 555. Advanced Conquest, Colonial and Indigenous Literatures  
3 Credits  
The advanced study of literary and cultural works of the Spaniard Conquest and Latin American Indigenous cultures.

SPAN 556. Advanced 19-Century Spanish-American Literature  
3 Credits  
Study of major works by Spanish-American authors of the 19th century.

SPAN 558. Bilinguismo  
3 Credits  
Examines the topics of bilingualism from a psycholinguistic perspective including the development of the bilingual brain, lexical acquisition, retrieval and storage, and experimental techniques in measuring language competence.  
**Prerequisite(s):** SPAN 540 or consent of instructor.
SPAN 560. Advanced Spanish Language Acquisition
3 Credits
Advanced research and theories of acquisition of Spanish as a first or second language.
Prerequisite(s): SPAN 540.

SPAN 561. Advanced Spanish Phonetics
3 Credits
Advanced study of Spanish phonetics, including basic dialectal variation and comparisons with English.

SPAN 562. Advanced Spanish Phonology
3 Credits
An advanced formal examination of the sound system of Spanish including formal characterizations, dialectal variation and laboratory data.

SPAN 563. Advanced Study in Mexican Literature
3 Credits
Mexican literature from the Pre-Columbian period to the present.

SPAN 564. Advanced Post-Modern Hispanic Literature
3 Credits
The advanced study of Post-Modern experimental literary genres, from Post-boom to the present.

SPAN 566. Contemporary Spanish-American Novel
3 Credits
The Spanish-American novel from the 20th century to the present.

SPAN 567. Advanced Study in Chicano Literature
3 Credits
Study of all genres of Chicano literature.

SPAN 570. Advanced Study in Technical Translation
3 Credits
Translation of a variety of non-literary texts from English to Spanish and from Spanish to English. Course is taught in Spanish.

SPAN 573. Advanced Study in Creative Writing
3 Credits
Advanced creative writing in Spanish.

SPAN 580. Research Methodology in Spanish Linguistics
3 Credits
Study and practical application of techniques in linguistic research.

SPAN 581. Advanced Hispanic Modernism and Avant-Garde Literature
3 Credits
The advanced study of major prose works by Latin American Modernist and Avant-Garde authors.

SPAN 583. Advanced Study in Spanish-American Women Writers
3 Credits
All genres of Spanish-American literature written by women. Research paper required.

SPAN 584. Spanish Morphosyntax
3 Credits
Examination of the morphological and syntactic structure of the Spanish language as well as their interaction. Practical applications are also explored.

SPAN 585. Language Assessment
3 Credits
Introduces students to theoretical principles of and analytical techniques for language assessment. Students will learn to critically analyze existing language assessment measures and will develop, pilot test and analyze measures of their own.
Prerequisite(s): SPAN 540 or SPAN 560 or SPAN 580 or consent of instructor.

SPAN 586. Contemporary Spanish-American Essay
3 Credits
Main currents in the Spanish-American thought from the 20th century to the present.

SPAN 587. Contemporary Spanish-American Short Story
3 Credits
The Spanish-American short story from the 20th century to the present.

SPAN 588. Contemporary Spanish-American Drama
3 Credits
The Spanish-American drama from the 20th century to the present.

SPAN 589. Spanish Sociolinguistics
3 Credits
Relationship between language and society in the Spanish-speaking world.

SPAN 590. Advanced Special Topics
3 Credits (3)
Specific subject to be announced in the Schedule of Classes. May be repeated up to 6 credits.

SPAN 591. Advanced Study in History of the Spanish Language
3 Credits
The development of Spanish from its origins.

SPAN 592. Advanced Structure of Spanish
3 Credits
Advanced study of Spanish linguistics topics such as phonology, morphology, syntax and semantics.

SPAN 593. Advanced Studies in U.S. Spanish
3 Credits
Linguistic issues and advanced studies of U.S. Spanish-speaking communities. Taught with SPAN 493.

SPAN 594. Theory and Methodology of Spanish Pedagogy
3 Credits
Advanced studies in current theories and methodologies of Spanish language pedagogy. Taught as a practicum.

SPAN 597. Advanced Strategies for Teaching Spanish for Heritage/Native Speakers
3 Credits
Advanced overview of the main theories, research, pedagogical approaches, assessment and practice concerning the teaching of Spanish to heritage learners and native speakers.

SPAN 598. Independent Reading, Research, and/or Creative Writing
1-3 Credits
Individual study of selected readings and problems; or individual research, either analytical or experimental, or creative writing. May be repeated for unlimited credits.

SPAN 599. Master’s Thesis
15 Credits
Thesis.
Chicano Studies - Supplementary Major

This program consists of 24 credits from the lists below. Advisor: Dr. Spencer R. Herrera, Languages and Linguistics.

Core Requirements
Select three from the following: 9

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN 327</td>
<td>Spanish in the Community</td>
</tr>
<tr>
<td>SPAN 448</td>
<td>U.S.-Hispanic Film</td>
</tr>
<tr>
<td>HIST 367</td>
<td>Mexican-Americans in the United States</td>
</tr>
<tr>
<td>HIST 369</td>
<td>History of Latinos in the United States</td>
</tr>
<tr>
<td>SOC 470</td>
<td>Sociology of Latinos/as in the United States</td>
</tr>
<tr>
<td>SPAN 350</td>
<td>Introduction to Chicano Studies</td>
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</table>

Culture and Literature
Select two from the following: 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 320</td>
<td>Art and Architecture in Pre-Columbian Meso-America</td>
</tr>
<tr>
<td>ENGL 339V</td>
<td>Chicana/o Literature</td>
</tr>
<tr>
<td>ENGL 394V</td>
<td>Southwestern Literature</td>
</tr>
<tr>
<td>ENGL 458</td>
<td>Latino/a Literature and Culture</td>
</tr>
<tr>
<td>SPAN 361</td>
<td>US-Mexico Border Culture-Literature and/or Culture</td>
</tr>
<tr>
<td>SPAN 385</td>
<td>Introduction to Chicano/US-Mexican Literature</td>
</tr>
<tr>
<td>SPAN 427</td>
<td>Chicano Literature</td>
</tr>
<tr>
<td>SPAN 450</td>
<td>Mexican Cultures</td>
</tr>
<tr>
<td>SPAN 451</td>
<td>Hispanic Cultures</td>
</tr>
<tr>
<td>SPAN 428</td>
<td>U.S. Latino Culture and Literature</td>
</tr>
<tr>
<td>SPAN 470</td>
<td>Methods for Teaching Literature to Spanish Heritage Learners</td>
</tr>
</tbody>
</table>

Applicable upper-division honors courses
Applicable upper-division “special topics” courses

Electives
Select one from the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ANTH 313</td>
<td>Ancient Mexico</td>
</tr>
<tr>
<td>EP 517</td>
<td>Multicultural Counseling 1</td>
</tr>
<tr>
<td>EDUC 315</td>
<td>Multicultural Education</td>
</tr>
<tr>
<td>EDUC 344</td>
<td>Issues in Schooling for Bilingual Learners</td>
</tr>
<tr>
<td>ENGL 394V</td>
<td>Southwestern Literature</td>
</tr>
<tr>
<td>GEOG 325V</td>
<td>New Mexico and the American West</td>
</tr>
<tr>
<td>GOVT 399</td>
<td>New Mexico Law</td>
</tr>
<tr>
<td>HIST 311V</td>
<td>Colonial Latin America</td>
</tr>
<tr>
<td>HIST 483</td>
<td>Historic Preservation</td>
</tr>
<tr>
<td>HIST 483</td>
<td>Hispanic Health Issues</td>
</tr>
<tr>
<td>PHLS 469</td>
<td>U.S.-Mexico Border Health Issues</td>
</tr>
<tr>
<td>SPAN 457</td>
<td>Strategies for Teaching Spanish for Heritage/Native Speakers</td>
</tr>
<tr>
<td>W S 454</td>
<td>Women Crossing Borders</td>
</tr>
</tbody>
</table>

Total Credits 24

1 Only with prior written permission of instructor, department head and course dean.

Independent study, honors or special topics courses may be chosen with the approval of the advisor for Supplementary Majors in Chicano Studies, the head of the Department of Languages and Linguistics, and the College of Arts and Sciences. As departments add new courses they may be included in the program.

Foreign Languages - Bachelor of Arts

Departmental Requirements for Majors

- Select at least one option: French, Spanish or German
- Complete LING 200G Introduction to Language
- Complete a second language through the 212 level (214 in Portuguese or Spanish for Heritage Speakers)
- Viewing a Wider World courses (FREN 365V Perspectives in French Culture, GER 333V German Culture through Cinema, SPAN 364V Culture and Civilization of Mexico, SPAN 365V Culture and Civilization of Spanish America) do not satisfy requirements for a major in Foreign Languages
- Electives sufficient to bring the total number of credits to 120, including 48 upper-division credits

Departmental Requirements for Double Majors

A double major means a major in a department outside Languages and Linguistics in combination with a major in Foreign Languages. Students with double majors are exempt from LING 200G Introduction to Language and second language requirement.

- Viewing a Wider World courses (FREN 365V Perspectives in French Culture, GER 333V German Culture through Cinema, SPAN 364V Culture and Civilization of Mexico, SPAN 365V Culture and Civilization of Spanish America) do not satisfy the requirement for a double major in Foreign Languages
• Electives sufficient to bring the total number of credits to 120, including 48 upper-division credits

**Concentration: French**

**Requirements**

24 FREN credits (at least one class each in the following areas):

**Requirements**

**Language Studies**

Select at least one from the following:

- FREN 315 French Grammar
- FREN 325 Intermediate Conversation
- FREN 352 French Phonetics
- FREN 425 Advanced French Conversation
- FREN 466 Introduction to French Linguistics

**Culture**

Select at least one from the following:

- FREN 306 Topics in French Culture and Civilization
- FREN 360 French Cinema
- FREN 362 Contemporary French Culture
- FREN 378 Studies in Francophone Cultures
- FREN 462 Advanced Contemporary French Culture
- FREN 478 Studies in Francophone Cultures Around the World

**Literature**

Select at least one from the following:

- FREN 381 Survey of French Literature I
- FREN 382 Survey of French Literature II
- FREN 386 Contemporary Women Writers in French
- FREN 471 The French Novel
- FREN 472 The French Short Story
- FREN 486 Advanced Contemporary Women Writers in French

Select 3 additional credits at the FREN 400 level. Other courses may be selected with the help of an advisor.

Select 12 additional credits from French courses chosen with the help of an advisor.

Total Credits 24

**Concentration: German**

**Requirements**

Select 24 credits from GER 300 or 400 level with the aid of an advisor.

Total Credits 24

**Concentration: Spanish**

**Requirements**

24 SPAN credits at either the 300 or 400 level from each of the following: of which at least 6 credits must be at the 400 level.

**Requirements**

- SPAN 312 Grammar for Heritage/Native Speakers of Spanish
- or SPAN 313 Spanish Grammar
- SPAN 314 Spanish Composition
- SPAN 315 Composition for Heritage/Native Speakers of Spanish
- SPAN 340 Introduction to Spanish Linguistics
- SPAN 380 Introduction to Hispanic Literature

**Linguistics/Methodology**

Select one from the following:

- SPAN 327 Spanish in the Community
- SPAN 445 Dialectos del Espanol
- SPAN 457 Strategies for Teaching Spanish for Heritage/Native Speakers
- SPAN 461 Introduction to Spanish Phonetics
- SPAN 491 History of the Spanish Language
- SPAN 493 Studies in U.S. Spanish

**Literature/Culture**

Select one from the following:

- SPAN 385 Introduction to Chicano/US-Mexican Literature
- SPAN 388 Contemporary Hispanic Literature
- SPAN 413 Mexican Literature
- SPAN 428 U.S. Latino Culture and Literature
- SPAN 447 Hispanic Film
- SPAN 448 U.S.-Hispanic Film
- SPAN 450 Mexican Cultures

**Electives**

Select 6 credits from SPAN 300 or 400 level courses

Total Credits 24

1 SPAN 364V Culture and Civilization of Mexico and SPAN 365V Culture and Civilization of Spanish America do not count, as they are taught in English.

**French - Undergraduate Minor**

Students must pass at least 18 credits of FREN courses of which at least 12 credits are upper division. Students may not count FREN 111 Elementary French I or FREN 112 Elementary French II, but may count FREN 211 Intermediate French I and/or FREN 212 Intermediate French II. A student whose primary language for a Bachelor of Arts in Foreign Languages is French may not also earn a minor in French.

**Required Courses**

- One upper division course in French or Francophone Culture
- One upper division course in French language studies
- One upper division course in French or Francophone Literature
- One additional upper-division class in one area above

Select 9 additional credits from French courses chosen with the help of an advisor.

Total Credits 21

**German - Undergraduate Minor**

Students must pass at least 18 credits of GER courses of which at least 12 credits are upper division. Students may not count GER 111 Elementary German I or GER 112 Elementary German II, but may count GER 211 Intermediate German I and/or GER 212 Intermediate German
II. A student whose primary language for a Bachelor of Arts in Foreign Languages is German may not also earn a minor in German.

**Required Courses**

Select at least 18 credits of GER courses of which at least 12 credits are upper division

Total Credits 18

**Latin American Studies - Supplementary Major**

This program consists of 24 credits drawn from the lists below of which 18 credits must be numbered 300 or above. In addition, students must satisfy the College of Arts and Sciences Second Language Requirement. Advisor: Mark Milliorn, Languages and Linguistics.

**Options**

There are two options based on the section chosen by the student:

**Option 1**

Concentration in Latin American Language, Culture and Literature (Spanish or Portuguese):

- 12 credits from Section 1
- 12 credits from Section 2, *(Note: No more than 6 credits may be taken in a single department)*

**Option 2**

Concentration in one major (e.g., history, government, economics, health science, anthropology, sociology) included in Latin American Social Sciences and Art:

- 12 credits in the chosen area of Section 2 (if the major is government, one of these courses may be ECON 325V Economic Development of Latin America)
- 6 credits from another area (or areas) of Section 2
- 6 credits from Section 1

Both options require that the student take at least two Spanish or Portuguese courses above 300-level.

**Section 1: Latin American Language, Culture and Literature**

Only 3 credits will count.

**Spanish/Portuguese Language**

Select one from the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN 325</td>
<td>Advanced Conversation</td>
</tr>
<tr>
<td>SPAN 327</td>
<td>Spanish in the Community</td>
</tr>
<tr>
<td>PHLS 461</td>
<td>Health Disparities: Determinants and Interventions</td>
</tr>
<tr>
<td>PORT 325</td>
<td>Portuguese Conversation</td>
</tr>
</tbody>
</table>

**Culture**

Select one from the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN 305</td>
<td>Topics in Hispanic Civilization</td>
</tr>
<tr>
<td>SPAN 306</td>
<td>Special Topics</td>
</tr>
<tr>
<td>SPAN 363</td>
<td>US-Hispanic Culture</td>
</tr>
<tr>
<td>SPAN 450</td>
<td>Mexican Cultures</td>
</tr>
</tbody>
</table>

**Section 2: Latin American Social Sciences and Art**

**Course List**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 110</td>
<td>North American Prehistory</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 306V</td>
<td>Peoples of Latin America</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 307</td>
<td>Anthropology of Mexico and Guatemala</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 312</td>
<td>The Ancient Maya</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 313</td>
<td>Ancient Mexico</td>
<td>3</td>
</tr>
<tr>
<td>ART 320</td>
<td>Art and Architecture in Pre-Columbian Meso-America</td>
<td>3</td>
</tr>
<tr>
<td>ART 321</td>
<td>Pre-Columbian Art and Architecture of the Andes</td>
<td>3</td>
</tr>
<tr>
<td>ECON 324V</td>
<td>Developing Nations</td>
<td>3</td>
</tr>
<tr>
<td>ECON 325V</td>
<td>Economic Development of Latin America</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 328V</td>
<td>Geography of Latin America</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 371</td>
<td>Latin American Politics</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 378</td>
<td>U.S.-Mexico Border Politics</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 379</td>
<td>Mexican Politics</td>
<td>3</td>
</tr>
<tr>
<td>HIST 311V</td>
<td>Colonial Latin America</td>
<td>3</td>
</tr>
<tr>
<td>HIST 312V</td>
<td>Modern Latin America</td>
<td>3</td>
</tr>
<tr>
<td>HIST 331</td>
<td>Rebels, Guerrillas, and Terrorists in Modern Latin America</td>
<td>3</td>
</tr>
<tr>
<td>HIST 353</td>
<td>Colonial Mexico</td>
<td>3</td>
</tr>
<tr>
<td>HIST 354</td>
<td>Modern Mexico</td>
<td>3</td>
</tr>
<tr>
<td>HIST 356</td>
<td>The Mexican Revolution</td>
<td>3</td>
</tr>
<tr>
<td>HIST 387</td>
<td>Spain</td>
<td>3</td>
</tr>
<tr>
<td>HIST 453</td>
<td>Cuba: Colony to Castro</td>
<td>3</td>
</tr>
<tr>
<td>HIST 455</td>
<td>Brazil</td>
<td>3</td>
</tr>
<tr>
<td>HIST 459</td>
<td>Peru: From Incas to Inca Kola</td>
<td>3</td>
</tr>
<tr>
<td>PHLS 462</td>
<td>Hispanic Health Issues</td>
<td>3</td>
</tr>
<tr>
<td>PHLS 465</td>
<td>International Health Problems</td>
<td>3</td>
</tr>
<tr>
<td>PHLS 469</td>
<td>U.S.-Mexico Border Health Issues</td>
<td>3</td>
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<tr>
<td>PORT 453</td>
<td>Independent Luso-Brazilian Studies</td>
<td>1-3</td>
</tr>
<tr>
<td>SOC 361V</td>
<td>Social Issues in the Rural Americas</td>
<td>3</td>
</tr>
<tr>
<td>SOC 479</td>
<td>Sociology Perspectives on the U.S.-Mexico Border</td>
<td>3</td>
</tr>
<tr>
<td>SPAN 364V</td>
<td>Culture and Civilization of Mexico</td>
<td>3</td>
</tr>
<tr>
<td>SPAN 365V</td>
<td>Culture and Civilization of Spanish America</td>
<td>3</td>
</tr>
<tr>
<td>SPAN 410</td>
<td>Mitos y Leyendas Indigenas</td>
<td>3</td>
</tr>
<tr>
<td>SPAN 412</td>
<td>Spanish-American Poetry</td>
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<tr>
<td>SPAN 413</td>
<td>Mexican Literature</td>
<td>3</td>
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<td>SPAN 415</td>
<td>Spanish-American Women Writers</td>
<td>3</td>
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<tr>
<td>SPAN 416</td>
<td>Nineteenth Century Spanish-American Literature</td>
<td>3</td>
</tr>
<tr>
<td>SPAN 418</td>
<td>Spanish-American Short Story</td>
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<tr>
<td>SPAN 419</td>
<td>Spanish American Drama</td>
<td>3</td>
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<tr>
<td>SPAN 421</td>
<td>Culture and Literature of New Mexico</td>
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</tr>
<tr>
<td>SPAN 422</td>
<td>Literature of the Mexican Revolution</td>
<td>3</td>
</tr>
</tbody>
</table>
In both sections, independent studies, honors or special topics courses may be chosen with the approval of the Supplementary Major in Latin American Studies advisor, the head of the Department of Languages and Linguistics, and the College of Arts and Sciences. As departments add new courses they may be included in the program.

**Linguistics - Supplementary Major**

This program consists of 24 credits drawn from the lists below. In addition, students must satisfy the College of Arts and Sciences Second Language Requirement. Advisor: Dr. Patricia MacGregor-Mendoza, Languages and Linguistics.

### Core Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LING 200G</td>
<td>Introduction to Language</td>
<td>3</td>
</tr>
<tr>
<td>LING 301</td>
<td>Introduction to Psycholinguistics</td>
<td>3</td>
</tr>
<tr>
<td>LING 302V</td>
<td>Language and Society</td>
<td>3</td>
</tr>
<tr>
<td>LING 303</td>
<td>Exploring Language Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

### Electives

Select 12 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 320</td>
<td>Anthropological Linguistics</td>
<td></td>
</tr>
<tr>
<td>C D 374</td>
<td>American Sign Language I</td>
<td></td>
</tr>
<tr>
<td>C D 375</td>
<td>American Sign Language II</td>
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</tr>
<tr>
<td>C D 476</td>
<td>American Sign Language III</td>
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<td>C S 409</td>
<td>Independent Study</td>
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<tr>
<td>C S 471</td>
<td>Programming Language Structure I</td>
<td></td>
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<tr>
<td>C S 479</td>
<td>Special Topics</td>
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<tr>
<td>COMM 305</td>
<td>Communication Research Methods</td>
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<td>COMM 351</td>
<td>Persuasion Theory and Practice</td>
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<td>COMM 370</td>
<td>Organizational Communication</td>
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<td>COMM 376</td>
<td>Communication and Culture</td>
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<td>COMM 384</td>
<td>Interpersonal Communication</td>
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<td>COMM 440</td>
<td>Political Communication</td>
<td></td>
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<td>COMM 450</td>
<td>Technologies of Human Communication</td>
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<td>COMM 460</td>
<td>Deception and Communication</td>
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<td>COMM 465</td>
<td>Nonverbal Communication</td>
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<td>COMM 475</td>
<td>International Communication</td>
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<td>COMM 480</td>
<td>Health Communication</td>
<td></td>
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<tr>
<td>COMM 484</td>
<td>Verbal Communication</td>
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<tr>
<td>COMM 490</td>
<td>Independent Study</td>
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<tr>
<td>COMM 491</td>
<td>Selected Topics</td>
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<td>EDUC 483</td>
<td>Second Language Acquisition</td>
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<tr>
<td>ENGL 451</td>
<td>Practicum in the Grammar of American English</td>
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<td>ENGL 452</td>
<td>History of the English Language</td>
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<td>FREN 352</td>
<td>French Phonetics</td>
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<tr>
<td>GER 451</td>
<td>Special Topics in German</td>
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<td>GER 453</td>
<td>Independent Studies in German</td>
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</tr>
<tr>
<td>LING 451</td>
<td>Independent Studies in Linguistics</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits: 24**

1 At least 3 hours must be at the 400 level. No more than 6 hours may be from the department where the student is obtaining his/her major.
2 Special topics, independent studies, and directed readings must be approved by the Department of Languages and Linguistics.

**Linguistics - Undergraduate Minor**

The department offers a minor in linguistics.

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LING 200G</td>
<td>Introduction to Language</td>
<td>3</td>
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<tr>
<td>Select two from the following:</td>
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<td>6</td>
</tr>
<tr>
<td>LING 301</td>
<td>Introduction to Psycholinguistics</td>
<td></td>
</tr>
<tr>
<td>LING 302V</td>
<td>Language and Society</td>
<td></td>
</tr>
<tr>
<td>LING 303</td>
<td>Exploring Language Systems</td>
<td></td>
</tr>
</tbody>
</table>

Select 9 credits with the help of an advisor from related fields

**Total Credits: 18**

1 See list of electives for the supplementary major in Linguistics.

**Spanish - Master of Arts**

The degree plan requires a minimum of 36 credits in Spanish, of which at least 30 must be earned at the 500 level, and the remainder above the 450 level. The courses should be concentrated in the student's chosen area of study (linguistics or literature) as each student will be tested on a reading list that corresponds to each area study. A thesis is optional. Students authorized to complete a thesis may count a maximum of 6 credits of thesis work toward the degree. At the present time, the thesis option is not available for online-only students. There are no required core courses at this time and a student should work closely with his/her advisor and the Graduate Director to establish an appropriate individual degree plan.

All students in either the on-campus or online program may complete a minor at the master's level by taking 9 credits (3 courses) at the 500 level or above, in another area (department) of study, or within the department itself. For instance, a student studying linguistics may wish to obtain a minor in literature or a student studying literature may wish to obtain a minor in linguistics. In either case, the minor credits count as part of the 36 total credits required for the degree. In all cases, the student should...
work closely with the Graduate Director to ensure his/her particular plan of study is acceptable to the program.

**Linguistics Area of Study**

Select 12 from the following: 

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN 507</td>
<td>Technology Enhanced Language Learning</td>
</tr>
<tr>
<td>SPAN 508</td>
<td>Teaching Literature with Technology</td>
</tr>
<tr>
<td>SPAN 509</td>
<td>Teaching Culture with Technology</td>
</tr>
<tr>
<td>SPAN 510</td>
<td>Assessing the National Standards</td>
</tr>
<tr>
<td>SPAN 540</td>
<td>Introduccion a la Linguistica</td>
</tr>
<tr>
<td>SPAN 545</td>
<td>Advanced Dialectos del Espanol</td>
</tr>
<tr>
<td>SPAN 558</td>
<td>Bilinguismo</td>
</tr>
<tr>
<td>SPAN 560</td>
<td>Advanced Spanish Language Acquisition</td>
</tr>
<tr>
<td>SPAN 561</td>
<td>Advanced Spanish Phonetics</td>
</tr>
<tr>
<td>SPAN 562</td>
<td>Advanced Spanish Phonology</td>
</tr>
<tr>
<td>SPAN 570</td>
<td>Advanced Study in Technical Translation</td>
</tr>
<tr>
<td>SPAN 580</td>
<td>Research Methodology in Spanish Linguistics</td>
</tr>
<tr>
<td>SPAN 584</td>
<td>Spanish Morphosyntax</td>
</tr>
<tr>
<td>SPAN 585</td>
<td>Language Assessment</td>
</tr>
<tr>
<td>SPAN 589</td>
<td>Spanish Sociolinguistics</td>
</tr>
<tr>
<td>SPAN 591</td>
<td>Advanced Study in History of the Spanish Language</td>
</tr>
<tr>
<td>SPAN 592</td>
<td>Advanced Structure of Spanish</td>
</tr>
<tr>
<td>SPAN 593</td>
<td>Advanced Studies in U.S. Spanish</td>
</tr>
<tr>
<td>SPAN 594</td>
<td>Theory and Methodology of Spanish Pedagogy</td>
</tr>
<tr>
<td>SPAN 597</td>
<td>Advanced Strategies for Teaching Spanish for Heritage/Native Speakers</td>
</tr>
</tbody>
</table>

Total Credits 36

Courses that may apply to either area include SPAN 590 Advanced Special Topics (see subtitles in schedule of courses to confirm subject of the course) SPAN 598 Independent Reading, Research, and/or Creative Writing, SPAN 599 Master's Thesis (both courses require a course proposal and prior approval).

**Additional Language Requirement**

For both the on-campus and online degrees, the department requires that students fulfill a second language requirement (in addition to English and Spanish) by following an approved course of study. Typically, this is completed by taking a four-semester course of study, but may vary according to the languages available.

Options for completing this requirement include taking classes at a local Community College or University, or online. Some students have met this requirement by studying abroad through NMSU. Students should consult the Graduate Director to establish a plan and discuss how this requirement will be met. Note: evidence of fulfilling the second language requirement must be provided to the Graduate Director BEFORE taking final examinations.

**English Language Requirement**

International students are required to demonstrate proficiency in English and meet all international admissions requirements prior to beginning their program of study. Please see the section of the Graduate Catalog on international admissions requirements and scores required for either the TOEFL or IELTS exam. Note: evidence of fulfilling the English Language Requirement must be provided to the Graduate Director AND the Graduate School BEFORE taking final examinations.

**Final Examinations**

Students must successfully complete a final department examination (generally during the final semester of coursework) that is partially written and partially oral. Please consult the Graduate Director for specific information on dates and format for these exams. Final examinations are only available during the Fall and Spring semesters.

**Areas of Interest/Reading List**

As stated previously, each student needs to select an area of interest: Linguistics or Literature. At the end of the student's degree, the final examinations (written and oral) will be based on the readings from the readings list in the student's selected area of study. For example, a student that has opted to specialize in literature is responsible for reading all the materials on the Literature Reading List. Likewise, a student that has opted to specialize in linguistics is responsible for reading all the
materials on the Linguistics Reading List. The student is responsible for the reading list that was in place the year he or she started the program.

Each student is responsible for covering the reading materials listed. Please contact the Graduate Director for a detailed reading. Note that the list is dated, so make sure to refer to the correct list that covers the year/semester the student started the program. The student is responsible for covering ALL the readings even if the student did not cover them as part of work done in class.

**Graduate Assistantships**

For the on-campus program only, the department awards graduate assistantships to qualified students. For this financial assistance, the student works up to 20 hours a week in departmental programs, chiefly in the teaching of elementary and intermediate Spanish courses in either the Heritage Language sequence or Spanish as a second Language sequence. Students interested in being considered for an assistantship should clearly state this interest in their introduction letter during the application process. The department offers a limited number of assistantships, and students should remember that not everyone that applies for this award receives one. Maintaining the award depends on the student's successful performance both academically and in the classes he/she teaches and is evaluated on a semester-by-semester basis. Students who receive an assistantship are required to take SPAN 594 Theory and Methodology of Spanish Pedagogy (see course description) as part of their degree plan in order to help them prepare for teaching classes at NMSU.

**Spanish - Undergraduate Minor**

Students must pass at least 18 credits of SPAN courses of which at least 12 credits are at either the 300 or 400 level. Students may not count SPAN 111 Elementary Spanish I or SPAN 112 Elementary Spanish II, but may count SPAN 211 Intermediate Spanish I and/or SPAN 212 Intermediate Spanish II. A student whose primary language for a Bachelor of Arts in Foreign Languages is Spanish may not also earn a minor in Spanish.

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN 312</td>
<td>Grammar for Heritage/Native Speakers of Spanish</td>
<td>3</td>
</tr>
<tr>
<td>or SPAN 313</td>
<td>Spanish Grammar</td>
<td></td>
</tr>
<tr>
<td>SPAN 314</td>
<td>Spanish Composition</td>
<td>3</td>
</tr>
<tr>
<td>or SPAN 315</td>
<td>Composition for Heritage/Native Speakers of Spanish</td>
<td></td>
</tr>
</tbody>
</table>

**Electives**

Select 12 credits from SPAN 300 or 400 level courses

| Total Credits | 18 |

**Mathematical Sciences**

**Undergraduate Program Information**

In addition to meeting University and College requirements, students earning a Bachelor of Science in Mathematics must fulfill the core departmental requirements and choose from one of three emphases:

- General
- Applied Mathematics or
- Actuarial Science and Insurance.

Students must earn a grade of C- or better in all departmental and nondepartmental courses for any degree in the Department of Mathematical Sciences.

**Graduate Program Information**

The Department of Mathematical Sciences offers graduate instruction leading to the Master of Science degree, and Doctor of Philosophy degree. Possible areas of study are various topics in pure mathematics and applied mathematics, statistics and mathematics education. Students may also pursue an interdisciplinary program of study. Our program has 50 to 60 graduate students, most of them supported by a combination of teaching assistantships, research assistantships, fellowships and job opportunities at nearby teaching or research units.

For more information on our programs and on our working environment, and to learn more about the research interests of the faculty, please see our web site at www.math.nmsu.edu, phone us at (575) 646-3901, or write to:

Graduate Secretary
Department of Mathematical Sciences
NMSU
Las Cruces, NM 88003-8001
Email: gradcomm@nmsu.edu

Students applying for regular admission to graduate study in mathematics are expected to have 24 credits of upper-division courses in mathematics and statistics, including a three-credit course in modern analysis and a three-credit course in modern algebra. Students who do not meet these requirements may be admitted with deficiencies and allowed to complete the requirements at New Mexico State University.

Applications must be submitted online, see http://prospective.nmsu.edu/graduate/apply/. The minimum application to be admitted as a regular graduate student in mathematics includes:

1. a completed Graduate School admission application
2. complete transcripts of all undergraduate and graduate work
3. application fee
4. three letters of recommendation from professors, employers, or others who are qualified to judge potential for graduate work in mathematics
5. a one-page statement of educational objectives

Although GRE subject test scores are not required for admission, applicants are encouraged to submit them, if available. The test scores may be used to help allocate available teaching assistantships among entering students.
To ensure full consideration for admission, candidates should submit their applications by the following deadlines.

**Application Deadlines - Domestic Applicants**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Admission Only</th>
<th>Admission/Financial Aid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>July 1</td>
<td>February 1</td>
</tr>
<tr>
<td>Spring/Summer</td>
<td>October 1</td>
<td>October 1</td>
</tr>
</tbody>
</table>

**Application Deadlines - International Applicants**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Admission Only</th>
<th>Admission/Financial Aid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
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</tr>
<tr>
<td>Spring/Summer</td>
<td>October 1</td>
<td>October 1</td>
</tr>
</tbody>
</table>

**Degrees for the Department**

Mathematics - Bachelor of Science (p. 360)

Applied Mathematics - Supplemental Major (p. 359)

Mathematics - Master of Science (p. 363)

Mathematics - Doctor of Philosophy (p. 362)

**Minors for the Department**

Mathematics - Undergraduate Minor (p. 364)

Professor, Joseph Lakey, Department Head

Professors

Baggett, Barany, Bezhanishvili, DeBlassie, Giorgi, Harding, Lakey, Lodder, Morandi, Olberding, Smits, Wang;

Associate Professors

Ballyk, Fouli, Salamanca-Riba, Stanford, Tian;

Instructors

Cahill, Contreras, Dai, Michalowski; College Professors

Fulte, Mostafa, Zimmerman; College Associate Professors

Stuart, College Assistant Professors

Ausbrooks, Villaverde, White-Hosford; College Instructors

Reece


Associated Faculty: Annie Selden, Ph.D. (Clarkson) – mathematics education; John Selden, Ph.D. (Georgia) – mathematics education.

**MATH 102. General Supplemental Instruction II**

1 Credit


Corequisite(s): MATH 121G.

**MATH 107. Topics in Mathematics**

1-3 Credits

Topics to be announced in the Schedule of Classes. Maximum of 3 credits per semester. Total credit not to exceed 6 credits. Community Colleges only.

Prerequisite: consent of instructor.

**MATH 111. Fundamentals of Elementary Mathematics I**

3 Credits

Numbers and the four operations of arithmetic. Understanding and comparing multiple representations of numbers and operations, in particular how these representations build from whole numbers to integers to fractions and decimals. Applying properties of numbers and operations in contextual situations. Reasoning, communicating, and problem solving with numbers and operations. Applications to ratio, and connections with algebra. Taught primarily through student activities and investigations. Restricted to: EDUC,EPARE,ED,ECED majors.

Prerequisite(s): ENGL 111G and grade of C or better in MATH 120.

**MATH 112G. Fundamentals of Elementary Math II**

3 Credits

Geometry and measurement. Multiple approaches to solving problems and understanding concepts in geometry. Analyzing and constructing two- and three-dimensional shapes. Measurable attributes, including angle, length, area, and volume. Understanding and applying units and unit conversions. Transformations, congruence, and symmetry. Scale factor and similarity. Coordinate geometry and connections with algebra. Reasoning and communicating about geometric concepts. Taught primarily through student activities and investigations.

Prerequisite(s): C or better in MATH 111.

**MATH 120. Intermediate Algebra**

3 Credits

Linear and algebraic functions as they arise in real world problems. Exponential and logarithmic functions. Equations and inequalities and their solutions considered symbolically, graphically and numerically.

Prerequisite: adequate score on the Mathematics Placement Examination (see note above).

**MATH 121G. College Algebra**

3 Credits

Fundamental concepts of functions, including algebraic and graphical properties. Fitting functions to data. Finding zeroes and extreme values. Solving systems of equations.

Prerequisites: Adequate math placement score or C or better in MATH 120.

**MATH 142G. Calculus for the Biological and Management Sciences**

3 Credits (2+2P)

Review of functions. Derivatives, exponential and logarithmic functions, antiderivatives and indefinite integrals, basic ordinary differential equations and growth models, with an emphasis on applications. Includes a significant writing component.

Prerequisite(s): C or better in MATH 121G.
MATH 190G. Trigonometry and Precalculus
4 Credits (3+2P)
Elementary functions used in the sciences with emphasis on trigonometric functions and their inverses. Polar coordinates. Complex numbers and Euler's formula. Analytic geometry and vectors.
Prerequisite: adequate score on Mathematics placement exam or a C or better in MATH 121G (see note at beginning of this section).

MATH 191G. Calculus and Analytic Geometry I
4 Credits
Limits and continuity, theory and computation of derivatives, applications of derivatives, extreme values, critical points, derivative tests, L'Hopital's Rule.
Prerequisite(s): C or better in MATH 190G.

MATH 192G. Calculus and Analytic Geometry II
4 Credits
Riemann sums, the definite integral, antiderivatives, fundamental theorems, techniques of integration, applications of integrals, improper integrals, Taylor polynomials, sequences and series, power series and Taylor series.
Prerequisite(s): C or better in MATH 191G.

MATH 192GH. Calculus and Analytic Geometry II Honors
4 Credits (3+1P)
A more advanced treatment of the material of MATH 192G with additional topics. Consent of Instructor required. Restricted to Las Cruces campus only.
Prerequisite(s): Consent of Department.

MATH 200. Directed Study
1-3 Credits
May be repeated for a maximum of 6 credits. Graded S/U.
Prerequisite: consent of the instructor.

MATH 210G. Mathematics Appreciation
3 Credits
Mathematics and its role in the development and maintenance of civilization.
Prerequisites: High school algebra, and an adequate score on the Mathematics Placement Examination.

MATH 215. Fundamentals of Elementary Mathematics III
3 Credits
Probability, statistics, ratios, and proportional relationships. Experimental and theoretical probability. Collecting, analyzing, and displaying data, including measurement data. Multiple approaches to solving problems involving proportional relationships, with connections to number and operation, geometry and measurement, and algebra. Understanding data in professional contexts of teaching. Taught primarily through student activities and investigations.
Prerequisite(s): C or better in MATH 112.

MATH 235. Calculus for the Technical Student I
3 Credits
Intuitive differential and integral calculus with applications to engineering.
Prerequisite: C or better in MATH 190G.

MATH 236. Calculus for the Technical Student II
3 Credits
A continuation and extension of the material in MATH 235.
Prerequisite: C or better in MATH 235 or in MATH 192G.

MATH 242. Calculus for the Biological and Management Sciences II
3 Credits
Calculus of functions of several variables, techniques of integration, differential equations, infinite series. Applications.
Prerequisite: C or better in MATH 142G.

MATH 275G. Spirit and Evolution of Mathematics
3 Credits
Same as HON 275G.

MATH 279. Introduction to Higher Mathematics
3 Credits
Logic; sets, relations, and functions; introduction to mathematical proofs.
Prerequisite(s): C- or better in MATH 192.

MATH 280. Introduction to Linear Algebra
3 Credits
Systems of equations, matrices, vector spaces and linear transformations. Applications to computer science.
Prerequisite(s): Grade of C- or better in MATH 192G.

MATH 291G. Calculus and Analytic Geometry III
3 Credits
Vector algebra, directional derivatives, approximation, max-min problems, multiple integrals, applications, cylindrical and spherical coordinates, change of variables.
Prerequisite: grade of C or better in MATH 192G.

MATH 292. Calculus and Analytic Geometry IV
3 Credits
Vector calculus, linear algebra, selected topics. Community Colleges only.
Prerequisite: grade of C or better in MATH 291G or equivalent.

MATH 300. Readings
1-3 Credits
A selection of readings and reports in the mathematical sciences, the breadth and depth of which is deemed to fit the needs of the student. Graded S/U.
Prerequisite: consent of instructor.

MATH 313. Fundamentals of Algebra and Geometry I
3 Credits
Vector algebra, directional derivatives, approximation, max-min problems, multiple integrals, applications, cylindrical and spherical coordinates, change of variables.
Prerequisite(s): MATH 111 and MATH 112G.

MATH 316. Calculus with Hands-on Applications
3 Credits
This course, primarily for prospective teachers, is taught in an interactive laboratory format. Students design and construct physical objects for which the planning stage requires calculus techniques. All numerical computations are carried out on graphing calculators. Meets simultaneously with MATH 516, primarily for practicing teachers. Secondary math education majors may take course as a math elective. MATH 316 does not substitute for other required math courses. Does not fulfill requirements for major in mathematics.

MATH 331. Introduction to Modern Algebra
3 Credits
Elements of abstract algebra, including groups, rings and fields.
Prerequisite: C or better in MATH 279 and MATH 280.
MATH 332. Introduction to Analysis
3 Credits
Development of the real numbers, a rigorous treatment of sequences, limits, continuity, differentiation, and integration.
Prerequisite: C or better in MATH 192G and MATH 279.

MATH 377. Introduction to Numerical Methods
3 Credits
Basic numerical methods for interpolation, approximation, locating zeros of functions, integration, and solution of linear equations. Computer-oriented methods will be emphasized.
Prerequisites: grade of C or better in MATH 192G and some programming experience.

MATH 391. Vector Analysis
3 Credits
Calculus of vector valued functions, Green’s and Stokes’ theorems and applications.
Prerequisite: grade of C or better in MATH 291G.

MATH 392. Introduction to Ordinary Differential Equations
3 Credits
Introduction to differential equations and dynamical systems with emphasis on modeling and applications. Basic analytic, qualitative and numerical methods. Equilibria and bifurcations. Linear systems with matrix methods, real and complex solutions.
Prerequisite: C or better in MATH 192G or B or better in MATH 236.

MATH 400. Undergraduate Research
1-3 Credits
May be repeated for a maximum of 6 credits. Graded S/U.
Prerequisite: consent of faculty member.

MATH 401. Special Topics
1-3 Credits (1-3)
Specific subjects to be announced in the Schedule of Classes. May be used to fulfill a course requirement for the mathematics major.
Prerequisite: An upper division MATH or STAT course, and consent of instructor.

MATH 411V. Great Theorems: The Art of Mathematics
3 Credits
Adopts the view of mathematics as art, using original sources displaying the creation of mathematical masterpieces from antiquity to the modern era. Original sources are supplemented by cultural, biographical, and mathematical history placing mathematics in a broad human context. Same as HON 411G.
Prerequisites: Grades of B or better in MATH 192G and any upper division MATH/STAT course, with overall GPA of 3.2 or better, or consent of instructor.

MATH 421. Financial Mathematics I
3 Credits
Types of derivatives, forwards and futures, options, returns and payoffs, Arrow-Debre, complete and incomplete markets, the one period model, the binomial option pricing model, binomial trees, martingales and sub martingales, Brownian motion, stochastic integrals, the Ito integral, Ito's dilemma, the Black-Scholes model, the Black-Scholes formula, European options, American options, free boundary problems, variational inequalities. This course is offered simultaneously with MATH 521.
Prerequisite(s): C or better in MATH 280 or MATH 480 or consent of instructor.

MATH 422. Financial Mathematics II
3 Credits
Bonds, swaps, exotic options, barrier options, Asian options, look back options, options with transaction costs, Fokker Plank theory, computing expectations, the Heath-Jarrow- Morton theorem, the Ho-Lee model, stochastic volatility models, exponential-affine models, numerical methods. This course is offered simultaneously with MATH 522.
Prerequisite: C or better in MATH 421 or consent of instructor

MATH 423. Numerical Optimization and Applications to Financial Mathematics
3 Credits
Dynamic optimization of a monopolist, trading off inflation and unemployment, the optimal adjustment of labor demand, infinite planning horizon, the optimal investment path of a firm, the optimal social saving behavior, phase-diagram analysis, optimal control theory, the political business cycle, the dynamics of a revenue-maximizing firm, economic examples of state-space constraints. This course is offered simultaneously with MATH 523.
Prerequisite(s): C or better in MATH 421.

MATH 430. Combinatorial Mathematics
3 Credits
Methods for solving combinatorial construction and enumeration problems. Topics include Ramsey theory, generating functions, matchings, and block designs.
Prerequisite(s): C or better in MATH 330 or C or better in MATH 331 or C or better in MATH 332.

MATH 451. Introduction to Differential Geometry
3 Credits
Applies calculus to curves and surfaces in three dimensional Euclidean space.
Prerequisite(s): C or better in each of MATH 280 and MATH 391, or consent of instructor.

MATH 452. Foundations of Geometry
3 Credits
Topics in projective, axiomatic Euclidean or non-Euclidean geometries. Restricted to: Main campus only.
Prerequisite(s): C or better in MATH 331 or MATH 332.

MATH 453. Introduction to Topology
3 Credits
Introduction to topological spaces and metric spaces, with connections to analysis, geometry, and the classification of surfaces.
Prerequisite(s): C or better in MATH 332 or consent of instructor.

MATH 454. Mathematical Logic
3 Credits
Propositional calculus and the first order predicate calculus, including Godel’s completeness theorem for the latter, and additional topics at the option of the instructor.
Prerequisite(s): C or better in MATH 331 or MATH 332, or consent of instructor.

MATH 455. Elementary Number Theory
3 Credits
Covers primes, congruences and related topics.
Prerequisite: grade of C or better in MATH 331 or consent of instructor.

MATH 457. Applications of Modern Algebra
3 Credits
Topics may include coding theory, cryptography, graph theory, or symmetry groups. May be repeated up to 9 credits.
Prerequisite(s): C or better in MATH 331 or consent of instructor.
MATH 459. Survey of Geometry
3 Credits
Basic concepts of Euclidean geometry, ruler and compass constructions. May include topics in non-Euclidean geometry. For non-math majors. Restricted to: Main campus only.  
Prerequisite(s): C or better in MATH 331 or MATH 332.

MATH 466. Lattice Theory
3 Credits
Introduction to partially ordered sets, distributive, modular, and Boolean lattices.  
Prerequisite(s): C- or better in MATH 330 or C- or better in MATH 331 or C- or better in MATH 332 or consent of instructor.

MATH 471. Complex Variables
3 Credits
A first course in complex function theory, with emphasis on applications.  
Prerequisite(s): C- or better in MATH 391 or C- or better in both MATH 392 and MATH 291.

MATH 472. Fourier Series and Boundary Value Problems
3 Credits
Fourier series and methods of solution of the boundary value problems of applied mathematics.  
Prerequisite(s): C- or better in MATH 392.

MATH 473. Calculus of Variations and Optimal Control
3 Credits
Euler’s equations, conditions for extrema, direct methods, dynamic programming, and the Pontryagin maximal principle.  
Prerequisite(s): C- or better in MATH 392.

MATH 480. Matrix Theory and Applied Linear Algebra
3 Credits
An application driven course, whose topics include rectangular systems, matrix algebra, vector spaces and linear transformations, inner products, and eigenvalues and eigenvectors. Applications may include LU factorization, least squares, data compression, QR factorization, singular value decomposition, and search engines.  
Prerequisite(s): C- or better in any 300-level course with a MATH or STAT prefix.

MATH 481. Advanced Linear Algebra
3 Credits
Rigorous treatment of vector spaces and linear transformations including canonical forms, spectral theory, inner product spaces and related topics.  
Prerequisite: grade of C or better in MATH 331.

MATH 491. Introduction to Real Analysis I
3 Credits
Rigorous discussion of the topics introduced in calculus. Sequences, series, limits, continuity, differentiation.  
Prerequisite: grade of C or better in MATH 332 or consent of instructor.

MATH 492. Introduction to Real Analysis II
3 Credits
Continuation of MATH 491. Integration, metric spaces and selected topics.  
Prerequisite(s): C- or better in MATH 491 or consent of instructor.

MATH 498. Directed Reading
1-6 Credits
May be repeated for a maximum of 6 credits. Graded S/U.

MATH 501. Introduction to Differential Geometry
3 Credits
Same as MATH 451 with additional work for graduate students.

MATH 502. Foundations of Geometry
3 Credits
Same as MATH 452 with additional assignments for graduate students.

MATH 503. Introduction to Topology
3 Credits
Same as MATH 453 with additional work for graduate students.

MATH 504. Mathematical Logic
3 Credits
Same as MATH 454 with additional assignments for graduate students.

MATH 505. Elementary Number Theory
3 Credits
Same as MATH 455 with additional assignments for graduate students.

MATH 506. Lattice Theory
3 Credits
Same as MATH 466 with additional assignments for graduate students.

MATH 507. Applications of Modern Algebra
3 Credits
Taught with MATH 457 with additional work for graduate students. May be repeated up to 9 credits.  
Prerequisite(s): C or better in MATH 331.

MATH 509. Information Theory
3 Credits
This class is a study of Shannon’s measure of information and discusses mutual information, entropy, and channel capacity, the noiseless source coding theorem, the noisy channel coding theorem, channel coding and random coding bounds, rate-distortion theory, and data compression. Restricted to: Main campus only. Crosslisted with: E E 586  
Prerequisite(s): E E 571 or STAT 515.

MATH 511. Fundamentals of Elementary Mathematics I
3 Credits (3+1P)
Topics from real numbers, geometry, measurement, and algorithms, incorporating calculator technology. Intended for K-8 teachers. As part of course students mentor MATH 111 undergraduates. Does not fulfill degree requirements for M.S. in mathematics.

MATH 512. Fundamentals of Elementary Mathematics II
3 Credits (3+1P)
Real numbers, geometry, and statistics, incorporating calculator technology. Intended for K-8 teachers. Students serve as mentors to MATH 112 undergraduates. Does not fulfill degree requirements for M.S. in mathematics.

MATH 513. Fundamentals of Algebra and Geometry I
3 Credits (3+1P)
Algebra and metric geometry, incorporating appropriate calculator technology. Intended for K-8 teachers. Students serve as mentors to MATH 313 undergraduates. Does not fulfill degree requirements for M.S. in mathematics.

MATH 516. Calculus with Hands-on Application
3 Credits
This course, primarily for in-service teachers, is taught in an interactive laboratory format. Students design and construct physical objects for which the planning stage requires calculus techniques. All numerical computations are carried out on graphing calculators. Meets simultaneously with Math 316, primarily for prospective teachers. Does not fulfill degree requirements for M.S. in Mathematics.  
Prerequisite(s): MATH 511 and MATH 512 or consent of instructor.
MATH 517. Complex Variables
3 Credits
Same as MATH 471 with additional work for graduate students.

MATH 518. Fourier Series and Boundary Value Problems
3 Credits
Same as MATH 472 with additional work for graduate students.

MATH 519. Calculus of Variations and Optimal Control
3 Credits
Same as MATH 473 with additional work for graduate students.

MATH 521. Financial Mathematics I: Portfolio Optimization
3 Credits
Complete and incomplete markets, optimal investment paths, dynamic optimization, the Black-Scholes model, European options, American options.
Prerequisite: STAT 515 and either MATH 280 or MATH 480.

MATH 522. Financial Mathematics II
3 Credits
Prerequisite: MATH 521.

MATH 523. Numerical Optimization and Applications to Financial Mathematics
3 Credits
Dynamic optimization of a monopolist, trading off inflation and unemployment, the optimal adjustment of labor demand, infinite planning horizon, the optimal investment path of a firm, the optimal social saving behavior, phase-diagram analysis, optimal control theory, the political business cycle, the dynamics of a revenue-maximizing firm, economic examples of state-space constraints. This course is offered simultaneously with MATH 423.
Prerequisite: MATH 521.

MATH 525. Advanced Linear Algebra
3 Credits
Same as MATH 481 with additional work for graduate students.
Prerequisite: grade of C or better in MATH 331.

MATH 527. Introduction to Real Analysis I
3 Credits
Same as MATH 491 with additional work for graduate students.

MATH 528. Introduction to Real Analysis II
3 Credits
Same as MATH 492 with additional work for graduate students.

MATH 530. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be for unlimited credit with approval of the department.

MATH 531. Ordinary Differential Equations
3 Credits
Linear algebra and linear ordinary differential equations, existence and uniqueness of solution, smooth dependence on initial conditions, flows, introduction to smooth dynamical systems.
Prerequisites: MATH 392 and MATH 527, or consent of instructor.

MATH 532. Partial Differential Equations
3 Credits
Prerequisite: MATH 518 or consent of instructor.

MATH 534. Nonlinear Programming
3 Credits
Theoretical and computational methods to solve optimization problems in engineering, statistics, economics, and operations research. Topics include convexity, optimality conditions, Newton’s method, Lagrange multipliers, search algorithms for unconstrained and constrained problems, as well as barrier and penalty methods.

MATH 540. Directed Reading
1-6 Credits
May be repeated for a maximum of 6 credits. Consent of instructor required. Graded: S/U.

MATH 541. Topology I
3 Credits
Connectedness and compactness of topological spaces, introduction to the quotient topology, elementary homotopy theory, the fundamental group, the Seifert-van Kampen theorem
Prerequisite(s): MATH 525 and MATH 528, or consent of instructor.

MATH 542. Topology II
3 Credits
Covering spaces and their classification, singular homology, degree theory, Brouwer’s fixed point theorem, CW-complexes and cellular homology, and other applications.
Prerequisite(s): MATH 541 or consent of instructor.

MATH 555. Differentiable Manifolds
3 Credits
Differentiable structures, tangent bundles, vector fields and differential equations. Additional topics may include differential forms, De Rham cohomology, Riemannian geometry, and topics chosen by the instructor. May be repeated for a maximum of 9 credits. Consent of instructor required.
Prerequisite(s): MATH 525 and MATH 528, or consent of instructor.

MATH 557. Axiomatic Set Theory
3 Credits
A detailed study of Zermelo-Fraenkel and Bernays set theories.
Prerequisite: MATH 504 or equivalent.

MATH 559. History and Theories of Mathematics Education
3 Credits
A study of the history of the mathematics taught in American schools, including an examination of authentic original textbooks and the changes in their content and the approach to the subject over time, together with writings of people who have influenced the development and changes of mathematics education. Theories of learning mathematics, and current issues in mathematics education.
Prerequisite(s): Restricted to graduate students.

MATH 563. Algebra with Connections
3 Credits
Connections between Algebra and other K-12 curriculum strands, especially Geometry and Probability / Data Analysis. Apply algebraic modeling and reasoning to a variety of mathematical problem solving situations. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.
MATH 564. From Number to Algebra
3 Credits
The progression from Number to Algebra in the K-12 curriculum as a concrete-to-abstract progression. Key concepts considered across the grade levels include the different uses of variables, equivalence in different contexts, patterns, and ratios. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.

MATH 566. Data Analysis with Applications
3 Credits
Statistical concepts and terminology in professional uses of data by teachers, such as standardized test score reports and educational research; visual displays of data; measures of variation and central tendency; consideration of how K-12 topics in Data Analysis are developed from one grade level to the next. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.

MATH 567. From Measurement to Geometry
3 Credits
The progression from Measurement to Geometry in the K-12 curriculum as a concrete-to-abstract progression. Important concepts such as angle, length, and area progress from concrete, measurable situations to more abstract problems which require reasoning and proof. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.

MATH 568. Using Number Throughout the Curriculum
3 Credits
Understand number concepts more deeply by seeing many examples of those concepts applied in other content strands. Develop mathematical knowledge and understanding to build a repertoire of ways for students to practice and review basic number skills and concepts as part of later, more advanced courses. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.

MATH 569. Geometry with Connections
3 Credits
Connections between Geometry and other K-12 curriculum strands, especially Algebra and Probability/Data Analysis. Address key attributes of geometric concepts by considering their connections within and across grade levels. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.

MATH 581. Algebra 1
3 Credits
Examines groups, commutative rings, solvability of polynomials, Galois theory, ruler and compass constructions.
Prerequisite/corequisite: MATH 525.

MATH 582. Algebra II
3 Credits
Group actions, fundamental theorem of finite Abelian groups, Sylow theorems, solvable groups, noncommutative rings, Noetherian rings, unique factorization domains, modules, tensor products.
Prerequisite: MATH 581.

MATH 583. Introduction to Commutative Algebra and Algebraic Geometry
3 Credits
Introduction to the basic notions and techniques of modern algebraic geometry, including the necessary commutative algebra foundation. Topics likely to include algebraic and projective varieties, Nullstellensatz, morphisms, rational and regular functions, local properties. Other topics may include Noether normalization, dimension theory, singularities, sheaves, schemes, Grobner bases. May be repeated up to 9 credits.
Prerequisite(s): MATH 581 or consent of instructor.

MATH 584. Representation Theory
3 Credits
Topics from representation theory of finite or infinite groups. May be repeated for a maximum of 9 credits.
Prerequisite: consent of instructor.

MATH 585. Universal Algebra
3 Credits
Universal algebra and category theory. Theorems of Birkhoff and Tarski relating equational classes, free algebras and their construction through homomorphisms, subalgebras and products. Topics from model theory, sheaf theory and representation by subdirect products. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

MATH 586. Nonlinear Dynamics I
3 Credits
Introduction to nonlinear dynamics and deterministic chaos. Core topics include stability and bifurcations; chaos in one dimensional maps; universality and re-normalization group. Further topics include symbolic dynamics, fractals, sensitive dependence on initial data, self-organization and complexity and cellular automata. Knowledge of differential equations and linear algebra is desired. May be repeated up to 6 credits.

MATH 587. Complex Analysis I
3 Credits
Rigorous treatment of complex differentiation and integration, properties of analytic functions, series and Cauchy's integral representations.
Prerequisites: MATH 517 and MATH 528, or consent of instructor.

MATH 588. Complex Analysis II
3 Credits
Harmonic functions, product representations, conformal mappings, Riemann's mapping theorem, Riemann surfaces, and selected other topics.
Prerequisite: MATH 591 or consent of instructor.

MATH 589. Measure and Integration
3 Credits
Measure spaces, measurable functions, extension and decomposition theorems for measures, integration on measure spaces, absolute continuity, iterated integrals.
Prerequisite: MATH 528 or consent of instructor.

MATH 590. Real Analysis
3 Credits
Differentiation, Lp spaces, Banach spaces, measure and topology, other selected topics.
Prerequisite: MATH 593.

MATH 591. Master's Thesis
15 Credits
Thesis.
MATH 600. Doctoral Research
1-15 Credits
Research.

MATH 643. Topology III
3 Credits
Topics may include higher homotopy groups, fibrations, cohomology operations and obstruction theory, spectral sequences, or others chosen by instructor. May be repeated for a maximum of 9 credits.
Prerequisites: MATH 542 or consent of instructor.

MATH 655. Topics in Differential Geometry
3 Credits
Representation theory of Lie groups, Riemannian geometry, or another topic chosen by instructor. Content varies. May be repeated for a maximum of 9 credits.
Prerequisite: MATH 555 or consent of instructor.

MATH 683. Homological Algebra
3 Credits
Basic topics in homological algebra and category theory. May be repeated for a maximum of 9 credits.
Prerequisite: MATH 542 or MATH 582 or consent of instructor.

MATH 695. Introduction to Functional Analysis I
3 Credits
Banach spaces. The three basic principles: uniform boundedness principle, closed graph/open mapping theorems, Hahn-Banach theorem.
Prerequisites: MATH 541 and MATH 594, or consent of instructor.

MATH 696. Introduction to Functional Analysis II
3 Credits
Continuation of MATH 695. Topics selected from topological vector spaces, Hilbert space, spectral theory, Banach algebras, and distribution theory.
Prerequisite: MATH 695 or consent of instructor.

MATH 698. Selected Topics
1-15 Credits
Selected topics.

MATH 700. Doctoral Dissertation
1-15 Credits
Dissertation.

Name:
Office Location:
Phone: (575) 646-3901
Website: http://math.nmsu.edu/

Applied Mathematics - Supplemental Major

The program consists of 24 credits in the designated list of courses. To earn a supplementary major in applied mathematics a student must earn 15 credits from Categories I.A and I.B of which at least 9 credits must be from Category I.B. A student must also earn 9 credits from the Category II list of related disciplines. The courses in Category II may be taken from any combination of areas. A student may not earn a bachelor's degree in mathematics and also a supplementary major in applied mathematics.

Requirements
Category I.A.

Select two from the following:

- MATH 377 Introduction to Numerical Methods
- MATH 391 Vector Analysis
- MATH 392 Introduction to Ordinary Differential Equations
- MATH 421 Financial Mathematics I
- STAT 371 Statistics for Engineers and Scientists I

Category I.B.

Select three from the following:

- MATH 331 Introduction to Modern Algebra
- MATH 332 Introduction to Analysis
- MATH 422 Financial Mathematics II or MATH 423 Numerical Optimization and Applications to Financial Mathematics
- MATH 430 Combinatorial Mathematics
- MATH 451 Introduction to Differential Geometry
- MATH 453 Introduction to Topology
- MATH 454 Mathematical Logic
- MATH 471 Complex Variables
- MATH 472 Fourier Series and Boundary Value Problems
- MATH 473 Calculus of Variations and Optimal Control
- MATH 480 Matrix Theory and Applied Linear Algebra
- STAT 470 Probability: Theory and Applications
- STAT 480 Statistics: Theory and Applications

Category II

Select 9 credits from the following Related disciplines:

- C E 315 Structural Analysis
- C E 314 Fluid Mechanics and Hydraulics
- C E 356 Fundamentals of Environmental Engineering
- C E 382 Hydraulic and Hydrologic Engineering
- C S 372 Data Structures and Algorithms
- C S 476 Computer Graphics I
- C S 486 Bioinformatics
- C S 491 Parallel Programming
- CHME 305 Transport Operations I: Fluid Flow
- CHME 306 Transport Operations II: Heat and Mass Transfer
- CHME 412 Process Dynamics and Control
- CHME 441 Chemical Kinetics and Reactor Engineering
- CHEM 433 Physical Chemistry I
- CHEM 434 Physical Chemistry II
- CHEM 456 Inorganic Structure and Bonding
- ECON 405 Introductory Econometrics
- ECON 457 Mathematical Economics
- ECON 498 Independent Study (with approval)
- E E 312 Signals and Systems I
- E E 314 Signals and Systems II
- E E 395 Introduction to Digital Signal Processing
- E E 473 Introduction to Optics
### Mathematics - Bachelor of Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>E E 475</td>
<td>Automatic Control Systems</td>
</tr>
<tr>
<td>E E 476</td>
<td>Computer Control Systems</td>
</tr>
<tr>
<td>E E 496</td>
<td>Introduction to Communication Systems</td>
</tr>
<tr>
<td>E E 497</td>
<td>Digital Communication Systems I</td>
</tr>
<tr>
<td>FIN 355</td>
<td>Investments</td>
</tr>
<tr>
<td>FIN 385</td>
<td>Analysis of Financial Markets and Institutions</td>
</tr>
<tr>
<td>FIN 406</td>
<td>Theory of Financial Decisions</td>
</tr>
<tr>
<td>FIN 435</td>
<td>Investment Analysis</td>
</tr>
<tr>
<td>I E 365</td>
<td>Quality Control</td>
</tr>
<tr>
<td>I E 413</td>
<td>Engineering Operations Research I</td>
</tr>
<tr>
<td>I E 423</td>
<td>Engineering Operations Research II</td>
</tr>
<tr>
<td>I E 460</td>
<td>Evaluation of Engineering Data</td>
</tr>
<tr>
<td>I E 466</td>
<td>Reliability</td>
</tr>
<tr>
<td>M E 332</td>
<td>Vibrations</td>
</tr>
<tr>
<td>M E 333</td>
<td>Intermediate Dynamics</td>
</tr>
<tr>
<td>M E 338</td>
<td>Fluid Mechanics</td>
</tr>
<tr>
<td>M E 341</td>
<td>Heat Transfer</td>
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<tr>
<td>PHYS 395</td>
<td>Intermediate Mathematical Methods of Physics</td>
</tr>
<tr>
<td>PHYS 451</td>
<td>Intermediate Mechanics I</td>
</tr>
<tr>
<td>PHYS 454</td>
<td>Intermediate Modern Physics I</td>
</tr>
<tr>
<td>PHYS 455</td>
<td>Intermediate Modern Physics II</td>
</tr>
<tr>
<td>PHYS 461</td>
<td>Intermediate Electricity and Magnetism I</td>
</tr>
<tr>
<td>PHYS 462</td>
<td>Intermediate Electricity and Magnetism II</td>
</tr>
<tr>
<td>PHYS 473</td>
<td>Introduction to Optics</td>
</tr>
<tr>
<td>PHYS 476</td>
<td>Computational Physics</td>
</tr>
<tr>
<td>PHYS 480</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>PHYS 485</td>
<td>Independent Study</td>
</tr>
<tr>
<td>PHYS 495</td>
<td>Mathematical Methods of Physics I</td>
</tr>
<tr>
<td>PHYS 497</td>
<td>Introduction to Space Plasma Physics</td>
</tr>
<tr>
<td>SUR 351</td>
<td>Introductory Spatial Data Adjustment I</td>
</tr>
<tr>
<td>SUR 451</td>
<td>Advanced Survey Measurements, Analysis, and Adjustments</td>
</tr>
<tr>
<td>SUR 461</td>
<td>GNSS Positioning</td>
</tr>
<tr>
<td>C S 510</td>
<td>Automata, Languages, Computability ¹</td>
</tr>
<tr>
<td>C S 570</td>
<td>Analysis of Algorithms ¹</td>
</tr>
</tbody>
</table>

**Total Credits:** 24

¹ Student must be eligible to take 500-level courses.

### Notes

Some students may be able to bypass one or more courses in the calculus sequence MATH 191-192-291. The calculus sequence, Introduction to Higher Mathematics, and Linear Algebra provide knowledge that is basic to further work, and students are advised to complete them or their equivalent as early as possible.

Students planning to enter a graduate program in Mathematics should select the General Emphasis. In any case, such students are strongly advised to take both MATH 331 Introduction to Modern Algebra and MATH 332 Introduction to Analysis, since these courses are required by most programs, and should take as many as possible of the following courses:

- **MATH 481** Advanced Linear Algebra 3
- **MATH 491** Introduction to Real Analysis I 3
- **MATH 492** Introduction to Real Analysis II 3

Students planning to do graduate work in Mathematics are encouraged to take French or German to meet the requirement of a second language.

### Concentration: Actuarial Science and Insurance

The concentration in Actuarial Science and Insurance draws on courses from mathematics and business to prepare students for a mathematical career in insurance. The coursework in this emphasis focuses on the analysis of risk and its applications to insurance finance. Students fulfilling the requirements for the Actuarial Science and Insurance Concentration earn a minor in Risk Management and Insurance.

#### Departmental Requirements

- **MATH 331** or **MATH 332** Introduction to Modern Algebra 3
- **STAT 371** Statistics for Engineers and Scientists I 3
- **STAT 470** Probability: Theory and Applications 3
- **STAT 480** Statistics: Theory and Applications 3

#### Departmental Electives

Select at least an additional 9 credits of approved upper-division courses prefixed MATH or STAT, excluding the following:

- **MATH 300** Readings
- **MATH 313** Fundamentals of Algebra and Geometry I
- **MATH 316** Calculus with Hands-on Applications
- **MATH 400** Undergraduate Research
- **MATH 459** Survey of Geometry
- **STAT 400** Undergraduate Research

#### Nondepartmental Requirements

- **ACCT 221** Financial Accounting 3
- **ACCT 222** Management Accounting 3
- **BLAW 316** or **BLAW 385V** Legal Environment of Business, Consumers and the Law 3
- **E E 161** Computer Aided Problem Solving 4
- **ECON 251G** Principles of Macroeconomics 3
- **ECON 252G** Principles of Microeconomics 3
- **FIN 322** Principles of Insurance 3
- **FIN 341** Financial Analysis and Markets 3
Select one from the following: 3
FIN 326 Business Risk Management
FIN 323 Life/Health/Employee Benefits
FIN 324 Property and Liability Insurance

Insurance Electives
Select 6 credits from the following: 6
FIN 303V Personal Financial Planning and Investing in a Global Economy
or FIN 421 Personal Financial Planning for Professionals
FIN 323 Life/Health/Employee Benefits
FIN 324 Property and Liability Insurance
FIN 391 Finance Internship and Cooperative Education I

Total Credits 55

1 MATH 401 Special Topics must be approved by the department for credit towards the major. At least 6 of the MATH and STAT credit hours must be numbered higher than 400.

Concentration: Applied Mathematics

The Applied Mathematics concentration is intended to prepare students planning a mathematically oriented career upon graduation. The coursework in this concentration provides a foundation in mathematics important in many scientific and engineering applications.

Departmental Requirements
MATH 377 Introduction to Numerical Methods 3
MATH 392 Introduction to Ordinary Differential Equations 3
MATH 471 Complex Variables 3
MATH 472 Fourier Series and Boundary Value Problems 3
STAT 371 Statistics for Engineers and Scientists I 3
STAT 470 Probability: Theory and Applications 3

Departmental Electives
Select at least 6 credits of approved additional upper-division courses prefixed MATH or STAT, excluding the following: 6
MATH 300 Readings
MATH 313 Fundamentals of Algebra and Geometry I
MATH 400 Undergraduate Research
MATH 459 Survey of Geometry
STAT 400 Undergraduate Research

Nondepartmental Requirements
Select a minimum of 12 credit hours of electives to form a coherent cluster in an applied area from the following: 12
Examples of acceptable clusters:

Signals
E E 161 Computer Aided Problem Solving
Select 9 credits from the following:
E E 280 DC and AC Circuits
E E 312 Signals and Systems I
E E 395 Introduction to Digital Signal Processing
E E 496 Introduction to Communication Systems

Structures
C S 172 Computer Science I

or E E 161 Computer Aided Problem Solving
Select 9 credits from the following:
PHYS 215G Engineering Physics I
C E 233 Mechanics-Statics
C E 301 Mechanics of Materials
C E 315 Structural Analysis
C E 365 Intermediate Structural Analysis

Operations Research
E E 161 Computer Aided Problem Solving
Select three from the following:
I E 311 Engineering Data Analysis
I E 365 Quality Control
I E 413 Engineering Operations Research I
I E 423 Engineering Operations Research II
I E 460 Evaluation of Engineering Data

Algorithm Theory
C S 172 Computer Science I
C S 272 Introduction to Data Structures
C S 370 Compilers and Automata Theory
C S 372 Data Structures and Algorithms

Bioinformatics
BIOL 211G Cellular and Organismal Biology
BIOL 211GL Cellular and Organismal Biology Laboratory
C S 486 Bioinformatics
Select 6 credits from the following:
C S 172 Computer Science I
C S 272 Introduction to Data Structures
C S 370 Compilers and Automata Theory
C S 371 Software Development
C S 372 Data Structures and Algorithms

Total Credits 36

2 MATH 401 Special Topics must be approved by the department for credit towards the major. At least 6 of the MATH and STAT credit hours must be numbered higher than 400.
Students may propose clusters subject to departmental approval. A cluster must contain either C S 172 Computer Science I or E E 161 Computer Aided Problem Solving. A major or minor in any of the following fields (along with C S 172 Computer Science I or E E 161 Computer Aided Problem Solving) will also fulfill the Cluster Electives requirement: Computer Science, Physics, Biology, Chemistry and Biochemistry, Chemical Engineering, Engineering Physics, Electrical and Computer Engineering, Industrial Engineering, Mechanical Engineering, Civil Engineering, Economics and Finance.

Concentrations: General Mathematics

Students seeking a foundation in pure mathematics and flexibility in the curriculum are encouraged to pursue the General Mathematics Concentration. Students choosing this emphasis should work closely with a faculty advisor to select courses appropriate to their interests.

Departmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 331</td>
<td>Introduction to Modern Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 332</td>
<td>Introduction to Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Departmental Electives

Select at least 18 additional upper-division credits of approved courses prefixed MATH or STAT, excluding: 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 300</td>
<td>Readings</td>
<td></td>
</tr>
<tr>
<td>MATH 313</td>
<td>Fundamentals of Algebra and Geometry I</td>
<td></td>
</tr>
<tr>
<td>MATH 316</td>
<td>Calculus with Hands-on Applications</td>
<td></td>
</tr>
<tr>
<td>MATH 400</td>
<td>Undergraduate Research</td>
<td></td>
</tr>
<tr>
<td>MATH 459</td>
<td>Survey of Geometry</td>
<td></td>
</tr>
<tr>
<td>STAT 400</td>
<td>Undergraduate Research</td>
<td></td>
</tr>
</tbody>
</table>

Nondepartmental Requirements for the Major 5

Second Language Requirement at the 212/214 level or above

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C S 172</td>
<td>Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>C S 272</td>
<td>Introduction to Data Structures</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits 32

4. recommend a discontinuation of the student's graduate program in mathematics.

A grade of C- or better must be earned.

5. Majors in the General Emphasis must pass the second language requirement at the 212/214 level or above, as described in the College Degree Requirements (p. 176) for the College of Arts and Sciences.

Note: It is strongly recommended that mathematics majors in the General Mathematics Concentration consider a minor or second major in an area that uses mathematics, such as physics or computer science. All programs should be planned with the guidance of a departmental advisor. More information is available at www.math.nmsu.edu. (https://www.math.nmsu.edu)

Mathematics - Doctor of Philosophy

Candidates for the Ph.D. degree in the Department of Mathematical Sciences must pass

- a qualifying examination,
- three comprehensive written examinations,
- a comprehensive oral examination,
- a series of courses, and
- a final oral doctoral thesis examination.

These are briefly described below. For more information, see the Graduate School requirements in this catalog, and the Mathematics Graduate Student handbook at www.math.nmsu.edu (https://www.math.nmsu.edu).

Qualifying Examination

Every student admitted to the Ph.D. program must complete the Ph.D. oral qualifying examination. Its purpose is to determine the areas in which the student shows strength or weakness, as well as the ability to assimilate subject matter presented at the graduate level. Students who complete their mathematics master's degree at NMSU may request, at the time of applying for their master's oral final examination, that the Master's examination also fulfill the Ph.D. qualifying examination requirement. In all other cases, towards the end of the student's first semester in the Ph.D. program, the student and his or her advisor will convene an oral examination with three examiners, the examiners being the advisor and some of the student's current or past instructors. As a result of the Qualifying examination, the department will take one of the following actions:

1. admit the student to further work toward the Ph.D.;
2. recommend that the student's program be limited to a Master's degree;
3. recommend a reevaluation of the student's progress after the lapse of one semester; or
4. recommend a discontinuation of the student's graduate program in mathematics.

Written Comprehensive Examinations

Candidates for the Ph.D. degree must pass written comprehensive examinations in three of the seven areas of algebra, complex analysis, differential equations, logic and foundations, real analysis, statistics and topology. To ensure adequate breadth, a combination of three comprehensive examinations must include real analysis, and at least one of algebra and topology.

The seven examinations are based on the following comprehensive examination sequence courses:

**Algebra**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 525</td>
<td>Advanced Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 581</td>
<td>Algebra I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 582</td>
<td>Algebra II</td>
<td>3</td>
</tr>
</tbody>
</table>

**Complex Analysis**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 517</td>
<td>Complex Variables</td>
<td>3</td>
</tr>
<tr>
<td>MATH 591</td>
<td>Complex Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 592</td>
<td>Complex Analysis II</td>
<td>3</td>
</tr>
</tbody>
</table>

**Differential Equations**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 518</td>
<td>Fourier Series and Boundary Value Problems</td>
<td>3</td>
</tr>
<tr>
<td>MATH 531</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 532</td>
<td>Partial Differential Equations</td>
<td>3</td>
</tr>
</tbody>
</table>

**Logic and Foundations**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 504</td>
<td>Mathematical Logic</td>
<td>3</td>
</tr>
<tr>
<td>MATH 557</td>
<td>Axiomatic Set Theory</td>
<td>3</td>
</tr>
</tbody>
</table>
Full time students should complete the comprehensive written exams in the first two years. Those who have not made substantial progress towards completion of their written exams at the start of the fifth semester may be removed from the program. Students who have not completed the written exams by the start of the sixth semester will normally have any departmental funding revoked.

Exams are offered every August and January. A student must register to take exams in the semester prior to taking the exams. A student has three consecutive examination periods to complete the written comprehensive exam requirements (Example: if s/he starts in August, s/he has the August, January and August examination periods to complete the exams). This does not extend the time limit mentioned above. Students will normally not be given more than two attempts at any one exam.

Course Requirements

Before graduation, a student must pass a total of four comprehensive exam sequences, but needs to take the comprehensive examinations in only three of them. In addition, a student must pass four more (one-semester) MATH/STAT courses from the seven comprehensive exam sequences listed above.

A student may pass any of the four comprehensive examination sequences before enrolling as a Ph.D. student, but the four additional courses have to be passed after enrolling as a Ph.D. student.

The following courses will not count towards the course requirements:

Any course below MATH 501

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 511</td>
<td>Fundamentals of Elementary</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mathematics I</td>
<td></td>
</tr>
<tr>
<td>MATH 512</td>
<td>Fundamentals of Elementary</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mathematics II</td>
<td></td>
</tr>
<tr>
<td>MATH 513</td>
<td>Fundamentals of Algebra and Geometry I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 516</td>
<td>Calculus with Hands-on Application</td>
<td>3</td>
</tr>
<tr>
<td>MATH 563</td>
<td>Algebra with Connections</td>
<td>3</td>
</tr>
<tr>
<td>MATH 564</td>
<td>From Number to Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 566</td>
<td>Data Analysis with Applications</td>
<td>3</td>
</tr>
<tr>
<td>MATH 567</td>
<td>From Measurement to Geometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 568</td>
<td>Using Number Throughout the Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>MATH 569</td>
<td>Geometry with Connections</td>
<td>3</td>
</tr>
<tr>
<td>MATH/STAT 540</td>
<td>Directed Reading</td>
<td>1-6</td>
</tr>
<tr>
<td>MATH 599</td>
<td>Master's Thesis</td>
<td>15</td>
</tr>
</tbody>
</table>

Minimum Requirements for the Master's Degree

1. In fulfillment of the Graduate School requirement of a minimum of 30 semester credits of course work, the student must take at least 24 credits of mathematics or statistics, numbered above 500.
2. At most 6 credits of individual study courses such as MATH 540 Directed Reading may be used to fulfill the course requirement.
3. MATH 511 Fundamentals of Elementary Mathematics I through MATH 569 Geometry with Connections may not be used to fulfill any of these requirements.
4. The student's program of study must be approved by the departmental Graduate Studies Committee.
5. The student must successfully complete a final master's examination.

Minimum Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 525</td>
<td>Advanced Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 527</td>
<td>Introduction to Real Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 528</td>
<td>Introduction to Real Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 581</td>
<td>Algebra I</td>
<td>1</td>
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<tr>
<td>MATH 582</td>
<td>Algebra II</td>
<td></td>
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<tr>
<td>MATH 591</td>
<td>Complex Analysis I</td>
<td></td>
</tr>
<tr>
<td>MATH 592</td>
<td>Complex Analysis II</td>
<td></td>
</tr>
<tr>
<td>MATH 531</td>
<td>Ordinary Differential Equations</td>
<td></td>
</tr>
<tr>
<td>MATH 532</td>
<td>Partial Differential Equations</td>
<td></td>
</tr>
<tr>
<td>MATH 557</td>
<td>Axiomatic Set Theory</td>
<td></td>
</tr>
<tr>
<td>MATH 585</td>
<td>Universal Algebra</td>
<td></td>
</tr>
<tr>
<td>STAT 562</td>
<td>Foundations of Probability</td>
<td></td>
</tr>
<tr>
<td>STAT 571</td>
<td>Continuous Multivariate Analysis</td>
<td></td>
</tr>
<tr>
<td>MATH 593</td>
<td>Measure and Integration</td>
<td></td>
</tr>
</tbody>
</table>

Students and advisors are encouraged to consider further courses beyond this minimum.

Oral Comprehensive Exam

The student must take this exam at the end of the semester after completing the written comprehensive exams. The student should present a proposed direction for thesis work.

Final Oral Exam

This should be an exam over the student's thesis and administered by the same committee of the oral comprehensive exam.

Mathematics - Master of Science

The Master's degree is designed to increase one's knowledge and understanding of mathematics beyond the Bachelor's degree level. It also prepares a student for future graduate work.

A candidate for a master's degree may select up to two minors in addition to the major. A minimum of 8 credits of graduate work is necessary for a minor.
The student must complete, transfer or challenge these courses.

The Master's Final Examination

The Master's final examination is an oral examination administered by the student's committee and covers the student's coursework. The student's committee consists of at least three departmental members and a Graduate faculty member from another department who serves as the Dean's representative. If the student has a minor area of study, then a member must come from the minor department. The examination is restricted to course work presented in the student's program of studies. When a master's thesis has been written, the master's final exam will be in part an oral defense of the thesis and in part a general examination of the candidate's course work. The oral exam must be completed at least 10 days prior to the end of the semester in which the candidate wishes to receive the degree.

Mathematics - Undergraduate Minor

A student must pass 18 or more credit hours in MATH and STAT courses, with at least 9 of the credits in upper division courses and three of those 9 credits in courses numbered above 400.

Requirements

Select 18 credits or more in MATH and STAT courses, with at least 9 of the credits in upper division courses and three of those 9 credits in courses numbered above 400.

The following courses are excluded from the minor:

Courses numbered below MATH 190

- MATH 200 Directed Study
- MATH 210G Mathematics Appreciation
- MATH 300 Readings
- MATH 313 Fundamentals of Algebra and Geometry I
- MATH 316 Calculus with Hands-on Applications
- MATH 400 Undergraduate Research
- MATH 459 Survey of Geometry
- MATH 498 Directed Reading
- STAT 400 Undergraduate Research

Select one from the following (at most):

- STAT 251G Statistics for Business and the Behavioral Sciences
- STAT 271G Statistics for Psychological Sciences
- STAT 371 Statistics for Engineers and Scientists I

Total Credits 18

1. MATH 401 Special Topics must be approved by the department for credit toward the minor. Any course taught outside the Department of Mathematical Sciences but cross-listed with a MATH or STAT course, must also be approved by the department for credit toward the minor. A student may not earn a bachelor's degree in mathematics or a supplementary major in applied mathematics and also earn a minor in mathematics.

Military Science

Undergraduate Program Information

The Military Science program leads to a commission as an officer in the Army Reserve, National Guard or Active Duty Army. The program consists of four parts:

1. the student's academic major,
2. nondepartmental courses of value to the military service,
3. courses in military science and
4. a six-week Leader Development and Assessment course.

The department offers a four-year program divided into two parts: the basic course (two years) and the advanced course (two years). Selected students may qualify for the two-year program with prior military service or successful completion of a six-week summer Leaders' Training Course. Financial assistance and scholarships are available for qualified individuals. Students should contact the Department of Military Science to obtain additional information.

Requirements

Courses should be taken in sequence, normally one per semester. The student's Military Science advisor will recommend course sequence. Military Science students must sign up for and attend courses plus laboratories. Departmental requirements may not be taken S/U.

Basic Course Freshman

- M SC 110 Introduction to Military Science 2
- M SC 111 Introduction to Leadership 2

Basic Course Sophomore

- M SC 210 Self/Team Development 3
- M SC 211 Leadership in Action and Team Building 3
- M SC 225 Directed Studies 1-3

Advanced Course Junior

- M SC 310 Leading Small Organizations I 3
- M SC 310 L Advanced Course Leadership Laboratories 1
- M SC 320 Leading Small Organizations II 3
- M SC 320 L Leading Small Organization Lab 1
- M SC 325 Advanced Directed Studies 1-3
- M SC 350 Leadership Internship II 1-6

Advanced Course Senior

- M SC 401 Leadership Challenges and Goal Setting 3
- M SC 401 L Advanced Course Leadership Laboratories 1
- M SC 402 Transition to Lieutenant 3
- M SC 402 L Transition to Lieutenant Lab 1
- M SC 425 Practicum 1-4
- M SC 465 Leading Small Organization - Graduate Level 3

M SC 465 L Advanced Course Leadership Lab - Graduate Level 1
- M SC 501 Leadership Challenges and Goal Setting 3

Nondepartmental Requirements
Minors for the Department

Military Science - Undergraduate Minor (p. 366)

LTC Blanca E. Reyes, Department Head

Assistant Professors and Staff  MAJ George W. Childs, MSG Ray L. Miller, SFC Scott Thrasher, SGT Brandon Cadena, CPT Michael Rivera, Mr. John Martin, Lisa I. Anthony, Patti Alarcon

M SC 110. Introduction to Military Science
2 Credits (2+1P)
Concepts of leadership, including basic drill, fitness sessions, rappelling, first aid, map reading, and basic marksmanship. Optional physical fitness sessions and weekend exercises.

M SC 111. Introduction to Leadership
2 Credits (2+1P)
Learning and application of leadership, as well as relating organizational ethics to effective leadership using communication skills to improve individual performance. Optional physical fitness sessions and weekend exercises.

M SC 210. Self/Team Development
3 Credits (3+1P)
Learning and application of leadership skills to building effective teams, using oral/written skills, planning, and coordination of group efforts. Include advanced first aid, land navigation, and basic military tactics. Leadership Lab and three physical fitness sessions per week required.

M SC 211. Leadership in Action and Team Building
3 Credits (3+1P)
Individual and team aspects of military tactics in small unit operations. Use of radio, movement, planning for safety/security and pre-execution checks. Continued leadership development and techniques for training others. Leadership Lab and three physical fitness sessions per week required.

M SC 225. Directed Studies
1-3 Credits
Individual directed studies under supervision of designated faculty. May be repeated for a maximum of 12 credits. No S/U option.
Prerequisite: GPA 2.5 or better.

M SC 310. Leading Small Organizations I
3 Credits
Practical opportunities to lead small groups in situations of graduated complexity. Use of small unit defensive tactics and opportunities to conduct training for lower division students. Leadership Lab M SC 310L, three physical fitness sessions per week, and weekend exercises required.
Prerequisite: must meet Basic Course of Military Science requirements. Corequisite: M SC 310L.

M SC 310 L. Advanced Course Leadership Laboratories
1 Credit
Planning, coordination, execution and evaluation of training and activities with basic course students and ROTC program. Students develop and refine leadership skills in positions of responsibility. Open only to students taking M SC 310.
Corequisite: M SC 310.

M SC 320. Leading Small Organizations II
3 Credits
Delegation and supervision based on leadership case studies that require planning and adaptation to the unexpected in organizations under stress. Use of ethical decision making to enhance team performance. Leadership Lab M SC 310L, three physical fitness sessions per week, and weekend exercises required.
Prerequisite: M SC 310 or consent of instructor.
Corequisite: M SC 320L.

M SC 320 L. Leading Small Organization Lab
1 Credit
Directed individual study of advanced subjects. May be repeated for a maximum of 12 credits. No S/U option.
Prerequisite: GPA 2.5 or better.

M SC 325. Advanced Directed Studies
1-3 Credits
Directed individual study of advanced subjects. May be repeated for a maximum of 12 credits. No S/U option.
Prerequisite: GPA 2.5 or better.

M SC 320 L. Leading Small Organization Lab
1 Credit
Directed individual study of advanced subjects. May be repeated for a maximum of 12 credits. No S/U option.
Prerequisite: GPA 2.5 or better.

M SC 350. Leadership Internship II
1-6 Credits (1-6)
Six-week paid internship conducted at an Army installation. Leadership-course environment is highly structured and demanding. Stresses leadership at small-unit levels under varying conditions. Evaluations during this required internship weigh heavily in type of commission and branch assignment offered.
Prerequisite(s): M SC 310, M SC 310L, M SC 320, and M SC 320L.

M SC 401. Leadership Challenges and Goal Setting
3 Credits
Planning, conducting and evaluating activities of the ROTC cadet organization, including the articulation of goals, and actuation of plans to attain them. Assessment of organizational skills and development of strategies to improve group cohesion through learning and application of Army policies and programs. M SC 401L, three physical fitness sessions per week, and weekend exercises required.
Prerequisite: M SC 320 or consent of instructor.
Corequisite: M SC 401L.

M SC 401 L. Advanced Course Leadership Laboratories
1 Credit
Different roles assigned for students at different levels in the program. Practice and refinement of leadership skills. Planning coordination, execution and evaluation of training and activities with basic course students and ROTC program. Open only to students taking M SC 401.
Corequisite: M SC 401.
M SC 402. Transition to Lieutenant
3 Credits
Continues methodology from M SC 401. Identification and resolution of ethical dilemmas along with counseling and motivation techniques. Examination of tradition and law as these issues relate to the Army officer and prepare the student to be a successful Army lieutenant. Leadership Lab M SC 402L, three physical fitness sessions per week and weekend exercises required.
Prerequisite: M SC 401 or consent of instructor.
Corequisite: M SC 402L.

M SC 402 L. Transition to Lieutenant Lab
1 Credit
Different roles assigned for students at different levels in the program. Practice and refinement of leadership skills. Planning, coordination, execution, and evaluation of training and activities with basic course students and ROTC program. Open only to students taking M SC 402.
Corequisite: M SC 402.

M SC 425. Practicum
1-4 Credits
Independent projects conducted under the direction of designated faculty, and concerned with analysis of selected leadership or management problems. May be repeated for a maximum of 16 credits. No S/U option.

M SC 465. Leading Small Organization - Graduate Level
3 Credits
Practical opportunities to lead small groups in situations of graduated complexity. Use of small unit defensive tactics and opportunities to conduct training for graduate students. Leader Lab M SC 465L, three physical fitness sessions per week and weekend exercises required. Research paper required. No S/U option.
Prerequisite: consent of PMS.
Corequisite: M SC 465L.

M SC 465 L. Advanced Course Leadership Lab - Graduate Level
1 Credit
Planning, coordination, execution and evaluation of training and activities with basic course students and ROTC program. Students develop and refine leadership skills in positions of responsibility. Open only to students taking M SC 465.
Prerequisite: consent of PMS.
Corequisite: M SC 465.

M SC 501. Leadership Challenges and Goal Setting
3 Credits (3+1P)
Planning, conducting, and evaluating activities of ROTC cadet organization. Articulation of goals and plans to attain them. Assessment of organizational skills and development of strategies to improve group cohesion. Leadership lab, three physical fitness sessions per week, weekend exercise, and research paper required. Consent of instructor required.
Prerequisite(s): Consent of PMS.
Corequisite(s): M SC 401L.

M SC 502. Transition to Lieutenant
3 Credits (3+1P)
Continuation of M SC 501. Identification and resolution of ethical dilemmas. Counseling and motivation techniques. Examination of tradition and law for officers. Leadership lab, three physical fitness sessions per week, weekend exercises, and research paper required. Consent of instructor required.
Prerequisite(s): Consent of PMS.
Corequisite(s): M SC 402L.

Name:
Office Location:
Phone: (575) 646-4030
Website: http://www.nmsu.edu/~armyrotc/

Military Science - Undergraduate Minor

The minor in Military Science is administered by the Department of Military Science (Army ROTC) in the College of Arts and Sciences. To obtain a minor in Military Science a student must complete a total of 19 credits, all of which must be upper division. A grade of C- or better must be obtained for each course. The only credits in which a grade of S will be accepted is M SC 350 Leadership Internship II. Students should contact the Department of Military Science to obtain additional information.

Molecular Biology
Graduate Program Information

Students of the molecular life sciences seek to reduce complex biological processes to a set of understandable molecular or chemical structure and function relationships. Integration of this knowledge into the context of complex living tissues interacting with the environment is the ultimate goal. This requires that the expertise from many diverse traditional disciplines be directed along converging experimental lines. The Ph.D. program in molecular biology is designed to facilitate an interdisciplinary approach to graduate research, utilizing both traditional techniques and the latest advances in biotechnology, including the extraordinary power of recombinant DNA methodology. Participants in this program will take core courses in biochemistry, molecular biology and cell biology. Subsequent course work will be tailored for the individual student, depending upon his or her research emphasis. Participation in regular seminar programs will be expected to provide students with the widest possible scientific background. Financial aid, in the form of a limited number of MB teaching and research assistantships, is available on a competitive basis. Research Assistantships may also be available from individual faculty within the Molecular Biology (MB) program. Only the most competitive students are admitted with assistantship support.

The MB program offers curricula leading to the MS and Ph.D. degrees in the areas of biochemistry, molecular genetics, molecular biology, cell biology, bioinformatics, and microbiology. Admission to the MB Program without deficiency is based on an undergraduate program essentially equivalent to that pursued by an undergraduate major in chemistry, biology, agronomy, horticulture, biochemistry, or microbiology at this university. An entering student is required to complete the Graduate Record Examination (General Aptitude). Undergraduate deficiency courses must be passed with a minimum grade of B.

Applicants are strongly encouraged to contact at least three individual program faculty before applying to identify a prospective advisor and laboratory in which to pursue graduate research. Previous course records and GPA standings (typically minimum of 3.3/4.0), GRE scores (typically minimum of 300 combined verbal and quantitative), TOEFL scores of foreign applicants (typically minimum of 550 on the paper-based or 213 on the computer-based), a letter of interest from the applicant that identified faculty laboratories of interest, and three letters of reference
regarding research performance or potential are weighted heavily during the selection process.

Students with a BS degree in one of the disciplines listed above can expect to earn the MS degree in about 30 credits, including at least 6 credits of thesis research. The Ph.D. degree can be earned in about 30 to 40 credits of formal course work, plus additional thesis research credits, for a minimum total of 75 credits beyond the BS. Because research is central in both the MS and Ph.D. curricula, early selection of a research advisor is required. Ph.D. degree candidates will successfully complete a written and oral qualifying examination based on their proposed research and the subject matter in the core courses (below) at the end of the first year of study. Also at this time, the master's or doctoral committee is organized to assist in planning a program appropriate to the background and goals of the student. Ph.D. candidates will subsequently complete a comprehensive written examination and oral examination approximately at the end of the second year of study. A final, formal presentation and oral defense of the original research documented in the MS or Ph.D. thesis completes the degree requirements.

**Degrees for the Department**

Molecular Biology - Master of Science (p. 369)

Molecular Biology - Doctor of Philosophy (p. 368)

**Minors for the Department**

Bioinformatics (with Computer Science) - Graduate Minor (p. 368)

Molecular Biology - Graduate Minor (p. 369)

Molecular Biology - Undergraduate Minor (p. 369)

A. Ashley, Ph.D. (Colorado State University) — Department of Chemistry and Biochemistry — cellular response to DNA replication stress and damage; maintenance of genomic integrity in eukaryotes; R. Ashley, Ph.D. (Colorado State University) – Department of Animal and Range Sciences – progesterone's actions mediated by membrane receptors, and chemokines' effects in early pregnancy and breast cancer; R. Creamer, Ph.D. (University of California-Davis) — Department of Entomology Plant and Weed Science — plant virology, fungal endophytes; D. Cowley, Ph.D. (University of Wisconsin-Madison) — Department of Fish, Wildlife and Conservation Ecology — ecological and conservation genetics; J. Curtiss, Ph.D. (University of Colorado-Boulder) — Department of Biology — molecular genetics of eye development; K. A. Hanley, Ph.D. (University of California San Diego) — Department of Biology — emerging vector-borne viruses; I. Hansen, Ph.D. (University of Wurzburg, Germany) — Department of Biology — molecular vector biology; S. Hanson (Wisconsin) — Department of Entomology Plant and Weed Science — viral plant pathogens; J. Hernandez Gifford, Ph.D. (Washington State University) — Department of Animal and Range Sciences — reproductive physiology; O. Holguin, Ph.D. (New Mexico State University) — Department of Plant and Environmental Sciences — biochemistry including metabolomics and proteomics with a focus on chemical analysis technique; J. Houston, Ph.D. (Texas A&M University) — Department of Chemical & Materials Engineering — biomedical engineering, flow cytometry, fluorescence dynamics, biophotonics, and instrumentation development; K. Houston, Ph.D. (University of Texas) — Department of Chemistry and Biochemistry — hormonal carcinogenesis; E. Indriolo, Ph.D. (Purdue University) — Department of Biology — plant signaling, molecular biology; P. Lodato, Ph.D. (University of Chile) — Department of Biology — understanding post-transcriptional mechanisms regulating the assembly of the T3SS and Shiga toxin production; G. Lopez-Martinez, Ph.D. (Ohio State University) — Department of Biology — short and long-term effects that single and repeated bouts of environmental stress can have on animals; S. Lusetti, Ph.D. (University of Wisconsin-Madison) — Department of Chemistry and Biochemistry — DNA replication, recombination and repair; B. A. Lyons, Ph.D. (Cornell University) — Department of Chemistry and Biochemistry — structure and function relationships in breast and liver cancer cell signaling pathways; P. Mera, Ph.D. (University of Wisconsin-Madison) — Biochemistry/Toxicology — identify genetic modules that control cell proliferation in pathogenic bacteria in order to uncover novel targets for new antibiotics; B. G. Milligan, Ph.D. (University of California-Davis) — Department of Biology — plant evolutionary biology; M. K. Nishiguchi, Ph.D. (University of California-Santa Cruz) — Department of Biology — molecular and ecological basis of speciation, coevolution of symbiotic relationships; N. Pietrasiaik, Ph.D. (University of California-Riverside) — Department of Plant and Environmental Sciences — cyanobacterial phylogenetics, molecular ecology of terrestrial algae, biocrusts; J. Randall, Ph.D. (New Mexico State University) — Department of Plant and Environmental Sciences — plant molecular physiology and plant/microbe interactions; I. Ray, Ph.D. (Wisconsin-Madison) — Department of Plant and Environmental Sciences — plant genetic engineering, primary and secondary metabolism, stress, legumes; C. Sengupta-Gopalan, Ph.D. (Ohio State) — Department of Plant and Environmental Sciences — nitrogen-fixation, plant-bacterial interactions; E. E. Serrano, Ph.D. (Stanford) — Department of Biology — neuroscience, genetics, science and ethics; C. B. Shuster, Ph.D., Program Director (Tufts University) — Department of Biology — regulation of mitosis and cytokinesis, role of the cytoskeleton during early development; G. Smith, Ph.D. (North Carolina State) — Department of Biology — environmental gene probes, microbial biodegradation; A. Summers, Ph.D. (University of Nebraska-Lincoln) — Department of Animal and Range Sciences — identification of strategic supplantation time points and nutrients during gestation to improve progeny growth, development and reproduction; W. Van Voolhies, Ph.D. (Arizona) — Molecular Biology Program — animal and algae physiology; J. Xu, Ph.D. (Second Military Medical University, China) — Department of Biology — functional genomics and population genetics of mosquito malaria interactions; E. Yukl (Oregon Health and Science University) — Department of Chemistry and Biochemistry — structural biology and bioorganic chemistry; J. Zhang, Ph.D. (University of Arkansas) — Department of Plant and Environmental Sciences — cotton genetics, genomics and molecular biology

**MOLB 448. Special Research Problems**

1-3 Credits

Individual investigation, theoretical or experimental, under the supervision of a molecular biology faculty member. May be repeated for a maximum of 6 credits.

**Prerequisite:** consent of instructor.

**MOLB 520. Molecular Cell Biology**

3 Credits

Same as BIOL 520.

**MOLB 542. Biochemistry I**

3 Credits

Same as BCHE 542. B or better required.

**MOLB 545. Molecular and Biochemical Genetics**

3 Credits

Same as BCHE 545 and BIOL 545.

**MOLB 546. Biochemistry II**

3 Credits

Same as BCHE 546.
MOLB 550. Topics in Molecular Biology
1-3 Credits
Selected topics of current interest in field of molecular biology for master's level students.

MOLB 590. Discussions in Molecular Biology
1 Credit
Oral presentations of ongoing research and/or research proposal for the masters thesis. Must be repeated twice for masters and three times for doctoral students. Graded by 2 options: S/U or Letter Grade

MOLB 597. Laboratory Rotations/Research Discussions
1-3 Credits
All entering students are required to take at least one credit, during their first semester, in which they will circulate through at least three different labs working on assigned problems and discussing research programs. May be repeated for a maximum of 4 credits. Graded S/U.

MOLB 598. Special Research Programs
1-3 Credits
Individual investigation, experimental or theoretical, under the supervision of a molecular biology faculty member. Course may be repeated up to a total of 6 credits with committee approval.

MOLB 599. Master's Thesis
15 Credits
Experimental and scholarly research leading to the preparation of a master’s thesis.

MOLB 600. Molecular Biology Research
1-15 Credits
Laboratory research efforts prior to successful completion of doctoral comprehensive exam.

MOLB 650. Advanced Topics in Molecular Biology
1-3 Credits
Discussions and lectures on topics of current interest in molecular biology for doctoral students.

Bioinformatics (with Computer Science) - Graduate Minor

The Bioinformatics minor is jointly offered with the Department of Computer Science and consists of 9 credit hours for Master's students and 12 credit hours for Ph.D. students, including BIOL 550 Special Topics/GENE 452 Applied Bioinformatics, and additional courses selected from those listed at http://research.nmsu.edu/molbio/. The courses selected will depend on whether the student is majoring in a biological or non-biological science and include courses from the graduate Computer Science and Molecular Biology curricula. Please inquire with the Molecular Biology Program office for the most recent requirements for the bioinformatics minor.

Molecular Biology - Doctor of Philosophy

Phase I Core Courses

MOLB 520 Molecular Cell Biology 3
MOLB 542 Biochemistry I 3
MOLB 545 Molecular and Biochemical Genetics 3

Molecular Biology Tier II Courses

Select at least 9 credits from the following:

AGRO 506 Plant Genetics 3
AGRO 516 Molecular Analysis of Complex Traits 3
ANSC 602 Advanced Reproductive Physiology (fo) 3
ANSC 602 L Molecular Techniques in Reproductive Physiology (fo) 3
ANSC 621 Metabolic Functions and Dysfunctions (fe) 3
BCHE 494 Biochemical Genetics Laboratory 3
BCHE 546 Biochemistry II 3
BCHE 645 Nucleic Acid Metabolism 3
BCHE 647 Physical Biochemistry 3
BIOL 451 Physiology of Microorganisms 3
BIOL 470 Developmental Biology 3
BIOL 474 Immunology 3
BIOL 475 Virology 3
BIOL 477 Applied and Environmental Microbiology 3
BIOL 478 Molecular Biology of Microorganisms 3
BIOL 490 Neurobiology 3
BIOL 541 Professional Development Seminar 3
BIOL 550 Special Topics 3
BIOL 577 Advanced Topics in Environmental Microbiology 3
BIOL 590 Advanced Neurobiology 3
BIOL 698 Selected Topics 3
CHEM 516 Physical Organic Chemistry 3
CHEM 517 Synthetic Organic Chemistry 3
EPWS 486 Plant Virology 3
MOLB 546 Biochemistry II 3
MOLB 550 Topics in Molecular Biology 3
MOLB 650 Advanced Topics in Molecular Biology 3
TOX 461 Toxicology I 3

Other Course Requirements

A ST 505 Statistical Inference I (or equivalent course) 4
MOLB 590 Discussions in Molecular Biology 1
MOLB 597 Laboratory Rotations/Research Discussions 1-3
MOLB 599 Master's Thesis 6
PHIL 540 Science and Ethics (or equivalent course) 1-3

Total Credits 31-35
MS candidates must enroll for 6 credits MOLB 599 Master’s Thesis. May register for additional credits to maintain full-time status.

The Molecular Biology program also offers formal minors in molecular biology or bioinformatics.

### Molecular Biology - Graduate Minor

The Molecular Biology Minor consists of 10 credit hours including MOLB 545; either MOLB 520 or MOLB 542; any of the tier II courses; and one MOLB 590 seminar.

#### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOLB 545</td>
<td>Molecular and Biochemical Genetics</td>
<td>3</td>
</tr>
<tr>
<td>MOLB 520</td>
<td>Molecular Cell Biology</td>
<td>3</td>
</tr>
<tr>
<td>or MOLB 542</td>
<td>Biochemistry I</td>
<td></td>
</tr>
<tr>
<td>MOLB 590</td>
<td>Discussions in Molecular Biology</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Molecular Biology Tier II Courses

Select one from the following:

- AGRO 506 Plant Genetics
- AGRO 516 Molecular Analysis of Complex Traits
- ANSC 602 Advanced Reproductive Physiology (fo)
- ANSC 602 L Molecular Techniques in Reproductive Physiology (fo)
- ANSC 621 Metabolic Functions and Dysfunctions (fe)
- BCHE 494 Biochemical Genetics Laboratory
- BCHE 546 Biochemistry II
- BCHE 645 Nucleic Acid Metabolism
- BCHE 647 Physical Biochemistry
- BIOL 451 Physiology of Microorganisms
- BIOL 470 Developmental Biology
- BIOL 474 Immunology
- BIOL 475 Virology
- BIOL 477 Applied and Environmental Microbiology
- BIOL 478 Molecular Biology of Microorganisms
- BIOL 490 Neurobiology
- BIOL 541 Professional Development Seminar
- BIOL 550 Special Topics
- BIOL 577 Advanced Topics in Environmental Microbiology
- BIOL 590 Advanced Neurobiology
- BIOL 698 Selected Topics
- CHEM 516 Physical Organic Chemistry
- CHEM 517 Synthetic Organic Chemistry
- EPWS 486 Plant Virology
- MOLB 546 Biochemistry II
- MOLB 550 Topics in Molecular Biology
- MOLB 650 Advanced Topics in Molecular Biology
- TOX 461 Toxicology I

**Total Credits:** 10

### Molecular Biology - Master of Science

The MB program offers curricula leading to the MS and Ph.D. degrees in the areas of biochemistry, molecular genetics, molecular biology, cell biology, bioinformatics, and microbiology. Admission to the MB Program without deficiency is based on an undergraduate program essentially equivalent to that pursued by an undergraduate major in chemistry, biology, agronomy, horticulture, biochemistry, or microbiology at this university. An entering student is required to complete the Graduate Record Examination (General Aptitude). Undergraduate deficiency courses must be passed with a minimum grade of B.

Applicants are strongly encouraged to contact at least three individual program faculty before applying to identify a prospective advisor and laboratory in which to pursue graduate research. Previous course records and GPA standings (typically minimum of 3.3/4.0), GRE scores (typically minimum of 300 combined verbal and quantitative), TOEFL scores of foreign applicants (typically minimum of 550 on the paper-based or 213 on the computer-based), a letter of interest from the applicant that identified faculty laboratories of interest, and three letters of reference regarding research performance or potential are weighted heavily during the selection process.

Students with a BS degree in one of the disciplines listed above can expect to earn the MS degree in about 30 credits, including at least 6 credits of thesis research. Because research is central in both the MS and Ph.D. curricula, early selection of a research advisor is required. The master’s committee is organized to assist in planning a program appropriate to the background and goals of the student. A final, formal presentation and oral defense of the original research documented in the MS thesis completes the degree requirements.

MS candidates must enroll in MOLB 599 Master’s Thesis for 6 credits. May register for additional credits to maintain full-time status.

### Molecular Biology - UndergraduateMinor

**Undergraduate Minor in Molecular Biology:**

The Molecular Biology Program offers opportunities for students to gain theoretical training and hands-on experience in the methods of molecular biology, cellular biology, and/or bioinformatics. A formal undergraduate minor in Molecular Biology is offered and is described below; a grade of C or better is required to certify the courses. A minor in Bioinformatics is currently under development; for planning purposes, please refer to the program office for the most recent drafts of the Bioinformatics minor requirements.

This program consists of a minimum of 18 hours, distributed through five or six areas.

#### Organic Chemistry:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 314</td>
<td>Organic Chemistry II</td>
<td>4-5</td>
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<td>CHEM 315</td>
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<td>CHEM 211</td>
<td>Organic Chemistry</td>
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#### Introductory Genetics:

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<tr>
<td>AGRO 305</td>
<td>Principles of Genetics</td>
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<tr>
<td>ANSC 305</td>
<td>Principles of Genetics</td>
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<tr>
<td>BIOL 305</td>
<td>Principles of Genetics</td>
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</tbody>
</table>
**Music**

**Undergraduate Program Information**

**Mission Statement**

The mission of the Music Department at NMSU is:

1. to prepare students for careers in music education, business and/or performance;
2. to give the student body opportunities to perform, study, create and experience music;
3. to enhance the cultural lives of our constituency by performance of superior music; and
4. to create an artistic environment which fosters the development of personal realizations we believe to be essential to the fabric of a healthy society.

All students are required to meet the State Common Core as well as the College of Arts and Sciences general education requirement (p. 176) as listed in earlier sections of this catalog. Please see a Music Department advisor for a specific list of courses.

**Admission into the Program**

For a student to be officially accepted as a Music major or minor, he/she must do the following:

- perform an audition for a panel of no less than three Music faculty members
  - one of whom must be the director of his/her program area
  - one of whom must be the applied teacher of the student’s principal instrument

- provide recommendation letters from at least two music professionals
- take a Music Theory placement exam

Any student declaring Music as his/her major may be accepted for a one-semester probationary period. During that first semester, the Music faculty will determine if the student has the necessary skills and work ethic to continue as a major. The student’s course work, ensemble participation and applied jury will be the basis for the decision to allow the student to continue or not.

**Departmental Requirements for all Bachelor’s Degrees (Music Core)**

A student must earn a grade of C- or better in all departmental requirements for any degree in the Department of Music. All students wishing to pursue a music degree must audition and take the theory placement exam. Contact the department for current audition requirements.

Students enrolled in this department’s major(s) or minor(s) may count credits in required applied courses toward their degrees beyond the normal maximum of 9 credits allowed in the College of Arts and Sciences. However, if students change major(s) or minor(s) or do not complete the requirements for the minor at the time of graduation, they may only count a maximum of 9 credits of the applied/occupational credits toward graduation.

**Recital Requirements for all Music Degrees**

**Bachelor of Music**
All performance majors are required to give a half recital (30 minutes of music) in the junior year and a full recital (60 minutes of music) in the senior year. Students taking the Music Business option will give a half recital in their major performance area.

**Bachelor of Music Education**
All music education majors will give a half recital (30 minutes of music) in their major performance area.

**Applied Music Requirements for All Music Degrees**

All Music degrees require at least two semesters of applied music study at the 430 level.

All students enrolling in applied music will audition and obtain permission from an applied teacher before enrolling for applied music credit.

Students may obtain further information by contacting the music department.

**Other Music Requirements, Fees and Regulations**

1. A Piano Proficiency Examination is required of all music majors. Each student must enroll in Functional Piano or Applied Piano every semester, until the Proficiency is passed. Detailed requirements may be obtained from the Department of Music office. Students must pass the piano Proficiency Exam before presenting a Senior Recital.
2. Qualitative grade-point average for graduation in music must be 2.0 or higher. All grades in required music courses must be C- or better.
3. A Music Theory Placement Examination is required of all entering freshman and transfer students.
4. An instrument rental fee is charged each semester for students using university instruments. Consult the music department concerning these fees.
Music Ensembles
All students majoring or minoring in Music, must enroll and participate in the ensemble appropriate for their particular degree plan. The appropriate ensemble will be determined by degree requirements in consultation with the student's advisor and ensemble directors. The student must enroll each and every semester he/she is considered full-time until the degree requirements are met, for a minimum of 8 semesters (7 semester for Music Education majors). Any student receiving any kind of financial assistance through the Music Department must enroll each and every semester while he/she is attending NMSU. Music Education Students will not receive Music Scholarship funds during their semester of Student Teaching. For more information, contact the Music Office.

Music Scholarships and Awards
A limited number of performance stipends and other music scholarships are available to any full-time registered student and are awarded through the department. Amounts awarded will reflect excellence and achievement in performance, determined by audition—either in person or by a recording—and references.

For more information on performance stipends and other music scholarships and awards, write to:

Department of Music
PO Box 30001, MSC 3 F
Las Cruces, New Mexico 88003-8001
E-mail: music@nmsu.edu.

Graduate Program Information
The Master of Music degree is offered in the following areas of study: Conducting, Music Education and Performance. Applicants are expected to have an undergraduate degree in music or music education equivalent to that represented by the BM or BME degree from New Mexico State University. The music department does not require the Graduate Record Exam, but does expect each applicant to possess graduate-level language and writing skills. For admission into the Master of Music degree program, all applicants must have an undergraduate GPA of at least 3.0 and submit at least three letters of recommendation from music professionals. An audition, either in person or by recording, is required for entrance into the Performance or Conducting programs. Auditions will be based upon, but not limited to, prescribed repertory.

For acceptance into the Music Education program, the applicant must have completed a Bachelor of Music Education degree comparable to the one offered by NMSU or take the requisite undergraduate courses at NMSU leading to state licensure before enrolling in graduate courses. (Contact the Music Department for details.)

Note: The degree offered is a Master of Music. The student’s official transcript and diploma will only indicate that degree. The area of study (Conducting, Music Education, Performance) will not be included as part of the official degree title.

Recital Requirements for Performance and Conducting
A graduate recital plus an analytical paper are required of all candidates in Performance and Conducting. Students must be enrolled in their applied area during the semester the recital is given. A minimum of 60 minutes of music is required for all Performance recitals. A minimum of three major works for the appropriate ensemble is required for all Conducting recitals. The recital may only be given after at least 6 hours of graduate applied or conducting courses have been successfully completed.

Program of Study and Committee Selection
After admission, each student must successfully complete MUS 471 Graduate Theory Review before subsequent enrollment in other music theory courses. He or she must also successfully complete MUS 477 Graduate Music History Review before subsequent enrollment in other music history courses.

During the first semester of study, a tentative Program of Study is planned, documented and filed by the student in consultation with the advisor in his or her major field. The Program of Study is subject to approval by the Music Department Head and the Graduate Music Committee. The student will also select, in consultation with his or her advisor, an advisory committee consisting of the advisor, and two additional faculty members.

Candidacy
In order to qualify for candidacy the student (except those in the online Music Education program) must meet the Graduate School requirement of 12 credits of graduate work in residence and must show evidence of a satisfactory quality of work in the required courses, demonstrate the desired progress in his or her performance area and, where required, submit a recital program, thesis topic, or project proposal for approval.

Thesis
A thesis is optional in Music Education and is encouraged for students considering completion of a terminal degree. Music Education candidates not writing a thesis must develop and complete an approved project before the oral examination.

Final Examination
All Master of Music candidates must take a final comprehensive oral examination. The final oral examination may not be scheduled until the graduate recital (with analytical paper) is completed or a final draft of the Music Education project or thesis has been approved by the candidate’s advisor.

Fees
Fees, in addition to tuition, will be assessed for all applied hours and recitals. (Consult the Music Department for details).

Degrees for the Department
Music - Bachelor of Music (p. 379)

Music Education - Bachelor of Music Education (p. 382)

Music - Master of Music (p. 381)

Minors for the Department
Music - Undergraduate Minor (p. 381)

Professor, Lon W. Chaffin, Department Head

Professors Borchert, Kaplan, Klein, Romero, Shearer, Associate Professors Bugbee, Daughtrey, Flanery, Joy, Martinez-Rios, Spitzer, Vega-Albela;
MUS 101G. An Introduction to Music
3 Credits
An introduction to music for the non-music major to encourage the enjoyment of listening to and understanding the world’s great music from the past to the present.

MUS 102. Fundamentals of Music
3 Credits
Introduction to music notation, meter and rhythm, scales, intervals, triads, seventh chords, fundamentals of harmonic progression, and aural skills. For students with little or no music theory background. Traditional Grading with RR.

MUS 103. Ear Training I
1 Credit
To develop the ability to accurately hear, identify, sing and notate musical elements including rhythm, melody, intervals and harmony. Traditional Grading with RR. Restricted to Las Cruces campus only.
Prerequisite(s): Passing the Theory Placement exam or making a C or better in MUS 102.

MUS 104. Ear Training II
1 Credit
To develop the ability to accurately hear, identify, sing and notate musical elements including rhythm, melody, intervals and harmony. Restricted to Las Cruces campus only.
Prerequisite(s): Grade of C- or better in MUS 103.

MUS 105. Music Theory I
3 Credits
Introduction to vocabulary and syntax of 4-voice 18th c. chorale music through study and harmonic analysis.
Prerequisite(s): Passing the Theory Placement exam or making a C or better in MUS 102.

MUS 106. Music Theory II
3 Credits
Expansion of vocabulary and syntax of 4-voice 18th c. chorale music through study, harmonic analysis, and part writing.
Prerequisite(s): Grade of C or better in MUS 105.

MUS 117. Jazz Improvisation
2 Credits
Techniques for extemporaneous playing; jazz harmonic practice. Traditional Grading with RR. Restricted to Las Cruces campus only.
Prerequisite(s): A grade of C or better in MUS 103 and MUS 105.

MUS 121. Concert and Recital Laboratory
0.5 Credits
Serves as a resource and performance lab for all applied areas of musical study. Music majors are expected to perform during the weekly student recital and must attend a designated number of musical performances during the semester. May be repeated up to 4 credits. Restricted to Music and Music Education majors. S/U Grading with RR. Restricted to Las Cruces campus only.

MUS 130. Applied Music
1-2 Credits
Private or group instruction for non-music majors, secondary instruments, and music majors preparing for 200-level applied music. May be taken for unlimited credit.

MUS 141. Class Voice I
1 Credit
Group instruction in voice and vocal pedagogy for instrumental Music Education majors, offering basic principles of healthy vocal production with particular attention to diction, development of vocal range, and the ability to impart that knowledge to elementary, junior and/or high school age students. Restricted to: Music Education majors. Traditional Grading with RR. Restricted to Las Cruces campus only.

MUS 145. Functional Piano I
2 Credits
Scales, chords, memorization. Harmonization of simple melodies with the ability to play simple melodies and rhythms. May be taken for unlimited credit. Restricted to music majors. No S/U option.

MUS 146. Functional Piano II
2 Credits
Scales, chords, memorization. Harmonization of simple melodies with the ability to play simple melodies and rhythms. May be taken for unlimited credit. Restricted to music majors. No S/U option.
Prerequisite: MUS 145 or consent of instructor.

MUS 147. Functional Piano III
2 Credits
For music majors preparing for the Piano Proficiency Examination. May be taken for unlimited credit. Restricted to music majors. No S/U option.
Prerequisite: MUS 146 or consent of instructor.

MUS 150. Orchestra
1 Credit
Participation in the Las Cruces Symphony at NMSU. This is a full symphony orchestra concentrating on masterworks of the literature. May be taken for unlimited credit.

MUS 151. Philharmonic Orchestra
1 Credit
The University Philharmonic Orchestra is open to all students and performs a wide variety of standard orchestral literature. The orchestra performs each semester and the objectives include refining technique, stylistic characteristics, intonation, balance, bowings, color, rhythmic integrity and dynamics. May be repeated up to 10 credits. Restricted to Las Cruces campus only.
Prerequisite(s): by audition only.

MUS 160. University Singers
1 Credit
Select concert and touring choir of undergraduate and graduate students performing a cappella and accompanied choral literature. May be repeated up to 10 credits. Restricted to Las Cruces campus only.
Prerequisite(s): By audition only.
MUS 161. Concert Choir  
1 Credit  
Campus choir composed of both music and non-music majors. Emphasis on vocal techniques, sight-singing, and basics of choral musicianship. May be taken for unlimited credit.

MUS 162. Master Works Chorus  
1 Credit  
Combination campus and community chorus. This group will perform the major chorale compositions for orchestra and/or wind ensemble. May be taken for unlimited credit.

MUS 163. Jazz Ensembles  
1 Credit  
Performance ensemble that explore repertoire written for big band, including (but not limited to) dance band, swing, and contemporary compositions. May be repeated up to 10 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): By audition only.

MUS 164. Chamber Ensembles  
1 Credit  
Small groups of singers and/or instrumentalists that perform chamber music. May be repeated up to 16 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): by audition only.

MUS 165. Marching Band  
1 Credit  
Marching band performance that study and performance of contemporary percussion ensemble literature. May be repeated up to 10 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): Grade of C or better in MUS 106.

MUS 166. Wind Symphony  
1 Credit  
This elite ensemble of 50 highly qualified graduate and undergraduate students performs a varied repertoire of the highest quality literature for winds. Members will also perform concerts of chamber winds literature each semester. This ensemble is dedicated to professional level performance while fostering the musical growth of its members. Conducted by the Director of Bands, this group serves as the flagship for the entire university bands program. May be repeated up to 10 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): By audition only.

MUS 167. Roadrunner Revue Pep Band  
1 Credit  
For both music and nonmusic majors. Opportunity to perform a variety of music in a showband setting. May be taken for unlimited credit.  
Prerequisite: by audition only; contact band office for date and time.

MUS 168. Wind Ensemble  
1 Credit  
For both music and nonmusic majors. Opportunity to perform all varieties of music in a contemporary styled marching unit. May be taken for unlimited credit.

MUS 169. Percussion Ensemble  
1 Credit  
Study and performance of contemporary percussion ensemble literature. May be repeated up to 5 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): by audition only.

MUS 170. Wind Symphony  
1 Credit  
This elite ensemble of 50 highly qualified graduate and undergraduate students performs a varied repertoire of the highest quality literature for winds. Members will also perform concerts of chamber winds literature each semester. This ensemble is dedicated to professional level performance while fostering the musical growth of its members. Conducted by the Director of Bands, this group serves as the flagship for the entire university bands program. May be repeated up to 10 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): By audition only.

MUS 171. Roadrunner Revue Pep Band  
1 Credit  
For both music and nonmusic majors. Opportunity to perform a variety of music in a showband setting. May be taken for unlimited credit.  
Prerequisite: by audition only; contact band office for date and time.

MUS 172. Marching Band  
1 Credit  
For both music and nonmusic majors. Opportunity to perform all varieties of music in a contemporary styled marching unit. May be taken for unlimited credit.

MUS 174. Percussion Ensemble  
1 Credit  
Study and performance of contemporary percussion ensemble literature. May be repeated up to 5 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): by audition only.

MUS 175. Marching Band  
1 Credit  
For both music and nonmusic majors. Opportunity to perform all varieties of music in a contemporary styled marching unit. May be taken for unlimited credit.

MUS 176. Wind Symphony  
1 Credit  
This elite ensemble of 50 highly qualified graduate and undergraduate students performs a varied repertoire of the highest quality literature for winds. Members will also perform concerts of chamber winds literature each semester. This ensemble is dedicated to professional level performance while fostering the musical growth of its members. Conducted by the Director of Bands, this group serves as the flagship for the entire university bands program. May be repeated up to 10 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): By audition only.

MUS 177. Roadrunner Revue Pep Band  
1 Credit  
For both music and nonmusic majors. Opportunity to perform a variety of music in a showband setting. May be taken for unlimited credit.  
Prerequisite: by audition only; contact band office for date and time.

MUS 178. Marching Band  
1 Credit  
For both music and nonmusic majors. Opportunity to perform all varieties of music in a contemporary styled marching unit. May be taken for unlimited credit.

MUS 179. Wind Symphony  
1 Credit  
This elite ensemble of 50 highly qualified graduate and undergraduate students performs a varied repertoire of the highest quality literature for winds. Members will also perform concerts of chamber winds literature each semester. This ensemble is dedicated to professional level performance while fostering the musical growth of its members. Conducted by the Director of Bands, this group serves as the flagship for the entire university bands program. May be repeated up to 10 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): By audition only.

MUS 180. Symphonic Band  
1 Credit  
This is a select large ensemble, chosen by audition. It provides a challenging musical environment for skilled performers by programming repertoire that ranges from works for chamber winds, to standards of the wind band literature, to cutting edge literature. Conducted by the Associate Director of Bands, this ensemble is comprised of music majors and non-music majors alike and provides the less experienced student an opportunity to hone and refine performance skills. May be repeated up to 10 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): By audition only.

MUS 181. Campus Band  
1 Credit  
This is a non-auditioned ensemble designed to meet the needs of students from all majors across campus. Music majors are encouraged to enroll while performing on a secondary instrument. Marching band members are also encouraged to take the course to build skills and leadership. This ensemble provides an educational experience and serves as an outlet for students who wish to remain musically active in a less intense setting. May be repeated up to 10 credits. Restricted to Las Cruces campus only.

MUS 201G. History of Jazz in Popular Music: A Blending of Cultures  
3 Credits  
Jazz in popular music as it relates to music history and the development of world cultures.

MUS 202. An Introduction to World Music, Jazz and Music Research  
3 Credits  
Introduces world music and jazz within a historical and cultural context, considering significant musical figures, forms, genres, styles, and representative works. A major component will be the development of effective research and scholarly writing skills for the music major or minor. May be repeated up to 3 credits. Restricted to: Music majors and minors. majors. Restricted to Las Cruces campus only.

MUS 203. Ear Training III  
1 Credit  
Continuation of MUS 104, advanced sight singing, dictation. Restricted to Las Cruces campus only.  
Prerequisite(s): Grade of C- or better in MUS 104.

MUS 204. Ear Training IV  
1 Credit  
Continuation of MUS 203, advanced sight singing, dictation. Restricted to Las Cruces campus only.  
Prerequisite(s): Grade of C or better in MUS 203 and MUS 205.

MUS 205. Music Theory III  
3 Credits  
Analysis of Baroque and Classical Music. Vocabulary and syntax of 18th and 19th c. Western art music through study, chordal/formal analysis, and composition. Restricted to Las Cruces campus only.  
Prerequisite(s): Grade of C or better in MUS 205.

MUS 206. Music Theory IV  
3 Credits  
Analysis of Romantic, Post-Romantic, Impressionist, and Twelve-Tone Music. Vocabulary and syntax of late 19th and early 20th c. Western art music through study, micro/macro analysis, and composition. Restricted to Las Cruces campus only.  
Prerequisite(s): Grade of C or better in MUS 205.
MUS 207. Music History and Literature: Antiquity through Baroque
3 Credits
Surveys Western art music within a historical and cultural context, considering significant musical figures, forms, genres, styles, and representative works from antiquity through the end of the Baroque era. An additional emphasis will be given to effective research and scholarly writing skills. Restricted to: M ED,MUS majors.
Prerequisite(s): A grade of C- or better in MUS 103, 105, and 202.

MUS 230. Applied Music I
1-4 Credits
Individual instruction to develop technique, musicianship, performance and improvisational skills, as well as knowledge of significant repertoire. May be repeated up to 16 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR. Restricted to Las Cruces campus only.

MUS 250. Introduction to Music Education
2 Credits
Overview of the basic principals and practices of the music education profession in K-12 settings, emphasizing philosophy and history of music education, methodologies commonly utilized in school curricula, music in special education, classroom/rehearsal management and lesson planning. Explores many aspects of public school teaching through class discussions and directed observations. Restricted to Las Cruces campus only.

MUS 251. Opera Workshop
1 Credit
Study, translation, analysis, rehearsal and performance of opera. May be repeated up to 10 credits. Restricted to Las Cruces campus only.
Prerequisite(s): by audition only.

MUS 260. Special Topics I
1-3 Credits
Emphasis on special areas of music; designed for highly motivated students. May be taken for unlimited credit.

MUS 261. Functional Piano IV
2 Credits
For music majors preparing for Piano Proficiency Examination. May be taken for unlimited credit. Restricted to music majors. No S/U option. Prerequisite: MUS 147 or consent of instructor.

MUS 262. Diction I
2 Credits
Introduction to the international phonetic alphabet, and its application to English, Italian, Spanish, and Latin song literature. Main campus only. Restricted to Las Cruces campus only.

MUS 263. Diction II
2 Credits
Advanced grammar and detailed study of Italian, German and French diction and song literature for vocal students. Restricted to music majors. Main campus only. Prerequisite: MUS 262 or consent of instructor.

MUS 273. Introduction to Music Technology
1 Credit
Introduction to uses of technology in musical settings. Practical applications in digital music notation, MIDI sequencing, and digital audio recording. Restricted to: MUS,M ED majors. Traditional Grading with RR. Restricted to Las Cruces campus only. 
Prerequisite(s): MUS 105.

MUS 301. Marching Band Techniques
2 Credits
This course will help students develop the techniques needed to administer and teach all aspects of a contemporary high school marching band. This includes drill conception and design, instruction, organization, and administration. Stylistic varieties of marching fundamentals, show conception, fundamentals of charting and teaching drill, computer-aided drill design, traditional show design, contemporary show design, rehearsal techniques, and organizational concepts. Restricted to: Music, Music Education majors. Traditional Grading with RR.

MUS 302. Music History and Literature: Classic through Romantic
3 Credits
Surveys Western art music within a historical and cultural context, considering significant musical figures, forms, genres, styles, and representative works from the beginnings of the Classic era through the end of the Romantic era. An additional emphasis will be given to effective research and scholarly writing skills. Restricted to: Music Majors and Minors majors.
Prerequisite(s): A grade of C- or better in MUS 207.

MUS 303. Music History and Literature: 20th Century Through the Present
3 Credits
Surveys Western art music within a historical and cultural context, considering significant musical figures, forms, genres, styles, and representative works from the beginning of the 20th Century through the Present. An additional emphasis will be given to effective research and scholarly writing skills. Restricted to: MUS minors and majors.
Prerequisite(s): A grade of C- or better in MUS 302.

MUS 315. Brass Techniques I
1 Credit
Methods and techniques of teaching high brass instruments, for music education majors. Main campus only.

MUS 316. Brass Techniques II
1 Credit
Methods and techniques of teaching low brass instruments, for music education majors. Main campus only.

MUS 317. Woodwind Techniques I
1 Credit
Methods and techniques of teaching high woodwind instruments, for music education majors. Main campus only.

MUS 318. Woodwind Techniques II
1 Credit
Methods and techniques of teaching saxophone and double reed instruments, for music education majors. Main campus only.

MUS 319. String Techniques I
1 Credit
Methods and techniques of teaching low string instruments, for music education majors. Main campus only.

MUS 320. String Technique II
1 Credit
Methods and techniques of teaching high string instruments, for music education majors. Main campus only.

MUS 321. Instrumental Techniques for Vocal Music Education Majors
2 Credits
Methods of teaching brass, woodwind, percussion, stringed and fretted instruments for vocal music education majors. Restricted to: Music and Music Education majors. Traditional Grading with RR.
MUS 322. Guitar Methods
1 Credit
Methods and techniques of teaching guitar, for Music Education majors. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 323. Percussion Technique I
1 Credit
Methods and techniques of teaching percussion instruments with a focus on snare drum, timpani and accessory. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 324. Percussion Technique II
1 Credit
Methods and techniques of teaching percussion instruments with a focus on keyboard percussion, marching percussion and drum set. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 325. Beginning Conducting
1 Credit
A study of the fundamentals of conducting and rehearsal strategies with an emphasis on beginning technique applicable to all ensembles. Reading of musical scores with application via laboratory ensemble experience is included. Restricted to: Music and Music Education majors. Traditional Grading with RR. Prerequisite(s): A grade of C or better in MUS 204 and 206.

MUS 326. Instrumental Conducting
3 Credits
Will continue from MUS 325 in the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques as it relates to the instrumental ensemble. The class will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. May be repeated up to 3 credits. Restricted to: MUS,MED majors. Traditional Grading with RR. Prerequisite(s): A grade of C- or better in MUS 325.

MUS 327. Choral Conducting
3 Credits
Continuation of conducting study with emphasis on choral rehearsal techniques, ensemble management, and literature. Restricted to: Music and Music Education majors. Traditional Grading with RR. Prerequisite(s): A grade of C or better in MUS 325.

MUS 330. Applied Music II
1-4 Credits
Continuation from MUS 230. Individual instruction to develop technique, musicianship, performance and improvisational skills, as well as knowledge of significant repertoire. May be repeated up to 16 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR. Prerequisite(s): A grade of C or better in MUS 230 plus a juried audition.

MUS 339. Survey of Music Business
3 Credits
Survey of career options and exploration of current events/trends within the Music Industry. Non-Music Business majors may be admitted with instructor’s approval.

MUS 340. Junior Recital
1 Credit
Public solo performance under the supervision of the appropriate applied instructor. 30 minutes of musical performance is required. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR. Corequisite(s): MUS 330.

MUS 346. Elementary Music Methods
2 Credits
Lesson planning, curriculum, teaching methodology, materials, and procedures for teaching music in an elementary school. Emphasis on methodology of Koday and Orff, teaching in a multicultural setting, and developing reflective practitioners. This course requires field experience in the public schools. Restricted to: Music Education majors. Prerequisite(s): A grade of C or better in MUS 250 and passing the TEP exam.

MUS 350. Chamber Music
1 Credit
Small performing ensembles that may include strings, woodwinds, brass, pianos, percussion, and voices. May be repeated up to 16 credits. Prerequisite(s): by audition only.

MUS 351. Opera Workshop
1 Credit
Study, translation analysis, rehearsal and performance of opera. May be repeated up to 10 credits. Prerequisite(s): by audition only.

MUS 360. Special Topics II
1-3 Credits
Emphasis on special areas of music; designed for highly motivated students. May be taken for unlimited credit.

MUS 361. Concert Choir II
1 Credit
Composed of both music and nonmusic majors. Emphasis on vocal techniques, sight-singing, and basics of choral musicianship. Students must assume leadership role. May be repeated up to 88 credits. Prerequisite(s): by audition only.

MUS 362. Philharmonic Orchestra II
1 Credit
The University Philharmonic Orchestra is open to all students and performs a wide variety of standard orchestral literature. The orchestra performs each semester and the objectives include refining technique, stylistic characteristics, intonation, balance, bowings, color, rhythmic integrity and dynamics. May be repeated up to 10 credits. Prerequisite(s): by audition only.

MUS 363. Jazz Ensembles II
1 Credit
Performance ensemble that explore repertoire written for big band, including (but not limited to) dance band, swing, and contemporary compositions. May be repeated up to 10 credits. Prerequisite(s): by audition only.
MUS 365. Composition I
2 Credits
Significant forms for various media. Emphasis on structural aspects of original composition. Restricted to: M ED,MUS majors.
Prerequisite(s): A grade of B or better in MUS 105.

MUS 366. Composition II
2 Credits
Applied larger forms. Emphasis on larger vocal and instrumental works.
Prerequisite(s): B or better in MUS 365.

MUS 368. University Singers II
1 Credit
Select concert and touring choir of undergraduate and graduate students performing a cappella and accompanied choral literature. May be repeated up to 10 credits. Consent of Instructor required.
Prerequisite(s): by audition only.

MUS 370. Wind Symphony II
1 Credit
This elite ensemble of 50 highly qualified graduate and undergraduate students performs a varied repertoire of the highest quality literature for winds. Members will also perform concerts of chamber winds literature each semester. This ensemble is dedicated to professional level performance while fostering the musical growth of its members. Conducted by the Director of Bands, this group serves as the flagship for the entire university bands program. May be repeated up to 10 credits.
Prerequisite(s): by audition only.

MUS 372. Marching Band II
1 Credit
Composed of both majors and nonmajors. Opportunity to perform all varieties of music in a contemporary style marching unit. May be repeated up to 5 credits. Consent of Instructor required. Traditional Grading with RR.

MUS 374. Percussion Ensembles II
1 Credit
Study and performance of contemporary percussion ensemble literature. Students must assume a leadership role. May be repeated up to 5 credits.
Prerequisite(s): by audition only.

MUS 380. Symphonic Band II
1 Credit
This is a select large ensemble, chosen by audition. It provides a challenging musical environment for skilled performers by programming repertoire that ranges from works for chamber winds, to standards of the wind band literature, to cutting edge literature. Conducted by the Associate Director of Bands, this ensemble is comprised of music majors and non-music majors alike and provides the less experienced student an opportunity to hone and refine performance skills. May be repeated up to 10 credits.
Prerequisite(s): by audition only.

MUS 381. Campus Band II
1 Credit
This is a non-auditioned ensemble designed to meet the needs of students from all majors across campus. Music majors are encouraged to enroll while performing on a secondary instrument. Marching band members are also encouraged to take the course to build skills and leadership. This ensemble provides an educational experience and serves as an outlet for students who wish to remain musically active in a less intense setting. May be repeated up to 10 credits.

MUS 386. Applied Music Pedagogy and Literature I
2 Credits
Methods, materials, problems, literature, and techniques in teaching individual lessons. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 390. Survey of Wind Literature
2 Credits
An examination of beginning to advanced literature for wind bands with an emphasis on the needs of middle and high school ensembles. It will include a means to determine the quality of a piece as well as the standardized level of difficulty (grading). Restricted to: Music and Music Education majors.
Prerequisite(s): A grade of C- or better in MUS 204 and 206.

MUS 391. Survey of Orchestral Literature
2 Credits
An examination of beginning to advanced literature for both string orchestra and symphony orchestra with an emphasis on the needs of middle and high school ensembles. A means to determine the quality of a piece as well as the standardized level of difficulty (grading) will be included. Restricted to: Music and Music Education majors.
Prerequisite(s): A grade of C- or better in MUS 204 and 206.

MUS 392. Survey of Choral Literature
2 Credits
An examination of beginning to advanced literature for choir with an emphasis on the needs of middle and high school ensembles. A means to determine the quality of a piece as well as the standardized level of difficulty (grading) will be included. Restricted to: Music and Music Education majors.
Prerequisite(s): A grade of C- or better in MUS 204 and 206.

MUS 393. Form and Analysis
3 Credits
Forms in tonal music and basic analytic techniques including music from diverse cultures and media.
Prerequisite(s): A grade of C- or better in MUS 204 and MUS 206.

MUS 413. Orchestration
3 Credits
Scoring for full orchestra and various instrumental combinations with consideration of instrument timbres, strengths, weaknesses and ranges. Restricted to: Music and Music Education majors.
Prerequisite(s): A grade of C or better in MUS 204 and 206.

MUS 415. Studio Accompanying
2 Credits
Practical application of collaborative piano skills in a studio setting for Piano Performance majors. May be repeated up to 8 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 417. Studio Accompanying
2 Credits
Practical application of collaborative piano skills in a studio setting for Piano Performance majors. May be repeated up to 8 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 420. Music of the Middle Ages and Renaissance
3 Credits
An overview of the music of the Middle Ages and Renaissance eras with an emphasis on history and literature.
Prerequisite(s): MUS 303.

MUS 421. Music of the Baroque Era
3 Credits
An overview of the music of the Baroque era with an emphasis on history and literature.
Prerequisite(s): MUS 303.
MUS 422. Music of the Classic Era
3 Credits
An overview of the music of the Classic era with an emphasis on history and literature.
Prerequisite(s): MUS 303.

MUS 423. Music of the Romantic Era
3 Credits
An overview of the music of the Romantic era with an emphasis on history and literature.
Prerequisite(s): MUS 303.

MUS 424. Music of the Twentieth Century
3 Credits
An overview of the music of the Twentieth Century with an emphasis on history and literature. Consent of Instructor required.
Prerequisite(s): MUS 303.

MUS 429. Opera and Music Drama
3 Credits
Lyrical drama of the Greeks through works of Wagner and Verdi to contemporary opera.
Prerequisite: MUS 303 or consent of instructor.

MUS 430. Applied Music III
1-4 Credits
Continuation from MUS 330. Individual instruction to develop technique, musicianship, performance and improvisational skills, as well as knowledge of significant repertoire. May be repeated up to 16 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.
Prerequisite(s): A grade of C or better in MUS 330 plus a juried audition.

MUS 440. Senior Recital
1-2 Credits (1-2)
Public solo performance under the supervision of the appropriate applied instructor. 60 minutes of musical performance is required for enrollment of 2 hours credit. 30 minutes of musical performance is required for enrollment of 1 hour credit. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.
Corequisite(s): MUS 430.

MUS 441. Supervised Studio Teaching
2 Credits
Teaching of private lessons under supervision. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 450. Research Methods
3 Credits
Introduction to methodology of music research. Emphasis on important scholarly resources and academic writing. Restricted to majors. Main campus only. No S/U option.
Prerequisite: consent of instructor.

MUS 451. Orchestra II
1 Credit
Las Cruces Symphony at NMSU, a full symphony orchestra concentrating on masterworks of the literature. Students must assume a leadership role. May be repeated up to 88 credits.
Prerequisite(s): by audition only.

MUS 455. Music Business Internship
3 Credits
Capstone course for the Music Business degree. Working with the music business coordinator, students must have been accepted as an intern in a music business setting before enrolling. Credit given for the internship based on criteria developed for each placement. Restricted to majors. S/U only.
Prerequisites: MUS 330 and piano proficiency.

MUS 465. Composition III
2 Credits
Emphasis on extended compositional techniques, serialization, and modern counterpoint. Consent of Instructor required. Restricted to: Music majors. Traditional Grading with RR.

MUS 466. Composition IV
2 Credits
New music notation and techniques. Open forms, aleatory concepts. Consent of Instructor required. Restricted to: Music majors. Traditional Grading with RR.
Prerequisite(s): MUS 465.

MUS 470. Special Topics III
1-3 Credits
Designed for highly motivated students. Independent study and individual guidance. May be taken for unlimited credit.

MUS 471. Graduate Theory Review
3 Credits
Comprehensive and accelerated study of modes, diatonic harmony, and classical form of the common practice period. Restricted to: Music majors. Traditional Grading with RR.

MUS 475. Intermediate Conducting
3 Credits
Serves as a bridge from undergraduate conducting study to the graduate level. Advanced undergraduate students may enroll to learn how the graduate program in conducting functions. The course also serves as the introductory experience for newly admitted graduate conducting majors. After successful completion of this course, students will be able to: Study musical scores from a conducting perspective; Demonstrate effective predetermined gestures and movements; Lead an ensemble; Research and give presentations related to composers and their music; Demonstrate advanced knowledge of conducting practices.
Prerequisite(s): A grade of C- or better in MUS 326 or 327.

MUS 476. Music Cultures of the World: History and Criticism
3 Credits
Listening, criticism, and analysis of musical cultures around the world. Emphasis on non-Western musical traditions and folk music of the world. Open to all majors.

MUS 477. Graduate Music History Review
3 Credits
Comprehensive and accelerated study of music history from antiquity to the present Restricted to: Music majors. Traditional Grading with RR.

MUS 486. Applied Music Pedagogy and Literature II
2 Credits
Methods, materials, problems, literature, and techniques in teaching individual lessons. Consent of Instructor required. Restricted to: Music majors. Traditional Grading with RR.
MUS 498. Independent Study
1-3 Credits
For students with a strong musical background wishing to explore content beyond the traditional curriculum. Restricted to majors. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

MUS 511. Survey of Traditional Harmony
3 Credits
Tonal harmony in common practice and theory of the late 17th, 18th, and early 19th centuries. Restricted to: Music majors. Traditional Grading with RR.
Prerequisite(s): A grade of B or better in MUS 471.

MUS 513. Twentieth Century Art Music
3 Credits
Analytical techniques, structural design and compositional materials from Debussy to the Minimalist school in historical context. Restricted to: Music majors.
Prerequisite(s): A grade of B or better in MUS 471.

MUS 514. Advanced Composition
3 Credits
Original composition in 20th century idioms.
Prerequisite: MUS 466.

MUS 518. Seminar in Music Theory
3 Credits
Varying topics in Music Theory, providing a more specific and in-depth study of the particular topic. May be repeated up to 6 credits. Restricted to: Music majors. Traditional Grading with RR.
Prerequisite(s): A grade of B or better in MUS 471.

MUS 519. Seminar in Music History
3 Credits
Varying topics in Music History, providing a more specific and in-depth study of the particular topic. May be repeated up to 6 credits. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 471.

MUS 520. Music of the Middle Ages and Renaissance: History and Literature
3 Credits
An overview of the music of the Middle Ages and Renaissance with an emphasis on history and literature. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 477.

MUS 521. Music of the Baroque Era: History and Literature
3 Credits
An overview of the music of the Baroque Era with an emphasis on history and literature.

MUS 522. Music of the Classical Era: History and Literature
3 Credits
An overview of the music of the Classical era with an emphasis on history and literature. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 477.

MUS 523. Music of the Romantic Era: History and Literature
3 Credits
An overview of Romantic era music, with an emphasis on history and literature. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 477.

MUS 524. Advanced Choral Conducting I
3 Credits
This course will continue the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques. Lessons will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 475.

MUS 525. Current Issues in Music Education
3 Credits
This course examines the rich and challenging complexities of music teaching and learning from a variety of perspectives. Educational theory to pedagogical inquiry of current educational practice will be examined, calling students to critically reflect on such professional activities as lesson planning, curriculum design, repertoire choice, program assessment, advocacy in the arts, and student evaluation. Restricted to: MUS (Music Ed track only) majors.

MUS 527. History and Analysis of the Symphony
3 Credits
Historical background and development of the symphony from its inception (ca. 1740s) to mid-twentieth century. Analysis of major works by significant composers with emphasis on Sonata form. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 471 and 477.

MUS 528. The Symphony in Historical Context
3 Credits
Considers the historical development of the symphony, as a musical genre, from its inception to the 20th century. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 477.

MUS 529. Opera and Music Drama
3 Credits
Lyric drama of the Greeks through works of Wagner and Verdi to contemporary opera. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 477.

MUS 530. Seminar in Music Education
3 Credits
Varying topics in Music Education, providing a more specific and in-depth study of the particular topic. Restricted to: MUS majors.

MUS 531. Music in Elementary Schools
3 Credits
This course is designed to provide experiences which will help the student gain skills to appropriately enhance the musical growth of children in K–6 classrooms. The course participants personal skill and understanding of musical concepts will be developed; musical needs and capabilities of young children will be investigated; methods of teaching music to young children will be explored. Restricted to: MUS (Music Ed track only) majors.

MUS 535. Advanced Choral Conducting I
3 Credits
This course will continue the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques. Lessons will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 475.
MUS 575. Advanced Choral Conducting II  
3 Credits  
This is the final course in preparation for the student’s graduate conducting concert. It will continue the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques. Lessons will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. Restricted to: MUS majors.  
Prerequisite(s): A grade of B or better in MUS 574.

MUS 576. Advanced Instrumental Conducting I  
3 Credits  
The role of the conductor is to lead, react to, alter, and reinforce the performance of the ensemble. This course will continue in the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques. Lessons will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. Restricted to: MUS majors.  
Prerequisite(s): A grade of B or better in MUS 475.

MUS 577. Advanced Instrumental Conducting II  
3 Credits  
The role of the conductor is to lead, react to, alter, and reinforce the performance of the ensemble. This course will continue in the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques. Lessons will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. Restricted to: MUS majors.  
Prerequisite(s): A grade of B or better in MUS 475.

MUS 578. Advanced Choral Literature  
2 Credits  
An examination of significant choral works from 1200 to the present, including composers, genres, and historical context Restricted to: MUS majors.  
Prerequisite(s): A grade of B or better in MUS 475.

MUS 579. ADV INSTR LIT  
2 Credits  
An examination of significant instrumental works from the Baroque period to the present, including composers, genres, and historical context Restricted to: MUS majors.  
Prerequisite(s): A grade of B or better in MUS 475.

MUS 580. Ensemble Performance  
1 Credit  
Performance in university ensembles. May be repeated up to 99 credits.  
Prerequisite(s): by audition only.

MUS 582. Applied Music  
2-4 Credits  
For music majors, individual instruction, including improvisation skills and techniques. Students may enroll for 2 or 4 credits. May be repeated for a maximum of 16 credits.  
Prerequisites: audition and consent of instructor.

MUS 586. Applied Music Pedagogy and Literature III  
2 Credits  
Methods, materials, problems, literature, and techniques in teaching individual lessons. Restricted to: MUS majors.  
Prerequisite(s): A grade of B or better in MUS 486.
<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>MUS 486</td>
<td>Applied Music Pedagogy and Literature II</td>
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<tr>
<td>MUS 121</td>
<td>Concert and Recital Laboratory (take for eight semesters for a total of 4 credits)</td>
<td>4</td>
</tr>
<tr>
<td>MUS 230</td>
<td>Applied Music I</td>
<td>2</td>
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<tr>
<td>&amp; MUS 330</td>
<td>and Applied Music II</td>
<td>20</td>
</tr>
<tr>
<td>&amp; MUS 430</td>
<td>and Applied Music III (Applied Music (Instrumental) must take for a total of 20 credits)</td>
<td>2</td>
</tr>
<tr>
<td>MUS 340</td>
<td>Junior Recital</td>
<td>1</td>
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<td>MUS 440</td>
<td>Senior Recital</td>
<td>1-2</td>
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<td>Applied or Functional Piano</td>
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<tr>
<td>Instrumental Ensemble</td>
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<td><strong>Total Credits</strong></td>
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**Note:**
- All Music Majors must take MUS 430 for a minimum of 2 semesters.
- Music Performance students must take MUS 440 (Senior Recital) for 2 credits.

### Piano Proficiency
- Students must pass Piano Proficiency before presenting a Senior Recital.
- Students must enroll for Functional Piano until the Proficiency is passed.

### Science Requirement
- Students must complete PHYS 120G Introduction to Acoustics.

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### Concentration: Piano Performance

#### Requirements - Basic Music and Performance

**Music Theory and Ear Training**

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<td>Ear Training I</td>
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<td>MUS 105</td>
<td>Music Theory I</td>
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<td>MUS 203</td>
<td>Ear Training III</td>
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<td>MUS 206</td>
<td>Music Theory IV</td>
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<td>MUS 413</td>
<td>Form and Analysis</td>
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**History and Literature**

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<td>An Introduction to World Music, Jazz and Music Research</td>
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<tr>
<td>MUS 207</td>
<td>Music History and Literature: Antiquity through Baroque</td>
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<tr>
<td>MUS 303</td>
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<tr>
<td>MUS 273</td>
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<td>Beginning Conducting</td>
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</tr>
<tr>
<td>MUS 441</td>
<td>Supervised Studio Teaching</td>
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**Performance**

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<tr>
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<td>Concert and Recital Laboratory (take for eight semesters for a total of 4 credits)</td>
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<tr>
<td>MUS 164</td>
<td>Chamber Ensembles (take two semesters for a total of 2 credits)</td>
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<td>MUS 230</td>
<td>Applied Music I</td>
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<td>MUS 340</td>
<td>Junior Recital</td>
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<td>Studio Accompanying (take two semesters for a total of 4 credits)</td>
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<td>Ensemble</td>
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<td>Secondary Applied</td>
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<td>Upper Level Music Electives</td>
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**Note:**
- All Music Majors must take MUS 430 for a minimum of 2 semesters.
- Music Performance students must take MUS 440 (Senior Recital) for 2 credits.

### Secondary Proficiency
- Students must pass Secondary Proficiency before presenting a Senior Recital.

### Science Requirement
- Students must complete PHYS 120G Introduction to Acoustics.

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### Concentration: Vocal Performance

#### Requirements - Basic Music and Performance

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<td>MUS 202</td>
<td>An Introduction to World Music, Jazz and Music Research</td>
<td>3</td>
</tr>
<tr>
<td>MUS 207</td>
<td>Music History and Literature: Antiquity through Baroque</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
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</tr>
<tr>
<td>MUS 302</td>
<td>Music History and Literature: Classic</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>through Romantic</td>
<td></td>
</tr>
<tr>
<td>MUS 303</td>
<td>Music History and Literature: 20th Century</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Through the Present</td>
<td></td>
</tr>
<tr>
<td>MUS 429</td>
<td>Opera and Music Drama</td>
<td>3</td>
</tr>
<tr>
<td>Techniques</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUS 262</td>
<td>Diction I</td>
<td>2</td>
</tr>
<tr>
<td>MUS 263</td>
<td>Diction II</td>
<td>2</td>
</tr>
<tr>
<td>MUS 273</td>
<td>Introduction to Music Technology</td>
<td>1</td>
</tr>
<tr>
<td>MUS 325</td>
<td>Beginning Conducting</td>
<td>1</td>
</tr>
<tr>
<td>MUS 386</td>
<td>Applied Music Pedagogy and Literature I</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>or MUS 486</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Applied Music Pedagogy and Literature II</td>
<td></td>
</tr>
<tr>
<td>MUS 441</td>
<td>Supervised Studio Teaching</td>
<td>2</td>
</tr>
<tr>
<td>Performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUS 121</td>
<td>Concert and Recital Laboratory</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>(take for eight semesters for a total of 4 credits)</td>
<td></td>
</tr>
<tr>
<td>MUS 230</td>
<td>Applied Music I</td>
<td>19</td>
</tr>
<tr>
<td>&amp; MUS 330</td>
<td>and Applied Music II</td>
<td></td>
</tr>
<tr>
<td>&amp; MUS 430</td>
<td>and Applied Music III (Applied Music</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(vocal) must take for a total of 19 credits</td>
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</tr>
<tr>
<td>MUS 340</td>
<td>Junior Recital</td>
<td>1</td>
</tr>
<tr>
<td>MUS 440</td>
<td>Senior Recital</td>
<td>1-2</td>
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<tr>
<td>Choral Ensembles</td>
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<td>6</td>
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<tr>
<td>Opera Ensembles</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Applied or Functional Piano</td>
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</tr>
<tr>
<td>Support Courses</td>
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</tr>
<tr>
<td>FREN 111</td>
<td>Elementary French I</td>
<td>4</td>
</tr>
<tr>
<td>GER 111</td>
<td>Elementary German I</td>
<td>4</td>
</tr>
<tr>
<td>Total Credits</td>
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<td>93-94</td>
</tr>
</tbody>
</table>

**Note:**
- All Music Majors must take MUS 430 for a minimum of 2 semesters.
- Music Performance students must take MUS 440 (Senior Recital) for 2 credits.

**Piano Proficiency**
- Students must pass Piano Proficiency before presenting a Senior Recital.
- Students must enroll for Functional Piano until the Proficiency is passed.

**Science Requirement**
- Student must complete PHYS 120G Introduction to Acoustics.

### Music - Master of Music

**Area of Study: Conducting**

**Required Courses**
- MUS 471 Graduate Theory Review 1
- MUS 477 Graduate Music History Review 1
- MUS 527 History and Analysis of the Symphony
- Music Theory
- Music History and Literature
- Conducting
- MUS 450 Research Methods
- MUS 580 Ensemble Performance
- MUS 540 Graduate Recital/Analytical Paper

Total Credits: 32

1 Students must make a B or better before taking additional music theory/music history courses.

**Area of Study: Performance**

**Requirements**
- MUS 471 Graduate Theory Review 3
- MUS 477 Graduate Music History Review 3
- Music Theory
- Music History and Literature
- Applied Pedagogy and Literature
- MUS 450 Research Methods
- MUS 580 Ensemble Performance
- MUS 540 Graduate Recital/Analytical Paper

Total Credits: 32

2 Students must make a B or better before taking additional music theory/music history courses.

### Music - Undergraduate Minor

A student may not earn both a bachelor's degree in the Department of Music and a minor in Music.

**Required Courses**
Music Education - Bachelor of Music Education

The Bachelor of Music Education (BME) is a diversified four- to five-year degree program of teaching, performance, and specialized studies in music. The goal of this degree is to prepare the student for certification to teach music in the public schools, and serves as a foundation for advanced study toward master’s and doctoral degrees: M.M., M.M.E., D.M.A. or Ph.D in music education.

Concentration: K-12 – Instrumental
Requirements: Basic Music and Performance

Music Theory and Ear Training

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 103</td>
<td>Ear Training I</td>
<td>1</td>
</tr>
<tr>
<td>MUS 104</td>
<td>Ear Training II</td>
<td>1</td>
</tr>
<tr>
<td>MUS 203</td>
<td>Ear Training III</td>
<td>1</td>
</tr>
<tr>
<td>MUS 204</td>
<td>Ear Training IV</td>
<td>1</td>
</tr>
<tr>
<td>MUS 105</td>
<td>Music Theory I</td>
<td>3</td>
</tr>
<tr>
<td>MUS 106</td>
<td>Music Theory II</td>
<td>3</td>
</tr>
<tr>
<td>MUS 205</td>
<td>Music Theory III</td>
<td>3</td>
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<tr>
<td>MUS 206</td>
<td>Music Theory IV</td>
<td>3</td>
</tr>
<tr>
<td>MUS 413</td>
<td>Form and Analysis</td>
<td>3</td>
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</tbody>
</table>

History and Literature

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 202</td>
<td>An Introduction to World Music, Jazz and Music Research</td>
<td>3</td>
</tr>
<tr>
<td>MUS 207</td>
<td>Music History and Literature: Antiquity through Baroque</td>
<td>3</td>
</tr>
<tr>
<td>MUS 302</td>
<td>Music History and Literature: Classic through Romantic</td>
<td>3</td>
</tr>
<tr>
<td>MUS 303</td>
<td>Music History and Literature: 20th Century Through the Present</td>
<td>3</td>
</tr>
</tbody>
</table>

Techniques

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 141</td>
<td>Class Voice I</td>
<td>1</td>
</tr>
<tr>
<td>MUS 273</td>
<td>Introduction to Music Technology</td>
<td>1</td>
</tr>
<tr>
<td>MUS 301</td>
<td>Marching Band Techniques</td>
<td>2</td>
</tr>
<tr>
<td>MUS 322</td>
<td>Guitar Methods</td>
<td>1</td>
</tr>
<tr>
<td>MUS 325</td>
<td>Beginning Conducting</td>
<td>1</td>
</tr>
<tr>
<td>MUS 326</td>
<td>Instrumental Conducting</td>
<td>3</td>
</tr>
<tr>
<td>MUS 415</td>
<td>Orchestration</td>
<td>3</td>
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</tbody>
</table>

Select five from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>MUS 315</td>
<td>Brass Techniques I</td>
</tr>
<tr>
<td>MUS 316</td>
<td>Brass Techniques II</td>
</tr>
<tr>
<td>MUS 317</td>
<td>Woodwind Techniques I</td>
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Performance

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MUS 121</td>
<td>Concert and Recital Laboratory</td>
<td>3.5</td>
</tr>
<tr>
<td>MUS 163</td>
<td>Jazz Ensembles</td>
<td>1</td>
</tr>
<tr>
<td>MUS 172</td>
<td>Marching Band</td>
<td>2</td>
</tr>
<tr>
<td>MUS 230</td>
<td>Applied Music I</td>
<td>9</td>
</tr>
<tr>
<td>MUS 330</td>
<td>and Applied Music II</td>
<td></td>
</tr>
<tr>
<td>MUS 430</td>
<td>and Applied Music III (Applied Music (Instrumental) must take for a total of 9 credits)</td>
<td>9</td>
</tr>
</tbody>
</table>

MUS 440  | Senior Recital                              | 1-2     |

Total Credits: 97.5-98.5

1 String students may substitute MUS 151 Philharmonic Orchestra, MUS 164 Chamber Ensembles, MUS 350 Chamber Music or MUS 362 Philharmonic Orchestra II for MUS 172 Marching Band.

Note:
- All Music Majors must take 2 semesters of MUS 430

Piano Proficiency
- Students must pass Piano Proficiency before presenting a Senior Recital.
- Students must enroll for Functional Piano until Proficiency is passed.

Music Education Requirement
- Students must pass the TEP Exam before taking MUS 346 Elementary Music Methods or MUS 349 Secondary Music Methods.
- Students must present Senior Recital before student teaching.

Science Requirement
- Students must complete PHYS 120G Introduction to Acoustics.
Concentration: K-12 – Vocal
Requirements: Basic Music and Performance

Music Theory and Ear Training

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 103</td>
<td>Ear Training I</td>
<td>1</td>
</tr>
<tr>
<td>MUS 104</td>
<td>Ear Training II</td>
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</tr>
<tr>
<td>MUS 203</td>
<td>Ear Training III</td>
<td>1</td>
</tr>
<tr>
<td>MUS 204</td>
<td>Ear Training IV</td>
<td>1</td>
</tr>
<tr>
<td>MUS 105</td>
<td>Music Theory I</td>
<td>3</td>
</tr>
<tr>
<td>MUS 106</td>
<td>Music Theory II</td>
<td>3</td>
</tr>
<tr>
<td>MUS 205</td>
<td>Music Theory III</td>
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<tr>
<td>MUS 206</td>
<td>Music Theory IV</td>
<td>3</td>
</tr>
<tr>
<td>MUS 413</td>
<td>Form and Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

History and Literature

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 202</td>
<td>An Introduction to World Music, Jazz and Music Research</td>
<td>3</td>
</tr>
<tr>
<td>MUS 207</td>
<td>Music History and Literature: Antiquity through Baroque</td>
<td>3</td>
</tr>
<tr>
<td>MUS 302</td>
<td>Music History and Literature: Classic through Romantic</td>
<td>3</td>
</tr>
<tr>
<td>MUS 303</td>
<td>Music History and Literature: 20th Century Through the Present</td>
<td>3</td>
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</tbody>
</table>

Techniques

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 262</td>
<td>Diction I</td>
<td>2</td>
</tr>
<tr>
<td>MUS 263</td>
<td>Diction II</td>
<td>2</td>
</tr>
<tr>
<td>MUS 273</td>
<td>Introduction to Music Technology</td>
<td>1</td>
</tr>
<tr>
<td>MUS 321</td>
<td>Instrumental Techniques for Vocal Music Education Majors</td>
<td>2</td>
</tr>
<tr>
<td>MUS 322</td>
<td>Guitar Methods</td>
<td>1</td>
</tr>
<tr>
<td>MUS 325</td>
<td>Beginning Conducting</td>
<td>1</td>
</tr>
<tr>
<td>MUS 327</td>
<td>Choral Conducting</td>
<td>1</td>
</tr>
<tr>
<td>MUS 386</td>
<td>Applied Music Pedagogy and Literature I</td>
<td>2</td>
</tr>
<tr>
<td>MUS 392</td>
<td>Survey of Choral Literature</td>
<td>2</td>
</tr>
<tr>
<td>MUS 415</td>
<td>Orchestration</td>
<td>3</td>
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</table>

Performance

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 121</td>
<td>Concert and Recital Laboratory (take seven semesters for a total of 3.5 credits)</td>
<td>3.5</td>
</tr>
<tr>
<td>MUS 230</td>
<td>Applied Music I</td>
<td>9</td>
</tr>
<tr>
<td>&amp; MUS 330</td>
<td>and Applied Music II</td>
<td></td>
</tr>
<tr>
<td>&amp; MUS 430</td>
<td>and Applied Music III (Applied Music (vocal) must take for a total of 9 credits)</td>
<td></td>
</tr>
<tr>
<td>MUS 440</td>
<td>Senior Recital</td>
<td>1-2</td>
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<tr>
<td>Vocal Ensemble</td>
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Professional Education Courses

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<tr>
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<th>Title</th>
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<tbody>
<tr>
<td>CEP 210</td>
<td>Educational Psychology</td>
<td>3</td>
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<tr>
<td>EDUC 471</td>
<td>Secondary Student Teaching</td>
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<tr>
<td>EDUC 482</td>
<td>Middle and High School Student Teaching Seminar</td>
<td>3</td>
</tr>
<tr>
<td>MUS 250</td>
<td>Introduction to Music Education</td>
<td>2</td>
</tr>
<tr>
<td>MUS 346</td>
<td>Elementary Music Methods</td>
<td>2</td>
</tr>
<tr>
<td>MUS 349</td>
<td>Secondary Music Methods</td>
<td>2</td>
</tr>
<tr>
<td>RDG 414</td>
<td>Content Area Literacy</td>
<td>3</td>
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</tbody>
</table>

SPED 350 Introduction to Special Education in a Diverse Society 3

Note:
- All Music Majors must take 2 semesters of MUS 430 Piano Proficiency
- Students must pass Piano Proficiency before presenting a Senior Recital.
- Students must enroll for Functional Piano until Proficiency is passed.

Music Education Requirement
- Students must pass the TEP Exam before taking MUS 346 Elementary Music Methods or MUS 349 Secondary Music Methods.
- Students must present Senior Recital before student teaching.

Science Requirement
- Students must complete PHYS 120G Introduction to Acoustics.

Philosophy

Undergraduate Program Information
A major in philosophy serves not only as preparation for further graduate study in philosophy but also as an area of concentration in a liberal arts program. A philosophy major is appropriate for students planning to attend medical school as well as for those students interested in a career that requires critical reading and argument analysis. Such careers include business, theology and above all, law.

While the course requirements for the major should meet the ends of the liberal arts student, those students interested in graduate study in philosophy or in a career in law are encouraged to seek advice from a faculty advisor as early in their career as possible.

A minor program in philosophy requiring 18 hours of course work is also offered as well as a minor in Ethics. For more information visit the Department of Philosophy's web page at www.nmsu.edu/~philos/.

Degrees for the Department
Philosophy - Bachelor of Arts (p. 386)

Minors for the Department
Ethics - Undergraduate Minor (p. 386)
Philosophy - Undergraduate Minor (p. 386)

Timothy Cleveland, Department Head

Professors Cleveland, Walker; Associate Professor Keleher, Vessel; Assistant Professors Klockseim; College Associate Professor Noonan

PHIL 100G. Philosophy, Law and Ethics 3 Credits
An introduction to practical problems in moral, social, political, and legal philosophy. Topics to be discussed may include ecology, animal rights, pornography, hate speech on campus, same-sex marriage, justice, abortion, terrorism, treatment of illegal immigrants, and New Mexican Aboriginal Peoples' land claims.
PHIL 101G. The Art of Wondering  
3 Credits
Introduction to some of the main problems of philosophy, with an emphasis on critical thinking. Philosophy conceived as an aid to living in this world with oneself and with others.

PHIL 124G. Philosophy of Music  
3 Credits
This is an introductory course in the philosophy of music. This course will survey three questions: What is music? Why is music important? How can we distinguish good music from bad music? We will draw examples from a wide variety of musical genres, from classical music, jazz and blues to punk and rap. Students will be encouraged to apply philosophical theorizing to think about their preferred musical form.

PHIL 136G. The Quest for God  
3 Credits
An effort to understand the religious life; a consideration of some of the traditional approaches to God and what it means to be religious.

PHIL 201G. Introduction to Philosophy  
3 Credits
Selected problems within the main branches of philosophy: metaphysics, theory of knowledge, ethics. Practice given in critical thinking.

PHIL 211G. Informal Logic  
3 Credits
Logical analysis of ordinary language, construction of definitions, argumentation, analysis of fallacious modes of thought and basic rhetorical considerations.

PHIL 223G. Ethics  
3 Credits
The philosophical explication of morality. Significant ethical systems developed in the history of Western thought.

PHIL 302. Business Ethics  
3 Credits
An analysis of the ethical issues that arise in contemporary business life, including the obligations businesses and employees have to each other, consumers, society and the environment.

PHIL 303. Asian Philosophy  
3 Credits
Survey of the most important philosophies of the East; emphasis is on the basic teachings.

PHIL 305. Philosophy and Literature  
3 Credits
Examination of philosophical ideas as presented in selected literary works and literary criticism.

PHIL 306. Philosophy Through Film  
3 Credits
An exploration of a range of philosophical issues through the use of film. Topics include personal identity and memory, faith and the problem of evil, free will and moral responsibility, and the meaning of life. Films may include The Prestige, Memento, The Third Man, A Clockwork Orange, Fight Club, and Synecdoche, New York.

PHIL 312. Formal Logic  
3 Credits
Introduction to symbolic logic and its application in the analysis of arguments in scientific and ordinary discourse.

PHIL 315. Philosophy of Language  
3 Credits
A critical examination of philosophical inquiries into the syntactic, semantic, and pragmatic dimensions of language.

PHIL 316. Philosophy of Mathematics  
3 Credits
Survey of traditional philosophical problems and views concerning the nature of mathematics including such questions as: What is the nature of mathematical knowledge? What is mathematical truth? What is a number? What is proof? What is the relationship between logic and mathematics?

PHIL 320. Social and Political Philosophy  
3 Credits
This course critically examines such fundamental concepts as liberty, equality and human rights.

PHIL 321. Biomedical Ethics  
3 Credits
Examines ethical dimensions of such issues as abortion, euthanasia, and physician-assisted suicide; informed consent as a condition of treating patients and experimenting on subjects; genetic engineering; and alternative reproductive methods, including surrogate motherhood. Also considers what implications moral theories have for these issues.

PHIL 322. Environmental Ethics  
3 Credits
Explores the ethical and topical issues raised by mining and grazing, air and water pollution, factory farming, global warming, and treatment of animals. It also studies some recent ecological movements such as ecofeminism, social ecology, and deep ecology.

PHIL 323V. Engineering Ethics  
3 Credits
The moral legal responsibilities of engineers to clients, employers, the public, and the environment. Topics include criteria for judging when risk is acceptable, the duty to safeguard public health and welfare, conflicts of interest, and whistle-blowing. 
Prerequisite: Junior standing or higher.

PHIL 325. Topics in Feminist Philosophy  
3 Credits
Philosophical treatment of issues concerning women, gender, and feminism. Topics may include social and political equality, pornography and freedom of speech, ethical issues raised by reproductive technologies, and feminist critiques of science.

PHIL 327. Ethics and Sports  
3 Credits
Examines contemporary ethical issues related to sports, including the relationship between morally right action and that required for competitive success, strong paternalism in sports, fair play, doping, sportsmanship, and the impact of sports on society.

PHIL 328. Applied Ethics  
3 Credits
Examines the implications of utilitarianism, Kantian ethics, natural law theory, and other moral theories for controversial moral issues such as the death penalty, euthanasia, abortion, genetic engineering, gay marriage, affirmative action, and pornography.
PHIL 330. Ethics and Biomedical Research
3 Credits
Explores some ethical issues raised by biological and biomedical research. Topics include: possible abuses of genetic engineering, cloning, and genetically modified foods; experimentation on humans and informed consent; animal experimentation; honesty in research and conflicts of interest; and intellectual property.

PHIL 331. Philosophy of Religion
3 Credits
The nature, fundamental concepts, and problems of religion. Emphasis on the significance of religion for creative and practical value.

PHIL 332. Ethics and Global Poverty
3 Credits
Philosophical scrutiny of and moral reflection on various aspects of global poverty and foreign aid. For example: Is poverty fundamentally a lack of income, or can it be understood as a failure to meet basic needs, or as a lack of valuable freedom? Do human rights exist? What, if any, are the moral obligations of rich countries to poor countries? Can foreign aid be immoral? How should the answers to these questions influence public policy? Restricted to: Main campus only.

PHIL 334. Modern Philosophy
3 Credits
Foundations of contemporary thought: introduction to the philosophies of Descartes, Bacon, Spinoza, Leibniz, Locke, Berkeley, Hume, Kant, and Hegel.

PHIL 336. Philosophy of Mind
3 Credits
Examination of some of the most influential accounts of the mind, focusing on such issues as the relation between the mind and the body, mental causation and consciousness.

PHIL 350. Epistemology
3 Credits
Introduction to epistemology. The philosophical critique of alleged ways of knowing. An examination of the nature of truth.

PHIL 351. Philosophy of Science
3 Credits
Philosophical examination of the methodology of science. The logical, metaphysical, epistemological, and ethical critique of science and its impact on human affairs.

PHIL 361. Special Topics
3 Credits
Specific subjects announced in the Schedule of Classes. May be repeated for a maximum of 9 credits.

PHIL 363. Independent Studies
1-3 Credits
For students with some background in philosophy. Independent work in a specific area. May be repeated for a maximum of 6 credits.

PHIL 373. Ethical Theory
3 Credits
The critical examination of the justification of ethical theories with particular attention to the language of moral discourse.

PHIL 375. History of Philosophy
3 Credits
A historical survey of philosophy from antiquity to modern times. Major figures and schools included.

PHIL 376. Philosophy of Law
3 Credits
Ethical, logical, and epistemological implications of law, together with an analysis of the rhetoric of legal practice.

PHIL 380. Metaphysics
3 Credits
Introduction to metaphysics: a treatment of such issues as the meaning of existence, the mind-body problem, the problem of universals, and free will versus determinism.

PHIL 397. Existentialism
3 Credits
The origins of existentialist thought in philosophy and literature, including the thought of Nietzsche, Kierkegaard, Dostoyevsky, Camus, and Sartre. The course covers topics in ethics and political philosophy, metaphysics, philosophical psychology, philosophy of religion, and other sub-disciplines of philosophy.

PHIL 413. Modal Logic
3 Credits
A formal introduction to the logic of necessity, possibility, and impossibility: the syntactic and semantic aspects of the formal modal systems T, S4, S5, as well as their philosophical implications.

PHIL 448. Writing Philosophy
3 Credits
A workshop on writing philosophy papers. Includes how to read and understand philosophical writing, organize a paper effectively, present a clear and forceful argument, and avoid common mistakes.

PHIL 463. Independent Studies
1-3 Credits
For students with a strong background in philosophy. Independent work in a specific area. May be repeated for a maximum of 6 credits.

PHIL 505. Advanced Studies in Philosophy and Literature
3 Credits
Examination of philosophical issues (e.g. personal identity, free will, moral dilemmas, the meaning of life) as presented in selected literary works and literary criticism. Consent of Instructor required.

PHIL 532. Advance Studies in Ethics and Global Poverty
3 Credits
Advanced philosophical scrutiny of and moral reflection on various aspects of global poverty and foreign aid. For example: Is poverty fundamentally a lack of income, or can it be understood as a failure to meet basic needs, or as a lack of valuable freedom? Do human rights exist? What, if any, are the moral obligations of rich countries to poor countries? Can foreign aid be immoral? How should the answers to these questions influence public policy? Restricted to: Main campus only.
**PHIL 540. Science and Ethics**  
1-3 Credits (1-3)  
Ethical concerns facing researchers in the basic and applied biological sciences. Coverage of responsible conduct in research including scientific integrity and research misconduct, mentor/trainee responsibilities, data management, authorship, publication practices, human subjects, animal welfare, intellectual property, conflicts of interest and effort and collaborative science. Emphasis on ethical reasoning skills. Discussion of ethical and societal implications of issues selected from a broad range of contemporary research areas (genetics, reproductive biology, environmental sciences, nanoscience, drug discovery, bioengineering, neuroscience). Subtitled. May be repeated for a maximum of 12 credits.

Name:  
Office Location:  
Phone: (575) 646-4616  
Website: [http://www.nmsu.edu/~philos/](http://www.nmsu.edu/~philos/)

## Ethics - Undergraduate Minor

A student who earns a Bachelor of Arts in Philosophy may not also earn a minor in Ethics.

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 101G</td>
<td>The Art of Wondering</td>
<td>3</td>
</tr>
<tr>
<td>or PHIL 201G</td>
<td>Introduction to Philosophy</td>
<td></td>
</tr>
<tr>
<td>PHIL 211G</td>
<td>Informal Logic</td>
<td>3</td>
</tr>
<tr>
<td>or PHIL 312</td>
<td>Formal Logic</td>
<td></td>
</tr>
<tr>
<td>PHIL 373</td>
<td>Ethical Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

Select three from the following, of which at least two must be upper division:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>C J 425</td>
<td>Issues in Ethics, Law, and Criminal Justice</td>
</tr>
<tr>
<td>HON 225G</td>
<td>History of Ethics</td>
</tr>
<tr>
<td>HON 304V</td>
<td>Dilemmas of War and Peace</td>
</tr>
<tr>
<td>HON 306V</td>
<td>Science, Ethics and Society</td>
</tr>
<tr>
<td>JOUR 377V</td>
<td>Mass Media Ethics</td>
</tr>
<tr>
<td>PHIL 302</td>
<td>Business Ethics</td>
</tr>
<tr>
<td>PHIL 321</td>
<td>Biomedical Ethics</td>
</tr>
<tr>
<td>PHIL 322</td>
<td>Environmental Ethics</td>
</tr>
<tr>
<td>PHIL 323V</td>
<td>Engineering Ethics</td>
</tr>
<tr>
<td>PHIL 327</td>
<td>Ethics and Sports</td>
</tr>
<tr>
<td>PHIL 328</td>
<td>Applied Ethics</td>
</tr>
<tr>
<td>PHIL 330</td>
<td>Ethics and Biomedical Research</td>
</tr>
<tr>
<td>PHIL 332</td>
<td>Ethics and Global Poverty</td>
</tr>
<tr>
<td>SUR 401</td>
<td>Ethics and Professionalism in Surveying and Mapping</td>
</tr>
</tbody>
</table>

### Total Credits

18

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**General Education Requirements**

1. Viewing a Wider World Requirement 3

**Departmental Requirements**

- **Introductory Philosophy**
  - PHIL 101G The Art of Wondering 3
  - PHIL 201G Introduction to Philosophy 3

- **Ethics**
  - Select one from the following: 3
    - PHIL 320 Social and Political Philosophy 3
    - PHIL 373 Ethical Theory 3
    - PHIL 376 Philosophy of Law 3

- **Logic**
  - PHIL 211G Informal Logic 3
  - or PHIL 312 Formal Logic 3

- **History of Philosophy**
  - Select one from the following: 3
    - HON 227G Plato and the Discovery of Philosophy 3
    - PHIL 341 Ancient Philosophy 3
    - PHIL 344 Modern Philosophy 3

- **Applied Ethics**
  - Select one from the following: 3
    - PHIL 302 Business Ethics 3
    - PHIL 321 Biomedical Ethics 3
    - PHIL 322 Environmental Ethics 3
    - PHIL 323V Engineering Ethics 3
    - PHIL 327 Ethics and Sports 3
    - PHIL 328 Applied Ethics 3
    - PHIL 330 Ethics and Biomedical Research 3
    - PHIL 332 Ethics and Global Poverty 3
  - Select two from the following: 6
    - PHIL 315 Philosophy of Language 3
    - PHIL 316 Philosophy of Mathematics 3
    - PHIL 346 Philosophy of Mind 3
    - PHIL 350 Epistemology 3
    - PHIL 351 Philosophy of Science 3
    - PHIL 380 Metaphysics 3

- **Philosophical Writing**
  - PHIL 448 Writing Philosophy 3

### Additional Requirements

- Select at least an additional 12 credits in philosophy, 6 of which are courses numbered 300 or above or the following HON courses:

- **Electives**
  - Select sufficient electives to bring total to 120, including 48 upper-division.

### Total Credits

120

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*For more information about General Education Courses, please see the General Education Courses (p. 47) section of the catalog.*

*HON 225G, HON 227G, and HON 228G will also satisfy this requirement.*

---

## Philosophy - Bachelor of Arts

## Philosophy - Undergraduate Minor
A student who earns a Bachelor of Arts in Philosophy may not also earn a minor in Philosophy.

Required Courses

<table>
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</table>

Select one from the following:

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>PHIL 223G</td>
</tr>
<tr>
<td>PHIL 328</td>
</tr>
<tr>
<td>PHIL 373</td>
</tr>
</tbody>
</table>

Select 9 credits from Philosophy at the 300 or above level

Total Credits 18

Physics

Undergraduate Program Information

A bachelor’s degree in physics provides the basis for careers in industry, teaching, the military, government or for study toward advanced degrees in physics or engineering. It should also provide the skills that recipients of physics degrees have listed as among the most important in obtaining their current positions, including problem solving ability, computer skills, mathematical skills, and laboratory skills, as well as knowledge of physics.

The Physics Department requires Physics BA and Physics BS students to have some knowledge of a second language. To meet this requirement, the student must do one of the following:

- Complete the introductory second language course sequence, 111 and 112, for any language taught at NMSU (or PORT 213 Portuguese for Romance Language Students I; or SPAN 113 Spanish for Heritage Learners I for heritage speakers). Students should enter the sequence at their proficiency level.
- Challenge the 112 level of any second language taught at NMSU (or PORT 213 Portuguese for Romance Language Students I; or SPAN 113 Spanish for Heritage Learners I for heritage speakers).
- Obtain college certification of completion of two years of one second language at the high school level with a grade of C- or higher in the second year level.
- Obtain, from the head of the Department of Languages and Linguistics, certification of a working knowledge of a second language if such language is not taught at NMSU.
- Obtain certification of a working knowledge of a Native American language from the American Indian program director.
- Successfully complete a regular university course taught in a language other than English. A student can receive credit only once for the same course taught in two languages.
- Pass a three-credit, upper-division course (numbered 300 or above) taught in a second language by the department of Languages and Linguistics.
- Pass C 375 American Sign Language II, with a grade of C- or better.
- In the case of a foreign student who is required to take the TOEFL exam, the dean will automatically waive the second language requirement.

Further information about the department may be found on the web at www.physics.nmsu.edu (http://www.physics.nmsu.edu). All incoming (new or transfer) students must schedule an orientation meeting with the department head and/or the undergraduate program head before their first semester at NMSU. All students will be assigned a faculty advisor in the physics department to discuss course selection, career resources, internships and coops, and other topics.

Graduate Program Information

The Department of Physics offers programs in many areas of emphasis leading to the MS and Ph.D. degrees. Admission to these programs is competitive and selection of applicants is based on undergraduate and/or previous graduate grade-point averages, performance on the general and subject Graduate Record Examination, other evidence of prior academic and research accomplishments submitted by the applicant, and references, as well as, in the case of applicants for the doctoral program, matching of the applicant’s research interests, as described by the student’s statement of purpose, to the Department’s research activities.

All degree-seeking graduate students must satisfy the relevant Graduate School requirements, pass a qualifying examination based on undergraduate physics courses at the 400 level, successfully complete a 3-credit, 500-level laboratory, and demonstrate or develop knowledge of computer programming. Additional course requirements are described below; courses taken S/U may not be used to satisfy any of the degree requirements, including the lab requirement for Master’s and Ph.D. students.

The qualifying and comprehensive examination outcomes are decided by vote of the entire faculty, based on the recommendations of the corresponding examination committees. For the qualifying examination, the faculty may decide that

- a student pass at the doctoral level;
- a student pass at the master's level;
- be requested to retake the exam at the next available opportunity; or
- terminate graduate study.

For the written part of the comprehensive examination, the faculty may decide that

- a student be given an unconditional pass;
- be given a conditional pass, with the requirement that the student produce additional evidence of research accomplishments during the oral part of the exam before being granted admission to candidacy;
- repeat the written part the next time it is offered; or
- terminate graduate study.

In addition, the faculty may decide to discontinue financial support to a student based on the student’s performance on the qualifying or comprehensive examination. Students will receive written notification of the exam’s outcome from the Graduate Physics Program Head within 30 days of the exam. Appeals must be addressed to the Physics Department Head within 30 days of receiving written notification of the exam’s outcome and will be decided by the physics faculty.

A student granted an unconditional or conditional pass on the written part of the comprehensive examination must take the oral part in the same semester that the written part was taken; the student’s Ph.D. committee makes the final decision, following the oral part of the comprehensive examination, on admission of the student to the candidacy to the doctoral degree.
Students may choose areas of emphasis from a variety of experimental, theoretical and computational research programs in the department. The current major research areas of the department include atmospheric physics, condensed matter physics/materials science, geophysics, optics, particle and nuclear physics, physics education, and others. These research projects are supported by multimillion-dollar funding by various federal agencies and two national laboratories within the state of New Mexico: Los Alamos National Laboratory and Sandia National Laboratories. In addition to the in-house research, the department conducts collaborative research programs with

- The Brookhaven National Laboratory,
- The Center for Integrated NanoTechnologies,
- Los Alamos National Laboratory,
- Sandia National Laboratories,
- The Thomas Jefferson Laboratory,
- Fermilab,
- Air Force Research Laboratory and
- other national and international laboratories.

The MS in Physics with a concentration in Space Physics program provides students with a strong foundation in physics with an intensive focus on space physics. Graduate study in space physics at the master's level prepares graduates for continued and specialized study toward the doctorate program in space-related fields as well as for challenges they will confront in space industrial and government settings.

The department is housed in a newly-renovated building which contains research laboratories, classrooms, offices and a computational laboratory.

**Degrees for the Department**

Physics - Bachelor of Arts (p. 393)

Physics - Bachelor of Science (p. 394)

Engineering Physics - Bachelor of Science in Engineering Physics (p. 393)

Physics - Master of Science (p. 395)

Physics - Doctor of Philosophy (p. 395)

**Minors for the Department**

Physics - Undergraduate Minor (p. 396)

**Professor, Stefan Zollner, Department Head**

**Professor, Matthias Burkardt, Undergraduate Program Head**

**Associate Professor, Vassilios Papavassiliou, Graduate Program Head**

**Professor, Heinz Nakotte, Engineering Physics Program Head**

**Professors M. Burkardt, Kieffer, Nakotte, Pate, Vasilev, Zollner; Associate Professors Engelhardt, Hearn, Kanim, Papavassiliou, Urquidi; Assistant Professors Cooper, Fohtung; College Professors Burkardt, DeAntonio; Emeritus Faculty** Burleson, Gibbs, Goedecke, Kanim, Kyle, Liefeld, Ni,

S. Zollner, Department Head, Ph.D. (Stuttgart) – experimental condensed matter and applied physics; V. Papavassiliou, Graduate Program Head, Ph.D. (Yale) – nuclear and particle physics; C. W. Bruce, Ph.D. (New Mexico State) – applied optics; M. Burkardt, Ph.D. (Erlangen) – theoretical nuclear and particle physics; M. DeAntonio, Ph.D. (New Mexico State) – applied optics; M. Engelhardt, Ph.D. (Erlangen) – computational nuclear and particle physics; E. Fohtung, Ph.D. (Freiburg)-materials science, neutron and X-ray scattering; G. H. Goedecke, Ph.D. (Rensselaer) – theoretical physics, optics; T. M. Hearn, Ph.D. (Cal Tech)– seismic tomography, seismology; S. Kanim, Ph.D. (University of Washington) – Physics Education; B. Kiefer, Ph.D. (Michigan) – computational condensed matter physics, mineral physics; H. Nakotte, Ph.D. (Amsterdam) – materials science, neutron scattering; J. Ni, Ph.D. (Cornell)– geophysics, seismology; S. F. Pate, Ph.D. (Pennsylvania) – nuclear and particle physics; J. Urquidi, Ph.D. (Texas Tech)– materials science, neutron and X-ray scattering; I. Vasiliev, Ph.D. (Minnesota) – computational materials science; X. Wang, Ph.D. (Hua-zhong Normal) – nuclear and particle physics

**PHYS 110G. The Great Ideas of Physics**

4 Credits (3+3P)

Conceptual, quantitative, and laboratory treatments of the great ideas and discoveries that have influenced lives and changed perceptions of nature, from Johannes Kepler's laws of planetary motion and Isaac Newton's and Albert Einstein's laws of motion and gravity to the modern concepts of the quantal structure of nature and the big bang universe.

**PHYS 120G. Introduction to Acoustics**

4 Credits (3+2P)

Lecture, demonstration, and laboratory treatment of the general properties of waves, the production, transmission, and reception of sound waves, including musical and vocal sounds, and characteristics of the human ear and several kinds of sources.

**PHYS 150. Elementary Computational Physics**

3 Credits (2+2P)

Introduction to computational techniques for the solution of physics-related problems.

**Prerequisite(s):** a C- or better in MATH 121G.

**PHYS 203. Supplemental Instruction to PHYS 213**

0.5-1 Credits (5.1-1)

Optional workshop as a supplement to PHYS 213. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.

**Corequisite(s):** PHYS 213.

**PHYS 204. Supplemental Instruction to PHYS 214**

0.5-1 Credits (5.1-1)

Optional workshop as a supplement to PHYS 214. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.

**Corequisite(s):** PHYS 214.

**PHYS 205. Supplemental Instruction to PHYS 215G**

0.5-1 Credits (5-1)

Optional workshop as a supplement to PHYS 215G. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.

**Corequisite(s):** PHYS 215G.

**PHYS 206. Supplemental Instruction to PHYS 216G**

0.5-1 Credits (5-1)

Optional workshop as a supplement to PHYS 216G. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.

**Corequisite(s):** PHYS 216G.

**PHYS 211G. General Physics I**

3 Credits

Non-calculus treatment of mechanics, waves, sound, and heat. Knowledge of simple algebra and trigonometry is required.
PHYS 211G. General Physics I Laboratory
1 Credit
Laboratory experiments in topics associated with material presented in
PHYS 211G.
Prerequisite(s)/Corequisite(s): PHYS 211G.

PHYS 212G. General Physics II
3 Credits
Non-calculus treatment of electricity, magnetism, and light.
Prerequisite(s): PHYS 211G or PHYS 221G.

PHYS 212GL. General Physics II Laboratory
1 Credit
Laboratory experiments in topics associated with material presented in
PHYS 212G.
Prerequisite(s)/Corequisite(s): PHYS 212G.

PHYS 213. Mechanics
3 Credits
Newtonian mechanics. Pre/
Corequisite(s): MATH 191G.

PHYS 213 L. Experimental Mechanics
1 Credit
Laboratory experiments associated with the material presented in
PHYS 213. Science majors. Pre/
Corequisite(s): PHYS 213.

PHYS 214. Electricity and Magnetism
3 Credits
Charges and matter, the electric field, Gauss law, the electric potential,
the magnetic field, Ampere's law, Faraday's law, electric circuits,
alternating currents, Maxwell's equations, and electromagnetic waves.
May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 192G. Prerequisite(s): a C- or better
in PHYS 213 or PHYS 215G.

PHYS 214 L. Electricity and Magnetism Laboratory
1 Credit
Laboratory experiments associated with the material presented in
PHYS 214. Prerequisite(s): a C- or better in
PHYS 213L or PHYS 215GL.

PHYS 215G. Engineering Physics I
3 Credits
Calculus-level treatment of kinematics, work and energy, particle
dynamics, conservation principles, simple harmonic motion. May be
repeated up to 3 credits.
Prerequisite(s): a C- or better in MATH 191G.

PHYS 215GL. Engineering Physics I Laboratory
1 Credit
Laboratory experiments associated with the material presented in
PHYS 215G. Students wishing to use the PHYS 215G-216G sequence to
satisfy the basic natural science general education requirement must
register for either PHYS 215GL or PHYS 216GL. Pre/
Corequisite(s): PHYS 215G.

PHYS 216G. Engineering Physics II
3 Credits
A calculus-level treatment of topics in electricity, magnetism, and optics.
May be repeated up to 3 credits.
Prerequisite(s): a C- or better in PHYS 213 or PHYS 215G and
MATH 192G.

PHYS 216GL. Engineering Physics II Laboratory
1 Credit
Laboratory experiments associated with the material presented in
PHYS 216G.
Prerequisite(s)/Corequisite(s): PHYS 216G. Prerequisite(s): A C- or better
in PHYS 213L or PHYS 215GL.

PHYS 217. Heat, Light, and Sound
3 Credits
Calculus-level treatment of thermodynamics, geometrical and physical
optics, and sound. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in PHYS 213 or PHYS 215G.

PHYS 217 L. Experimental Heat, Light and Sound
1 Credit
Laboratory experiments associated with the material presented in
PHYS 217. Science majors.
Prerequisite(s)/Corequisite(s): PHYS 217. Prerequisite(s): a C- or better
in PHYS 213L or PHYS 215GL.

PHYS 221G. General Physics for Life Sciences I
3 Credits
This algebra-based introduction to general physics covers mechanics,
waves, sound, and heat. Special emphasis is given to applications in
the life sciences. This course is recommended for students in the life
sciences and those preparing for the physics part of the MCAT.
Prerequisites: a C or better in MATH 120 or higher.

PHYS 221GL. Laboratory to General Physics for Life Science I
1 Credit
Laboratory experiments in topics associated with material presented in
PHYS 221G.
Prerequisite(s)/Corequisite(s): PHYS 221G. Restricted to Las Cruces
campus only.

PHYS 222G. General Physics for Life Sciences II
3 Credits
This algebra-based course covers electricity, magnetism, light, atomic
physics, and radioactivity. Special emphasis is given to applications in
the life sciences. This course is recommended for students in the life
sciences and those preparing for the physics part of the MCAT.
Prerequisite: PHYS 211G or PHYS 221G.

PHYS 222GL. Laboratory to General Physics for Life Sciences II
1 Credit
Laboratory experiments in topics associated with material presented in
PHYS 222G.
Prerequisite(s)/Corequisite(s): PHYS 222G. Restricted to Las Cruces
campus only.

PHYS 280. Independent Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member.
May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.
PHYS 290. Special Topics  
1-3 Credits  
Topics to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

PHYS 303V. Energy and Society in the New Millennium  
3 Credits  
Traditional and alternative sources of energy. Contemporary areas of concern such as the state of depletion of fossil fuels; nuclear energy, solar energy, and other energy sources; environmental effects; nuclear weapons; and health effects of radiation. Discussion of physical principles and impact on society. Focus on scientific questions involved in making decisions in these areas. No physics background required.

PHYS 304. Forensic Physics  
4 Credits (3+3P)  
Theories, laboratory, and field techniques in the area of forensic physics.

PHYS 305V. The Search for Water in the Solar System  
3 Credits  
Examines the formation, abundance and ubiquity of water in our Solar System stemming from comets, Martian and Lunar poles, Earth's interior and into the outer reaches of the Solar System. Topics will include nuclear synthesis, Solar System formation, remote sensing, as well as past, present and future NASA missions for water.

PHYS 315. Modern Physics  
3 Credits  
An introduction to relativity and quantum mechanics, with applications to atoms molecules, solids, nuclei, and elementary particles. May be repeated up to 3 credits.  
Prerequisite(s): a C- or better in MATH 291 and PHYS 214 or PHYS 216G.

PHYS 315 L. Experimental Modern Physics  
3 Credits (1+6P)  
Elementary laboratory in modern physics which supports the subject matter in PHYS 315. Required for physics majors. May be repeated up to 3 credits.  
Prerequisite(s)/Corequisite(s): PHYS 315. Prerequisite(s): a C- or better in PHYS 214L or 216GL.

PHYS 350. Special Topics  
1-3 Credits  
Lectures, demonstrations, and discussions on such topics as lasers and holography, energy sources, clouds, and biophysics. May be repeated for a maximum of 12 credits under different subtitles.

PHYS 380. Individual Study  
1-3 Credits  
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.  
Prerequisite: consent of instructor.

PHYS 395. Intermediate Mathematical Methods of Physics  
3 Credits  
Introduction to the mathematics used in intermediate-level physics courses. Topics include vector calculus, curvilinear coordinates, matrices, linear algebra, function spaces, partial differential equations, and special functions. May be repeated up to 3 credits.  
Prerequisite(s)/Corequisite(s): MATH 392. Prerequisite(s): a C- or better in MATH 291G.

PHYS 400. Undergraduate Research  
1-3 Credits  
May be repeated for a maximum of 6 credits.  
Prerequisite: consent of instructor.

PHYS 420. Capstone Project I  
3 Credits  
Application of engineering physics principles to a significant design project. Includes teamwork, written and oral communication and realistic technical, economic and public safety requirements.

PHYS 421. Capstone Project II  
3 Credits  
Continuation of PHYS 420.

PHYS 450. Selected Topics  
1-3 Credits  
Readings, lectures or laboratory studies in selected areas of physics. May be repeated for a maximum of 12 credits.

PHYS 451. Intermediate Mechanics I  
3 Credits  
Vector calculus, Lagrangian and Hamiltonian formulations of Newtonian mechanics. Topics include central force motion, dynamics of rockets and space vehicles, rigid body motion, noninertial reference frames, oscillating systems, relativistic mechanics, classical scattering, and fluid mechanics. Pre/  
Prerequisite(s): PHYS 213 or PHYS 215G, and MATH 291G.  
Corequisite(s): MATH 392.

PHYS 454. Intermediate Modern Physics I  
3 Credits  
Introduction to quantum mechanics, focusing on the role of angular momentum and symmetries, with application to many atomic and subatomic systems. Specific topics include intrinsic spin, matrix representation of wave functions and observables, time evolution, and motion in one dimension. May be repeated up to 3 credits.  
Prerequisite(s)/Corequisite(s): MATH 392 and PHYS 395. Prerequisite(s): a C- or better in PHYS 315.

PHYS 455. Intermediate Modern Physics II  
3 Credits  
Continuation of subject matter of PHYS 454. Specific topics include rotation and translation in three dimensions, solution of central potential problems, perturbation theory, physics of identical particles, scattering theory, and the interaction between photons and atoms. May be repeated up to 3 credits.  
Prerequisite(s): a C- or better in PHYS 454.

PHYS 461. Intermediate Electricity and Magnetism I  
3 Credits  
The first part of a two-course sequence in classical electrodynamics. Covered topics include static electric and magnetic fields, Laplace's and Poisson's equations, electromagnetic work and energy, Lorentz force, Gauss's, Biot-Savart, and Ampere's laws, Maxwell's equations, as well as electric and magnetic fields in matter. May be repeated up to 3 credits.  
Prerequisite(s)/Corequisite(s): MATH 392 and PHYS 395. Prerequisite(s): a C- or better in PHYS 214 or PHYS 216G or equivalent and a C- or better in MATH 291G.

PHYS 462. Intermediate Electricity and Magnetism II  
3 Credits  
Continuation of subject matter of PHYS 461. Covered topics include Maxwell's equations and their applications, electromagnetic waves, reflection, refraction, dispersion, radiating systems, interference and diffraction, as well as Lorentz transformations and relativistic electrodynamics. May be repeated up to 3 credits.  
Prerequisite(s): a C- or better in PHYS 461.
PHYS 467. Nanoscience and Nanotechnology
3 Credits
See CHME 467. Crosslisted with: CHME 467.
Prerequisite(s): CHEM 112 and (PHYS 211 or PHYS 215) and (EH&S
Safety training to include the courses: (1) Employee & Hazard
Communication Safety (HazCom); (2) Hazardous Waste Management;
and (3) Laboratory Standard.

PHYS 468. Intermediate X-ray Diffraction
3 Credits
Introduction to x-ray diffraction and reflectivity spectra. Topics include
X-ray sources and detectors, atomic spectra, characteristic x-rays,
thermionic emission, synchrotron radiation, instrument components, and
beam conditioners. Crosslisted with: CHME 488.
Prerequisite(s): a C- or better in PHYS 315 and PHYS 315L.

PHYS 469. Introduction to Condensed Matter Physics
3 Credits
Crystal structure, X-ray diffraction, energy band theory, phonons, cohesive
energy, conductivities, specific heats, p-n junctions, defects, surfaces,
amagnetic, optical, and low-temperature properties.
Prerequisite(s): PHYS 315.

PHYS 470. Introduction to Modern Materials
3 Credits
Structure and mechanical, thermal, electric, and magnetic properties
of materials. Modern experimental techniques for the study of material
properties.
Prerequisite: PHYS 315.

PHYS 474. Advanced X-ray Diffraction
3 Credits
Advanced laboratory experiments in optics related to the material
presented in PHYS 473.
Prerequisite(s): PHYS 315 and PHYS 315L.

PHYS 476. Computational Physics
3 Credits
An introduction to finite difference methods, Fourier expansions, Fourier
integrals, solution of differential equations, Monte Carlo calculations, and
application to advanced physics problems.
Prerequisite(s): PHYS 150 or equivalent and MATH 392.

PHYS 477. Fiber Optic Communication Systems
4 Credits (3+3P)
See E E 477 Crosslisted with: E E 477.
Prerequisite(s): C- or better in E E 315 or PHYS 461.

PHYS 478. Fundamentals of Photonics
4 Credits (3+3P)
Prerequisite(s): PHYS 216G or PHYS 217.

PHYS 479. Lasers and Applications
4 Credits (3+3P)
See E E 479 Crosslisted with: E E 479.
Prerequisite(s): C- or better in E E 315 or PHYS 461.

PHYS 480. Thermodynamics
3 Credits
Thermodynamics and statistical mechanics. Basic concepts of
temperature, heat, entropy, equilibrium, reversible and irreversible
processes. Applications to solids, liquids, and gases.
Prerequisites: PHYS 217, PHYS 315 and MATH 291G.

PHYS 485. Independent Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member.
May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

PHYS 488. Introduction to Condensed Matter Physics
3 Credits
Crystal structure, X-ray diffraction, energy band theory, phonons, cohesive
energy, conductivities, specific heats, p-n junctions, defects, surfaces,
amagnetic, optical, and low-temperature properties.
Prerequisite(s): PHYS 315.

PHYS 489. Introduction to Modern Materials
3 Credits
Structure and mechanical, thermal, electric, and magnetic properties
of materials. Modern experimental techniques for the study of material
properties.
Prerequisite: PHYS 315.

PHYS 491. High Energy Physics I
3 Credits
Particle detectors, accelerators, and experimental techniques.
Fundamental particles and interactions. Symmetries in particle physics.
Quark model of hadrons. Electroweak theory. Strong interactions and
QCD. Nuclear interactions at high energies. Grand unification. Super
symmetry.
Prerequisite(s): PHYS 455.

PHYS 493. Experimental Nuclear Physics
3 Credits (1+6P)
Selected experimental investigations in nuclear physics such as
measurement of radioactivity, absorption of radiation, nuclear
spectrometry.
Prerequisite(s): PHYS 315 and PHYS 315L.

PHYS 495. Mathematical Methods of Physics I
3 Credits
Applications of mathematics to experimental and theoretical physics.
Topics selected from: complex variables; special functions; numerical
analysis; Fourier series and transforms, Laplace transforms.
Prerequisite(s): MATH 392 and PHYS 395.

PHYS 497. Introduction to Space Plasma Physics
3 Credits
Properties of plasmas, especially those in the heliosphere such as the
solar wind, planetary magnetospheres and ionospheres, cosmic rays, and
the Sun. Topics include both independent-particle and fluid descriptions
of plasmas such as magnetohydrodynamics, the solar cycle and solar
flares, planetary magnetic substorms and aurorae, Van Allen radiation
belts, shocks in the solar wind, and wave propagation in plasmas.
Prerequisite(s): (PHYS 461 or E E 351) and MATH 392.

PHYS 500. Special Topics Seminar
1-2 Credits
Treatment of topics not covered by regular courses. Graded S/U. May be
repeated.

PHYS 511. Mathematical Methods of Physics I
3 Credits
Same as PHYS 495. Additional work required at a more advanced level.
PHYS 520. Selected Topics
1-3 Credits
Formal treatment of graduate-level topics not covered in regular courses. May be repeated for a maximum of 9 credits.
Prerequisites: graduate standing, consent of instructor, and selection of a specific topic prior to registration.

PHYS 521. Individual Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.
Prerequisites: graduate standing, consent of instructor, and selection of a specific topic prior to registration.

PHYS 527. Fiber Optic Communication Systems
4 Credits (3+3P)
Same as E E 527 Crosslisted with: E E 527

PHYS 528. Fundamentals of Photonics
4 Credits (3+3P)
Same as E E 528. Crosslisted with: E E 528.

PHYS 529. Lasers and Applications
4 Credits (3+3P)
Same as E E 529 Crosslisted with: E E 529

PHYS 551. Classical Mechanics
3 Credits
Lagrangian and Hamiltonian formulation of dynamics. Advanced treatments of most topics listed under PHYS 451, plus canonical transformations and Hamilton-Jacobi theory. PHYS 451 strongly recommended.

PHYS 554. Quantum Mechanics I
3 Credits

PHYS 555. Quantum Mechanics II
3 Credits
Continuation of topics in PHYS 554.
Prerequisites: PHYS 554 or consent of instructor.

PHYS 561. Electromagnetic Theory I
3 Credits
Detailed advanced treatments of most topics listed under PHYS 461, PHYS 462, plus multipole radiation, collisions of charged particles and bremsstrahlung, scattering, and radiation reaction. PHYS 461 and PHYS 462 strongly recommended.

PHYS 562. Electromagnetic Theory II
3 Credits
Continuation of topics in PHYS 561.
Prerequisites: PHYS 561 or consent of instructor.

PHYS 567. Nanoscience and Nanotechnology
3 Credits
See CHME 567. Crosslisted with: CHME 567.

PHYS 568. Elements of X-ray Diffraction
3 Credits
Same as PHYS 468, but additional work required. Crosslisted with: CHME 588.

PHYS 571. Advanced Experimental Optics
3 Credits
Taught with PHYS 471 with additional work required at the graduate level. Consent of Instructor required.
Prerequisite(s): PHYS 473 or PHYS 562.

PHYS 575. Advanced Physics Laboratory
1-3 Credits (1+6P)
Selected experiments in atomic, molecular, nuclear and condensed-matter physics.

PHYS 576. Advanced Computational Physics I
3 Credits
Advanced treatment of topics listed under PHYS 476, plus additional required work. Applications of numerical methods to complex physical systems. Recommended knowledge of Fortran or C, and MATH 377 or MATH 392. Same as PHYS 476, but additional work required.

PHYS 577. Fourier Methods in Electro-Optics
3 Credits
Same as E E 577 Crosslisted with: E E 577

PHYS 578. Optical System Design
3 Credits
See E E 578. Crosslisted with: E E 578

PHYS 584. Statistical Mechanics
3 Credits

PHYS 588. Condensed Matter Physics
3 Credits
Same as PHYS 488, but additional work required.

PHYS 589. Modern Materials
3 Credits
Same as PHYS 489 with differentiated assignments for graduate students.
Prerequisite: PHYS 554 or consent of instructor.

PHYS 591. Advanced High-Energy Physics I
3 Credits
Taught with PHYS 491 with additional work required at the graduate level.
Prerequisite(s): PHYS 555 or consent of instructor.

PHYS 592. Advanced High-Energy Physics II
3 Credits
Continuation of topics in PHYS 591
Prerequisite(s): PHYS 591.

PHYS 593. Advanced Experimental Nuclear Physics
3 Credits (1+6P)
Advanced experimental investigation of topics such as measurement of radioactivity, absorption of radiation, and nuclear spectrometry.

PHYS 597. Space Plasma Physics
3 Credits
Same as PHYS 497 but with added requirements.

PHYS 599. Master's Thesis
15 Credits
Thesis.

PHYS 600. Research
1-15 Credits
Doctoral research. May be repeated.
PHYS 620. Advanced Topics in Physics
1-3 Credits
Advanced formal treatment of topics not covered in regular courses. May be repeated for a maximum of 9 credits.
Prerequisite: consent of instructor.

PHYS 650. General Relativity I
3 Credits
Basic foundations and principles of general relativity, derivation of the Einstein field equations and their consequences, the linearized theory, the Bel-Petrov classification of the curvature tensor, derivation of the Schwarzschild solution and the four basic tests of general relativity.
Prerequisite(s): PHYS 511 or PHYS 561 or consent of instructor.

PHYS 680. Independent Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.
Prerequisite: graduate standing or consent of instructor.

PHYS 688. Advanced Condensed Matter Physics
3 Credits
Continuation of the advanced condensed matter physics presented in PHYS 588. Topics include electronic structure methods, optical, magnetic, and transport properties of solids, semiconductors, crystalline defects, nanostructures, and noncrystalline solids. PHYS 588 strongly recommended.

PHYS 689. Advanced Modern Materials
3 Credits
Advanced topics in the physics of modern materials, such as crystalline, amorphous, polymeric, nanocrystalline, layered, and composite materials and their surfaces and interfaces.
Prerequisites: PHYS 555, PHYS 588, or consent of instructor.

PHYS 691. Quantum Field Theory I
3 Credits
Path integrals, gauge invariance, relativistic quantum mechanics, canonical quantization, relativistic quantum field theory, introduction to QED.
Prerequisites: PHYS 555 and PHYS 562, or consent of instructor.

PHYS 692. Quantum Field Theory II
3 Credits
QED, running coupling constant, QCD, electroweak theory, asymptotic freedom, deep inelastic scattering, basic QCD phenomenology, path integrals in quantum field theory, lattice QCD.
Prerequisite: PHYS 691 or consent of instructor.

PHYS 700. Doctoral Dissertation
15 Credits
Dissertation.

Name:
Office Location:
Phone: (575) 646-3831
Website: http://physics.nmsu.edu/

Engineering Physics - Bachelor of Science in Engineering Physics
The Bachelor of Science in Engineering Physics is a joint degree program of the Department of Physics and the College of Engineering. This degree is ideal preparation for technical careers in high-tech industries, research laboratories, and the public sector. It also provides an excellent preparation for graduate studies in physics or engineering. A full description of the program requirements can be found in the College of Engineering (p. 563) section of this catalog.

Physics - Bachelor of Arts
The curriculum for the Bachelor of Arts degree is designed for students who would like to have a firm foundation in physics combined with study in another area and greater flexibility in choosing elective courses. The program requires a minor in a second field of study chosen by the student in consultation with an advisor.

Nondepartmental Requirements
MATH 191G Calculus and Analytic Geometry I 4
MATH 192G Calculus and Analytic Geometry II 4
MATH 291G Calculus and Analytic Geometry III 3
MATH 392 Introduction to Ordinary Differential Equations 3
Select 18 credits from a Minor in a second field from another department

Department Requirements
PHYS 150 Elementary Computational Physics 3
PHYS 213 Mechanics 3
PHYS 213 L Experimental Mechanics 1
PHYS 214 Electricity and Magnetism 3
PHYS 214 L Electricity and Magnetism Laboratory 1
PHYS 217 Heat, Light, and Sound 3
PHYS 217 L Experimental Heat, Light and Sound 1
PHYS 315 Modern Physics 3
PHYS 315 L Experimental Modern Physics 3
PHYS 395 Intermediate Mathematical Methods of Physics 3
PHYS 451 Intermediate Mechanics I 3
PHYS 454 Intermediate Modern Physics I 3
PHYS 455 Intermediate Modern Physics II 3
PHYS 461 Intermediate Electricity and Magnetism I 3
PHYS 462 Intermediate Electricity and Magnetism II 3
PHYS 480 Thermodynamics 3
Electives
Select sufficient electives to bring total number of credits to 128, including 48 upper-division.

Total Credits 128

1 May not be taken S/U and must earn a grade of C- or better.

Suggested Minors for the Bachelor of Arts
Physics Major
Basic Science Minor — A minor in a related scientific field broadens the overall knowledge of the student majoring in physics. Some departments which offer such minors are astronomy, chemistry, computer science, geology and mathematics.

Prehealth Minor — Students wishing to attend a medical or dental post-graduate school are strongly encouraged to obtain a minor in
Physics - Bachelor of Science

A Bachelor of Science degree in physics at NMSU prepares a student well for graduate study in physics, geophysics, or engineering or for a variety of careers in research and teaching. Specialization in one of the emphasis areas should increase employability at the BS level.

Nondepartmental Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 291G</td>
<td>Calculus and Analytic Geometry III</td>
<td>3</td>
</tr>
<tr>
<td>MATH 392</td>
<td>Introduction to Ordinary Differential Equations</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
</tr>
<tr>
<td>&amp; CHEM 112G</td>
<td>General Chemistry II</td>
</tr>
<tr>
<td>CHEM 115</td>
<td>Principles of Chemistry I</td>
</tr>
<tr>
<td>&amp; CHEM 116</td>
<td>Principles of Chemistry II (or higher-level courses)</td>
</tr>
</tbody>
</table>

Department Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 150</td>
<td>Elementary Computational Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 213</td>
<td>Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 213 L</td>
<td>Experimental Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 214</td>
<td>Electricity and Magnetism</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 214 L</td>
<td>Electricity and Magnetism Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 217</td>
<td>Heat, Light, and Sound</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 217 L</td>
<td>Experimental Heat, Light and Sound</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 315</td>
<td>Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 315 L</td>
<td>Experimental Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 395</td>
<td>Intermediate Mathematical Methods of Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 451</td>
<td>Intermediate Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 454</td>
<td>Intermediate Modern Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 455</td>
<td>Intermediate Modern Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 461</td>
<td>Intermediate Electricity and Magnetism I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 462</td>
<td>Intermediate Electricity and Magnetism II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 480</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
</tbody>
</table>

Select an additional 6 credits in physics or geophysics numbered 300 or above

Advanced Laboratory

Select at least 3 credits from the following (in any combination):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 471</td>
<td>Modern Experimental Optics</td>
</tr>
<tr>
<td>PHYS 475</td>
<td>Advanced Physics Laboratory</td>
</tr>
<tr>
<td>PHYS 493</td>
<td>Experimental Nuclear Physics</td>
</tr>
</tbody>
</table>

Electives

Select sufficient electives to bring total number of credits to 128, including 48 upper-division.

Total Credits: 128

1 May not be taken S/U and must earn a grade of C- or better.

Students who plan to pursue graduate study in physics or geophysics are strongly advised to take one or more senior-level courses in optics, nuclear physics, space physics, condensed matter physics, geophysics, or computational physics.

Students who plan to seek employment at the B.S. level are advised to take one of the following concentration area curricula in addition to the general and departmental requirements. The program of study should be chosen by the student in consultation with an advisor. Some recommended courses are listed below.

Concentration: Applied Optics

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 473</td>
<td>Introduction to Optics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 478</td>
<td>Fundamentals of Photonics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 479</td>
<td>Lasers and Applications</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits: 11

Concentration: Applied Physics

The program of study in applied physics is planned by the student and the physics advisor and includes classes in electrical and mechanical engineering along with classes in computer science.

Concentration: Computational Physics

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C S 157</td>
<td>Topics in Software Programming and Applications</td>
<td>3</td>
</tr>
<tr>
<td>or C S 150</td>
<td>C Programming</td>
<td>4</td>
</tr>
<tr>
<td>C S 171G</td>
<td>Introduction to Computer Science</td>
<td>4</td>
</tr>
<tr>
<td>MATH 279</td>
<td>Introduction to Higher Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 476</td>
<td>Computational Physics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 13

Concentration: Geophysics

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 111G</td>
<td>Introductory to Geology</td>
<td>4</td>
</tr>
<tr>
<td>GPHY 340V</td>
<td>Planet Earth</td>
<td>3</td>
</tr>
<tr>
<td>GPHY 450</td>
<td>Selected Topics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 10

2 For the geophysics concentration, students must take at least three credits of GPHY 450 Selected Topics.

Concentration: Materials Science

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHME 361</td>
<td>Engineering Materials</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 475</td>
<td>Advanced Physics Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 488</td>
<td>Introduction to Condensed Matter Physics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 10

1 May not be taken S/U and must earn a grade of C- or better.
New Mexico State University

PHYS 489
Introduction to Modern Materials
3
Total Credits
12

For the materials science concentration, students must take three credits of PHYS 475 Advanced Physics Laboratory.

Geophysics courses are offered by the Department of Physics and are listed under "Geophysics" in the course description chapter of the catalog.

Dual Degree (BS/MS) Program

This program option is designed to provide a means for PHYS undergraduates to obtain both a BS and an MS degree with 146 credits (normally: BS=128 credits, MS=30 credits). Students electing this option will follow the regular undergraduate BS in physics curriculum, except that they take the advanced laboratory course at the 5XX level to meet their BS requirements. They also apply nine other credits of their undergraduate courses numbered 450 and higher towards their MS degree, requiring only an additional 18 credits for the MS. These 18 credits can be obtained in two semesters (and perhaps one summer term to write and defend an MS thesis). Students interested in this dual degree must be admitted to the MS in Physics graduate program and must fulfill all degree requirements for the MS in Physics.

Physics - Doctor of Philosophy

For the Ph.D. degree, students must also pass the doctoral comprehensive examination, carry out original research, complete a dissertation, and pass a final oral examination. They must also pass or transfer at least 36 credits in formal courses numbered above 500 in physics/geophysics, including 24 credits of core graduate courses, and complete at least 6 credits of formal courses numbered above 600. The total number of credits, including formal and informal course credits and a minimum of 18 dissertation credits, must be at least 72. Financial support is available to graduate students in physics through teaching and research assistantships and fellowships. Inquiries about these opportunities should be directed to the graduate program director.

Requirements

Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 511</td>
<td>Mathematical Methods of Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 551</td>
<td>Classical Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 554</td>
<td>Quantum Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 555</td>
<td>Quantum Mechanics II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 561</td>
<td>Electromagnetic Theory I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 562</td>
<td>Electromagnetic Theory II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 576</td>
<td>Advanced Computational Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 584</td>
<td>Statistical Mechanics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits

24

Physics - Master of Science

For the master's degree, students must also successfully complete or transfer at least 30 course credits and pass a final oral examination or the doctoral comprehensive examination. Of these 30 credits, at least 21 must be in physics/geophysics, at most 3 may be for individual study or other informal courses, at most 6 may be for a thesis, and at most 9 may be numbered between 450 and 499. Students must successfully complete

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 576</td>
<td>Advanced Computational Physics I</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 476</td>
<td>Computational Physics</td>
<td></td>
</tr>
<tr>
<td>Select 3 credits from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 571</td>
<td>Advanced Experimental Optics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 575</td>
<td>Advanced Physics Laboratory</td>
<td></td>
</tr>
<tr>
<td>PHYS 593</td>
<td>Advanced Experimental Nuclear Physics</td>
<td></td>
</tr>
</tbody>
</table>

A Master's thesis is optional. PHYS 599 Master's Thesis credits will not count toward the 21 credits in physics/geophysics and can only be counted toward the 30 credits for a Master's degree if a student selects the thesis option and successfully defends a Master's thesis. PHYS 700 Doctoral Dissertation credits can be used as a substitute for PHYS 599 Master's Thesis credits.

Concentration: Space Physics

Requirements

See above section for general requirements for the Master's degree.

For the master's degree with a concentration in Space Physics, students must successfully complete the following physics core and specialized courses:

Physics Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 551</td>
<td>Classical Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 593</td>
<td>Advanced Experimental Nuclear Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 511</td>
<td>Mathematical Methods of Physics I</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 495</td>
<td>Mathematical Methods of Physics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 497</td>
<td>Introduction to Space Plasma Physics</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 597</td>
<td>Space Plasma Physics</td>
<td></td>
</tr>
<tr>
<td>PHYS 554</td>
<td>Quantum Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 454</td>
<td>Intermediate Modern Physics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 561</td>
<td>Electromagnetic Theory I</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 461</td>
<td>Intermediate Electricity and Magnetism I</td>
<td></td>
</tr>
<tr>
<td>PHYS 584</td>
<td>Statistical Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 480</td>
<td>Thermodynamics</td>
<td></td>
</tr>
</tbody>
</table>

Specialization Electives

Select a minimum of three from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR 535</td>
<td>Observational Techniques I (f)</td>
<td></td>
</tr>
<tr>
<td>ASTR 575</td>
<td>Computational Astrophysics</td>
<td></td>
</tr>
<tr>
<td>ASTR 620</td>
<td>Planetary Science</td>
<td></td>
</tr>
<tr>
<td>ASTR 698</td>
<td>Special Topics.</td>
<td></td>
</tr>
<tr>
<td>E E 460</td>
<td>Space System Mission Design and Analysis</td>
<td></td>
</tr>
<tr>
<td>GPHY 540</td>
<td>Physics of the Earth and Planetary Interiors</td>
<td></td>
</tr>
<tr>
<td>M E 533</td>
<td>Computational and Theoretical Fluid Mechanics</td>
<td></td>
</tr>
<tr>
<td>PHYS 576</td>
<td>Advanced Computational Physics I</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 476</td>
<td>Computational Physics</td>
<td></td>
</tr>
<tr>
<td>PHYS 591</td>
<td>Advanced High-Energy Physics I</td>
<td></td>
</tr>
<tr>
<td>or PHYS 491</td>
<td>High Energy Physics I</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits

30
Physics - Undergraduate Minor

A student cannot earn a BA or a BS in Physics and a minor in Physics. The minor in Physics requires a minimum of 18 credits distributed as follows:

Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 213</td>
<td>Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 215G</td>
<td>Engineering Physics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 214</td>
<td>Electricity and Magnetism</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 216G</td>
<td>Engineering Physics II</td>
<td></td>
</tr>
<tr>
<td>PHYS 315</td>
<td>Modern Physics</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 9 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 217</td>
<td>Heat, Light, and Sound</td>
</tr>
</tbody>
</table>

Other Physics or Geophysics courses numbered 300 or above

Select 0-6 credits from the following: ¹

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>A E 362</td>
<td>Orbital Mechanics</td>
</tr>
<tr>
<td>C E 301</td>
<td>Mechanics of Materials</td>
</tr>
<tr>
<td>CHME 361</td>
<td>Engineering Materials</td>
</tr>
<tr>
<td>CHME 470</td>
<td>Introduction to Nuclear Energy</td>
</tr>
<tr>
<td>CHME 471</td>
<td>Health Physics</td>
</tr>
<tr>
<td>CHME 475</td>
<td>Nuclear Reactor Theory</td>
</tr>
<tr>
<td>CHEM 431</td>
<td>Physical Chemistry</td>
</tr>
<tr>
<td>or CHEM 431 H</td>
<td>Physical Chemistry Honors</td>
</tr>
<tr>
<td>CHEM 433</td>
<td>Physical Chemistry I</td>
</tr>
<tr>
<td>or CHEM 433 H</td>
<td>Physical Chemistry I Honors</td>
</tr>
<tr>
<td>CHEM 434</td>
<td>Physical Chemistry II</td>
</tr>
<tr>
<td>E E 310</td>
<td>Engineering Analysis II</td>
</tr>
<tr>
<td>E E 351</td>
<td>Fields and Waves</td>
</tr>
<tr>
<td>E E 425</td>
<td>Introduction to Semiconductor Devices</td>
</tr>
<tr>
<td>E E 473</td>
<td>Introduction to Optics</td>
</tr>
<tr>
<td>E E 478</td>
<td>Fundamentals of Photonics</td>
</tr>
<tr>
<td>E E 479</td>
<td>Lasers and Applications</td>
</tr>
<tr>
<td>M E 333</td>
<td>Intermediate Dynamics</td>
</tr>
<tr>
<td>M E 338</td>
<td>Fluid Mechanics</td>
</tr>
<tr>
<td>M E 340</td>
<td>Applied Thermodynamics</td>
</tr>
</tbody>
</table>

Total Credits 18-24

¹ Other courses may be chosen with the approval of the Physics department head.

Psychology

Undergraduate Program Information

Students may take a major in psychology either as an area of emphasis in a liberal arts program or in preparation for further graduate education leading to professional careers in psychology. A major in psychology may be appropriate for the liberal arts student who wishes to pursue a career involving extensive social interaction and requiring solutions to people-related problems. Such careers include law, business, parenting, government, education, and management. Professional careers in psychology generally require some post-baccalaureate education. These careers include provision of clinical and counseling services, conducting research, applying research findings in industrial or government settings, and doing teaching and research in colleges and universities. All students, but especially those planning to apply to graduate school, are encouraged to take PSY 310 Experimental Methods, no later than the Spring semester of their junior year.

Requirements for the Bachelor of Arts in Psychology are listed here (p. 400). Satisfying these requirements should provide an adequate exposure to psychology for the liberal arts student and a basic foundation for students seeking a career in psychology. Students wishing to prepare for a professional career in psychology are especially encouraged to work closely with an advisor, as early as possible.

Graduate Program Information

Admission

The Department of Psychology offers graduate work leading to the Master of Arts and Doctor of Philosophy degrees. To maximize consideration for admittance, candidates should submit applications by January 15. Note that the Psychology Department does not offer training in counseling or clinical psychology.

Students will be admitted to graduate study on the basis of their potential for achievement in research, scholarship and teaching. The most promising applicants will be accepted. The number of students that the department can successfully accommodate is limited, therefore it will not always be possible to admit all qualified applicants. The admissions committee will consider any material that a candidate for admission wishes to present.

Students with bachelor degrees should apply for admittance to the master’s program even if their eventual goal is a Ph.D. Students with a master's degree in psychology-related disciplines or from other institutions may apply directly to the Ph.D. program.

A completed Graduate School admission application (https://gradschool.nmsu.edu/apply) (online only) should include all of the following:

1. Complete transcripts of all college work (minimum 3.0 GPA).
2. Scores on the General Graduate Record Examination. Applicants to the MA program are most likely to be considered with minimum scores of 155 Verbal, 156 Quantitative, 4.5 Analytical Writing. Applicants to the PhD program are more likely to be admitted with minimum scores of 158 Verbal, 159 Quantitative, and 4.5 Analytical Writing. Scores on the GRE Psychology test are not required.
3. Three letters of recommendation from professors, employers or others qualified to evaluate your potential for graduate work.
4. A letter explaining your research interests and experience, career goals, and an indication of the faculty member(s) whose work is of particular interest to you.
5. A curriculum vitae or résumé.
6. A writing sample (e.g., a paper you wrote for a course, a senior thesis, or a master’s thesis) uploaded through online application system. Ideally, the sample should demonstrate your ability to write clearly about psychological research.

As per NMSU Graduate School policy, admission to the doctoral program is conditional upon passing a qualifying exam. In Psychology this generally involves giving a presentation about a completed, empirical Masters thesis project to an examining committee. Also, if there are perceived gaps in preparedness, once at NMSU, candidates may be
asked to complete certain coursework/research projects to address deficiencies.

A number of potential minors are available to interested students, including a minor in statistics (p. 431). Additional information about a minor may be found in the listing of the home department in this catalog.

**Degrees for the Department**

**Psychology - Bachelor of Arts**

**Psychology - Master of Arts (p. 402)**

**Psychology - Doctor of Philosophy (p. 401)**

**Minors for the Department**

**Psychology - (p. 402) Undergraduate Minor (p. 402)**

**Psychology - (p. 402) Graduate Minor (p. 402)**

**Associate Professor, Dominic A. Simon, Department Head**

*Professors* Thompson, Trafimow; *Associate Professors* Dolgov, Guynn, Ketelaar, Kroger, MacDonald, Madsen, Marks; *Assistant Professors* Chen, Hout; *Emeritus Faculty* Cowie, Johnston, McDonald, Paap, Schvaneveldt, Stephan


**PSY 201G. Introduction to Psychology**

3 Credits

Methods and principles of behavior. Topics include human evolution and development, biopsychology, perception, learning, thinking, motivation, social interaction, and the diagnosis and treatment of abnormal behavior.

**PSY 266. Applied Psychology**

3 Credits

Explanation of the psychological principles of everyday living. Emphasizes motivation, learning of intelligent behavior, and applications of psychology to social issues. Community Colleges only.

**PSY 274. A Study of Substance Abuse through Service Learning**

3 Credits

Physiological and psychological impact of drug use on human behavior. Emphasizes practical applications of intervention and prevention in the community. Community Colleges only.

**PSY 290. Psychology of Adjustment**

3 Credits

Analyzes the responses people have to conflict, emotional stress, and frustration. It focuses on adapting to these problems and examines both normal and neurotic responses. Community College campus only.

**PSY 301. Introduction to Psycholinguistics**

3 Credits

Psychological aspects of language, including linguistic theories of grammar, psychological factors influencing language performance, primary language acquisition and the relationship of language to thought processes. Same as LING 301.

**Prerequisites:** PSY 201G and one of: STAT 251G, STAT 271G, or A ST 311; and PSY 310 or consent of instructor.

**PSY 302. Abnormal Psychology**

3 Credits

Introduces the types, causes, and treatment of mental disorders. Descriptions and explanations of the neuroses, affective disorders and the psychoses. Case histories are also analyzed.

**Prerequisites:** PSY 201G, MATH 120 and ENGL 111G.

**PSY 310. Experimental Methods**

4 Credits (2+4P)

The basic skills of literature search, experimental design, research methodology, and research reporting are emphasized; includes laboratory.

**Prerequisite(s):** PSY 201G, and either STAT 251G, STAT 271G, or A ST 311.

**PSY 311. Advanced Research Seminar**

4 Credits (2+4P)

Psychological research in conjunction with designing, conducting, writing, and presenting an independent research project. May also include various computer applications. Will discuss issues regarding application to graduate programs. Course should be taken no later than the first semester of senior year.

**Prerequisite:** PSY 310.

**PSY 315. Emotion**

3 Credits

An overview of the past century of research on human emotion from William James to Antonio Damasio. Explores a cognitive science perspective on emotion that includes questions about developmental, physiological, and evolutionary aspects of emotion and an exploration of the proximate and ultimate functions of emotion. Topics range from understanding the feeling component of emotion to understanding the role of facial displays of emotion.

**Prerequisite(s):** PSY 201G, and one of: STAT 251, STAT 271, or A ST 311, and PSY 310 or consent of instructor.

**PSY 317. Social Psychology**

3 Credits

Ways in which people are influenced by the behavior of others are analyzed. Includes aggression, altruism, conformity, attraction, sexual behavior, prejudice, and nonverbal behavior.

**Prerequisites:** PSY 201G, MATH 120, and ENGL 111G.

**PSY 320. Learning**

4 Credits (3+2P)

Covers: habituation, Pavlovian conditioning, Thorndikian learning, stimulus generalization, transfer of training, and the learning and forgetting of related and unrelated material.

**Prerequisites:** PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310.
PSY 321. Psychology of Personality
3 Credits
Introduces personality theories and supporting research. Psychoanalytic, physiological, and behavioral theories as they apply to personality are examined. Focuses on normal personality functioning.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310.

PSY 324. Sexual Behavior
3 Credits
Examines viewpoints of the evolution, control and function of human sexual behavior. Includes human sexuality, reproduction, male-female conflicts and the social implications of sex. Prerequisites: PSY 201G, MATH 120, and ENGL 111G

PSY 325. Health Psychology
3 Credits
Life stress, surgical stress, coronary-prone behavior, biofeedback, pain control, psychosocial approaches to geriatrics and cancer, behavioral treatments for addictions, obesity, and interpersonal issues in health care.
Prerequisite: PSY 201G.

PSY 330. Psychology and the Law
3 Credits
Discretionary practices in the judicial system including pretrial procedures, jury selection, jury decision making, eyewitness testimony, insanity, expert witnesses, and probation judgments.
Prerequisite: PSY 201G.

PSY 340. Cognitive Psychology
3 Credits
Review of research and theory in the study of human cognitive processes. Topics include information processing, pattern recognition, memory, attention, language, problem solving, decision making, and reasoning.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310.

PSY 342. Cognitive Neuroscience
3 Credits
Introduction to the study of the neural mechanisms underlying cognitive processes. Topics include relations between neural processes and attention, perception, memory, thinking and language; measuring changes in electrical activity, blood flow, and metabolism in the brain during cognition; the problem of consciousness; and evolutionary perspectives.
Prerequisites: PSY 201G and PSY 310.

PSY 350. Developmental Psychology: Conception through Childhood
3 Credits
Covers a wide range of topics concerning human psychological development from conception through childhood with special emphasis on current research and theory.
Prerequisite: PSY 201G.

PSY 351. Developmental Psychology: Adolescence through Old Age
3 Credits
Covers a wide range of topics concerning human psychological development from adolescence through old age with special emphasis on current research and theory.
Prerequisite: PSY 201G.

PSY 359. Psychology of Women
3 Credits
Examines theories and research on the psychological functioning of women in North American society. Influential theories of gender in psychology and current controversies in the psychological literature. Topics include women’s development across the lifespan, women and work, women’s physical and mental health and sexuality, the victimization of women, gender stereotypes, biological, social, and cultural influences on women’s behavior, and gender comparisons in abilities and personality. Same as W S 359.
Prerequisite: PSY 201G.

PSY 370. Special Topics
1-3 Credits
May be taken under different subtitles announced in the Schedule of Classes for unlimited credit. May be repeated for a maximum of 12 credits.
Prerequisite: PSY 201G.

PSY 375. Psychology and the Brain
3 Credits
An exploration of how the brain produces thinking, emotion, and behavior.
Prerequisite(s): PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311 or consent of instructor.

PSY 376. Evolutionary Psychology
3 Credits
This course introduces the student to the science of Evolutionary Psychology. In this class we will explore how evolutionary psychologists think about a variety of topics ranging from our capacity for (and appreciation of) art, emotions, and beauty to an exploration of the "design" of our minds in regards to mating, status striving, social behavior and cultural production.
Prerequisite(s): PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 380. Perception
4 Credits (4+4P)
Primary emphasis on vision. Topics include measurement of sensations, development of visual-motor coordination, reading, speech perception, picture perception, illusions, 3-dimensional space, and causes and consequences of visual abnormalities.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310.

PSY 383. Memory
3 Credits
Examines facets of human memory from the information processing viewpoint, including encoding, storage, and retrieval and memory-aiding techniques.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 384. Perceptual and Cognitive Development
3 Credits
Development across the lifespan in perception, memory, attention, reasoning, language and academic skills.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 400. Research
1-3 Credits
Individual research projects supervised by a department faculty member. May be repeated for a maximum of 6 credits.
Prerequisites: PSY 310 and consent of instructor.
PSY 401. Directed Readings
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisites: PSY 201G and consent of instructor.

PSY 402. Field Experience
1-3 Credits
Working with preschool, juvenile delinquent, handicapped, aged, convict, or mentally ill. Approximately five hours scheduled work per week per credit. May be repeated to 6 credits.
Prerequisites: 6 psychology credits and consent of instructor.

PSY 417V. Intercultural Relations
3 Credits
Exploration of cultural and subcultural differences from a psychological perspective. Emphasis on modern cultural settings. Issues may include: ethnocentrism, stereotyping, intercultural communication, culture shock, cultural differences, nonverbal behavior, conflict management, and developing intercultural interaction skills.
Prerequisite: PSY 201G.

PSY 430. Human-Computer Psychology
3 Credits
Theories, methodologies, and data from psychology applicable to interface design, with an emphasis on construction and application of conceptual psychological models.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 440. History and Systems of Psychology
3 Credits
History of scientific method emphasizing outstanding methodological problems of contemporary science, especially psychology. Also covers recent history of psychology and development of schools of psychology.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 442. Thinking
3 Credits
Research and theory pertaining to human thinking and problem solving. Effective problem-solving methods and common obstacles to problem solving are analyzed.
Prerequisites: PSY 201G and PSY 310.

PSY 445. Clinical Psychology
3 Credits
Basic theories in clinical psychology and techniques of psychotherapy.
Prerequisites: PSY 201G, PSY 302, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 450. Senior Thesis
3 Credits
A laboratory or field research project conducted under faculty supervision. Requires written research proposal, conduct of research, data analysis, and final written report. May be repeated for a maximum of 6 credits.
Prerequisites: PSY 310, 6 additional psychology credits, consent of supervising faculty member, and junior or above standing.

PSY 470. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

PSY 507. Quantitative Methods in Psychology I
3 Credits
Statistical concepts emphasizing distributions and methods most appropriate to the data, models, and theories in psychology. Emphasis on distributions, probability and basic inferential statistics in Psychological research.
Prerequisite(s): An elementary statistics course or consent of instructor.

PSY 508. Quantitative Methods in Psychology II
3 Credits
Statistical concepts emphasizing distributions and methods most appropriate to the data, models, and theories in psychology. Emphasis on Analysis of Variance (ANOVA) in Psychological research.
Prerequisite(s): PSY 507 or equivalent.

PSY 509. Quantitative Methods in Psychology III
3 Credits
Statistical concepts emphasizing distributions and methods most appropriate to the data, models, and theories in psychology. Emphasis on multiple regression in Psychological research.
Prerequisite(s): PSY 507 or equivalent.

PSY 510. Computer Methodology
3 Credits
Use of computers in psychological research with emphasis on developing experimental control programs.

PSY 520. Learning
3 Credits
Classical areas of learning, including instrumental and classical conditioning paradigms, habituation, reinforcement variables, stimulus generalization and transfer, and memory.

PSY 522. Sensation and Perception
3 Credits
Stimulus and decision variables in judging auditory and visual events. Topics include: detection of signals; signal intensity versus perceived strength; size, shape, and movement perception; reading and listening.

PSY 523. Methods in Cognitive Psychology
3 Credits
Experimental and correlational methodologies appropriate for investigating cognitive psychological theories and problems.
Prerequisite(s): PSY 524 or consent of instructor.

PSY 524. Cognitive Psychology
3 Credits
Examines theoretical and empirical work on human cognition. Topics include: information processing theories, pattern recognition, memory, attention, language, problem solving, decision making, and reasoning.

PSY 525. Behavioral Neuroscience
3 Credits
The biological basis of behavior with an emphasis on human cognitive functioning.

PSY 527. Social Psychology
3 Credits
Current and traditional theories, research findings, and research methodologies of social psychology.

PSY 529. Methods in Social Psychology
3 Credits
Experimental, quasi-experimental, and correlational methodologies appropriate for investigating social psychological theories and problems.
Prerequisite(s): Graduate student in psychology or consent of instructor.
PSY 530. Human-Computer Interaction
3 Credits
Issues associated with human-computer interface design. Concepts, methods, and data from HCI, cognitive psychology, human factors, artificial intelligence, and psycholinguistics that apply.

PSY 531. Human Memory
3 Credits
Current and traditional theories and research findings related to human memory.

PSY 535. Developmental Psychology
3 Credits
Examines theoretical and empirical work in lifespan developmental psychology, with an emphasis on perceptual and cognitive development, language development, and social cognitive development.

PSY 540. History and Systems of Psychology
3 Credits
History of scientific method emphasizing outstanding methodological problems of contemporary science, especially psychology. Covers recent history of psychology and development of schools of psychology.

PSY 543. Cognitive Neuroscience
3 Credits
Introduction to the study of the neural mechanisms underlying cognitive processes. Topics include relations between neural processes and attention, perception, memory, thinking and language; measuring change in electrical activity, blood flow, and metabolism in the brain during cognition; the problem of consciousness; and evolutionary perspectives.

PSY 547. Engineering Psychology
3 Credits
Covers concepts, methods, and findings of human performance. Treats the human as a subsystem that receives, stores and processes information, makes decisions, and acts within a human-machine environment system.

PSY 550. Teaching of Psychology
3 Credits
This class serves both new and experienced teachers. It will help new teachers design and conduct a successful course and help experienced teachers improve their teaching.

PSY 570. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes.

PSY 590. Research Seminar in Psychology
1 Credit (1)
Presentations on research by students, faculty, and guest speakers. May be repeated for credit.

PSY 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. May be repeated for credit.

PSY 599. Master’s Thesis
15 Credits
Thesis.

PSY 600. Doctoral Research
1-15 Credits
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination.

PSY 698. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. May be repeated for credit.

PSY 700. Doctoral Dissertation
15 Credits
Dissertation.

Administrative Assistant: Bea Guzman
Office Location: Science Hall, Room 220
Phone: (575) 646-2502
FAX: (575) 646-6212
Mailing Address:
Department of Psychology, MSC 3452
New Mexico State University
P.O. Box 30001
Las Cruces, NM 88003-8001
USA
Website: https://psychology.nmsu.edu/

Psychology - Bachelor of Arts

General Requirements

Students must receive a C- or better in courses used to satisfy the departmental and nondepartmental requirements of the psychology major. Students must also complete all University degree requirements, which include: General Education requirements (p. 47), Viewing a Wider World requirements (p. 47), and elective credits to total 120 credits with 48 of them being upper division.

Departmental Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PSY 201G</td>
<td>Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select one from the following:</td>
<td></td>
</tr>
<tr>
<td>PSY 302</td>
<td>Abnormal Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 350</td>
<td>Developmental Psychology: Conception through Childhood</td>
<td>3</td>
</tr>
<tr>
<td>PSY 440</td>
<td>History and Systems of Psychology</td>
<td>3</td>
</tr>
</tbody>
</table>

Research Methods

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PSY 310</td>
<td>Experimental Methods</td>
<td>4</td>
</tr>
<tr>
<td>PSY 311</td>
<td>Advanced Research Seminar</td>
<td>4</td>
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</table>

Basic Mechanisms

Select 3 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 301</td>
<td>Introduction to Psycholinguistics</td>
<td>3</td>
</tr>
<tr>
<td>PSY 375</td>
<td>Psychology and the Brain</td>
<td>3</td>
</tr>
<tr>
<td>PSY 376</td>
<td>Evolutionary Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 380</td>
<td>Perception</td>
<td>3</td>
</tr>
</tbody>
</table>

Acquisition and Use of Knowledge

Select 3 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 320</td>
<td>Learning</td>
<td>3</td>
</tr>
<tr>
<td>PSY 340</td>
<td>Cognitive Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 383</td>
<td>Memory</td>
<td>3</td>
</tr>
<tr>
<td>PSY 442</td>
<td>Thinking</td>
<td>3</td>
</tr>
</tbody>
</table>

Understanding Behavior
Select one from the following: 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 315</td>
<td>Emotion</td>
</tr>
<tr>
<td>PSY 317</td>
<td>Social Psychology</td>
</tr>
<tr>
<td>PSY 321</td>
<td>Psychology of Personality</td>
</tr>
</tbody>
</table>

Additional Electives 3

Nondepartmental Requirements
Select one from the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 251G</td>
<td>Statistics for Business and the Behavioral Sciences</td>
</tr>
<tr>
<td>STAT 271G</td>
<td>Statistics for Psychological Sciences</td>
</tr>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
</tr>
</tbody>
</table>

Philosophy course 300-level or above 4

At least three credits of introductory biology 3

Select one from the following: 5

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 101G</td>
<td>Human Biology</td>
</tr>
<tr>
<td>&amp; 101GL</td>
<td>and Human Biology Laboratory</td>
</tr>
<tr>
<td>BIOL 111G</td>
<td>Natural History of Life</td>
</tr>
<tr>
<td>&amp; 111GL</td>
<td>and Natural History of Life Laboratory</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
</tr>
<tr>
<td>&amp; 211GL</td>
<td>and Cellular and Organismal Biology Laboratory</td>
</tr>
</tbody>
</table>

Second Language Option 13-15

Total Credits 60-62

1. PSY 310 Experimental Methods: prerequisite of PSY 201G Introduction to Psychology
2. requirements are to be met after the student has completed PSY 310 Experimental Methods (which has prerequisites of PSY 201G Introduction to Psychology, and either STAT 251G Statistics for Business and the Behavioral Sciences or STAT 271G Statistics for Psychological Sciences or A ST 311 Statistical Applications
3. Additional electives to bring total credits in psychology to at least 34, with at least 24 of those 34 credits being upper division.
4. PHIL 346 Philosophy of Mind or PHIL 351 Philosophy of Science recommended
5. A course that includes a laboratory is highly recommended, and is required if intended to satisfy Gen Ed Area III
6. Prerequisite: CHEM 110G Principles and Applications of Chemistry or CHEM 111G General Chemistry I or CHEM 115 Principles of Chemistry I

Second Language

Students seeking the BA in Psychology must meet the second language requirement by completing one of the following three skills requirements:

Option 1: Traditional Language Track
Options as described in Section III of College Degree Requirements under College Degree Requirements under College of Arts and Sciences (i.e. typically through 212 or 214 or Arts & Sciences Certification, Option B).

Option 2: Computer Science Track

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 153</td>
<td>Python Programming I</td>
</tr>
<tr>
<td>CS 154</td>
<td>Python Programming II</td>
</tr>
<tr>
<td>CS 158</td>
<td>R Programming</td>
</tr>
<tr>
<td>CS 159</td>
<td>R PROGRAMMING II</td>
</tr>
</tbody>
</table>

Under special circumstances, alternative combinations of CS courses may be approved by the Department Head

Total Credits 12

Option 3: Math Track

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
</tr>
<tr>
<td>MATH 190G</td>
<td>Trigonometry and Precalculus</td>
</tr>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
</tr>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
</tr>
</tbody>
</table>

Total Credits 15

Psychology - Doctor of Philosophy

The Ph.D. in psychology is offered in the major areas of cognitive, engineering and social psychology. Ph.D. candidates are required to:

Core Course: (corresponding to the student's area of study)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 524</td>
<td>Cognitive Psychology</td>
</tr>
<tr>
<td>PSY 527</td>
<td>Social Psychology</td>
</tr>
<tr>
<td>PSY 547</td>
<td>Engineering Psychology</td>
</tr>
</tbody>
</table>

Quantitative Methods Sequence:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 507</td>
<td>Quantitative Methods in Psychology I</td>
</tr>
<tr>
<td>PSY 508</td>
<td>Quantitative Methods in Psychology II</td>
</tr>
<tr>
<td>PSY 509</td>
<td>Quantitative Methods in Psychology III</td>
</tr>
</tbody>
</table>

Content Courses: 9

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 520</td>
<td>Learning</td>
</tr>
<tr>
<td>PSY 522</td>
<td>Sensation and Perception</td>
</tr>
<tr>
<td>PSY 525</td>
<td>Behavioral Neuroscience</td>
</tr>
<tr>
<td>PSY 530</td>
<td>Human-Computer Interaction</td>
</tr>
<tr>
<td>PSY 531</td>
<td>Human Memory</td>
</tr>
<tr>
<td>PSY 535</td>
<td>Developmental Psychology</td>
</tr>
<tr>
<td>PSY 540</td>
<td>History and Systems of Psychology</td>
</tr>
<tr>
<td>PSY 543</td>
<td>Cognitive Neuroscience</td>
</tr>
</tbody>
</table>

Experimental/Quantitative Methods: (additional) 6

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>PSY 510</td>
<td>Computer Methodology</td>
</tr>
<tr>
<td>PSY 523</td>
<td>Methods in Cognitive Psychology</td>
</tr>
<tr>
<td>PSY 529</td>
<td>Methods in Social Psychology</td>
</tr>
<tr>
<td>PSY 550</td>
<td>Teaching of Psychology</td>
</tr>
</tbody>
</table>

Comprehensive Examination: 1

Work related training requirement: 2

Final Oral Examination: 3

Dissertation: 18+

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>PSY 700</td>
<td>Doctoral Dissertation</td>
</tr>
</tbody>
</table>

1. pass written and oral components of the comprehensive exam
2. complete a work-related training requirement (i.e. complete an internship of at least 10 weeks duration, or teach at least one 3-credit undergraduate course independently; pre-teaching requirements listed here)
3. pass a final oral examination that consists primarily of an evaluation of the dissertation and the candidate’s defense of it, but may extend over the entire field of the candidate’s study.

Students are encouraged to register for one credit of PSY 590 Research Seminar in Psychology each semester.
Graduate courses fall into five categories:

**Core:** PSY 524 Cognitive Psychology, PSY 527 Social Psychology, PSY 547 Engineering Psychology

**Quantitative methods:** PSY 507 Quantitative Methods in Psychology I, PSY 508 Quantitative Methods in Psychology II, PSY 509 Quantitative Methods in Psychology III

**Experimental Methods:** PSY 510 Computer Methodology, PSY 523 Methods in Cognitive Psychology, PSY 550 Teaching of Psychology

**Content:** PSY 520 Learning, PSY 522 Sensation and Perception, PSY 525 Behavioral Neuroscience, PSY 530 Human-Computer Interaction, PSY 531 Human Memory, PSY 535 Developmental Psychology, PSY 540 History and Systems of Psychology, PSY 543 Cognitive Neuroscience,

**Supervised research (PhD):** PSY 600 Doctoral Research, PSY 698 Special Research Programs, PSY 700 Doctoral Dissertation

When offered, PSY 570 Special Topics may be considered content, quantitative methods, or experimental methods, depending on the specific course content.

**Psychology - Graduate Minor**

Students may earn a minor in psychology at the MA or Ph.D. level by completing the following:

**Required Coursework**

| Core Course (corresponding to the student’s area of study): | 3 |
| PSY 524 | Cognitive Psychology |
| PSY 527 | Social Psychology |
| PSY 547 | Engineering Psychology |

**Two other Content Courses:**

| Two other Content Courses: | 6 |
| PSY 520 | Learning |
| PSY 522 | Sensation and Perception |
| PSY 525 | Behavioral Neuroscience |
| PSY 530 | Human-Computer Interaction |
| PSY 531 | Human Memory |
| PSY 535 | Developmental Psychology |
| PSY 540 | History and Systems of Psychology |
| PSY 543 | Cognitive Neuroscience |

**The Quantitative Methods Sequence:**

| The Quantitative Methods Sequence: | 3 |
| PSY 507 | Quantitative Methods in Psychology I |
| PSY 508 | Quantitative Methods in Psychology II |
| PSY 509 | Quantitative Methods in Psychology III |

**Research Thesis:**

| Research Thesis: | 6 |
| PSY 590 | Research Seminar in Psychology |

1 Students are also encouraged to register for one credit of PSY 590 Research Seminar in Psychology each semester.

Graduate courses fall into five categories:

**Core:** PSY 524 Cognitive Psychology, PSY 527 Social Psychology, PSY 547 Engineering Psychology

**Quantitative Methods:** PSY 507 Quantitative Methods in Psychology I, PSY 508 Quantitative Methods in Psychology II, PSY 509 Quantitative Methods in Psychology III

**Experimental Methods:** PSY 510 Computer Methodology, PSY 523 Methods in Cognitive Psychology, PSY 550 Teaching of Psychology

**Content:** PSY 520 Learning, PSY 522 Sensation and Perception, PSY 525 Behavioral Neuroscience, PSY 530 Human-Computer Interaction, PSY 531 Human Memory, PSY 535 Developmental Psychology, PSY 540 History and Systems of Psychology, PSY 543 Cognitive Neuroscience,

**Supervised Research (MA):** PSY 598 Special Research Programs, PSY 599 Master’s Thesis

When offered, PSY 570 Special Topics may be considered content, quantitative methods, or experimental methods, depending on the specific course content.

**Psychology - Undergraduate Minor**

A student must pass at least 18 credits in Psychology courses with grades of C- or higher, and at least 9 of those credits must be upper division. A student may not earn both a BA in Psychology and a minor in Psychology.

**Sociology**

**Undergraduate Program Information**

The undergraduate major in sociology is broad in scope. It prepares students for a variety of public and private sector employment.
Graduate Program Information

The program is designed to prepare students for doctoral study in sociology as well as employment in research and applied areas of the field. In addition to the on-campus program, we also offer an online MA for students who are unable to attend in person. Through small seminars, on campus graduate students engage in discussions of subjects that often result in thesis and internship topics. In online seminars, small classes allow for in-depth discussions that can generate ideas for research as well as knowledge for applied work environments. In both online and on-campus settings, faculty members and students work toward the mutual goal of developing the full potential of each student.

The Southwest and Border Region

Our unique location attracts faculty and students who are interested in peoples of the southwest, particularly Hispanics/Latinos and Native Americans. In addition, our proximity to the U.S.-Mexico border provides an ideal laboratory for the examination of such issues as globalization, transnational migration and the consequences of border development.

Social Inequality

Our faculty members examine the intersection of race, class and gender oppression in their teaching and research, with special attention to educational, rural/urban, ecological and global disparities. One goal of this examination is to address social problems such as poverty and racial/ethnic inequality.

Program Options and Requirements

Students seeking a master's degree in sociology should have taken undergraduate courses in methods and statistics or their equivalent. Students who have not taken these courses should complete them before beginning their graduate study or as soon as possible in consultation with the sociology graduate director.

Graduate students in sociology have two program options, thesis or non-thesis. Faculty consider the students special interests and career plans in advising regarding their choice of program options. The thesis option is typically selected by students who intend to pursue a Ph.D. degree, while the non-thesis option is commonly pursued by those desiring immediate employment in research and applied areas in business, government, education, social welfare and health. The non-thesis, coursework only option is currently the only option available for on-line MA students. All students must pass a final master’s examination.

Degrees for the Department

Sociology - Bachelor of Arts (p. 407)
Sociology - Master of Arts (p. 408)

Minors for the Department

Contemporary Social Studies - Undergraduate Minor (p. 407)
Sociology - Undergraduate Minor (p. 409)

Professor, David G. LoConto, Department Head

Professor LoConto; Associate Professors Ortiz, Rice, Steinkopf-Rice, Way; Assistant Professors Arnett, Newby, Pelak; College Assistant Professor Hovey; Emeritus Professor Hoffman, Loustaunau

D. LoConto, Ph.D. (Oklahoma State University) – classical American social thought, popular culture, social psychology; S. Arnett, Ph.D. (University of Notre Dame) – education, race and ethnicity, social inequalities, K. Hovey, Ph.D. (University of New Mexico) – rural and urban communities, social control, criminological theory; C. A. Newby, Ph.D. (University of Texas at Austin) – race/ethnicity/minority relations, immigration, demography; D. Ortiz, Ph.D. (University of Notre Dame) – social movements, political sociology, Latin America; C. Pelak, Ph.D. (Ohio State University) – social inequalities, race and ethnicity, sociology of sport; J. Steinkopf-Rice, Ph.D. (Washington State University) – gender, globalization, communities; J.C. Rice, Ph.D. (Washington State University) – environment, society and technology, political sociology; S. Way, Graduate Program Director, Ph.D. (University of Arizona) – education, gender, juvenile delinquency.

SOC 101G. Introductory Sociology
3 Credits
Introduction to social theory, research, methods of analysis, contemporary issues in historical and cross-cultural contexts. Covers groups, deviance, inequality, family, gender, social change, and collective behavior.

SOC 201G. Contemporary Social Problems
3 Credits
Introduction to the fundamentals of social analysis through the analysis of contemporary American social problems. Emphasis on methods of analysis and cross-national comparisons showing that the social problems studied are common to all societies. Covers racism, violence, poverty, crime, health care, and substance abuse.

SOC 258. Current Issues in Marriage and Family
3 Credits
Examination of contemporary American family life, including courtship, marriage, divorce, and child rearing. Community Colleges only.

SOC 262. Issues in Death and Dying
3 Credits
Major personal and social issues related to the process of dying in our culture. Community Colleges only.

SOC 263. Human Sexuality
3 Credits
Introduction to cultural and personal aspects of human intimacy, sexuality and the life cycle, sexual variation, and sexually transmitted diseases. Community Colleges only.

SOC 269. Sexualities and Society
3 Credits
Examines various sexualities from a sociological perspective. Topics include sexual identity, intimate relationships, sexual desire, sexual behavior, the sex industry, and the politics of sexuality. Discussion of selected topics is grounded in both macro and micro sociological viewpoints. Restricted to: Main campus only.

SOC 273. Sex and Gender
3 Credits
Analysis of changes, behaviors, and stereotypes of women and men in contemporary Western societies. Same as W S 273.
SOC 330V. Introduction to Religious Studies  
3 Credits  
Provides an overview of old and new methods and theories for the study of religion. Exposure to the ways groups of people in diverse cultural systems construct and change their religious traditions to serve practical and meaningful ends. Same as ANTH 330V and HIST 330V.

SOC 336V. Sociology of Pop Culture  
3 Credits  
This course will provide students with a sociological look at creation, distribution, and effects of popular culture that have shaped, preserved, and conveyed distorted images of social class, race, gender and history to unwary consumers.

SOC 350. Sociological Foundations  
3 Credits  
Focus is on becoming a sociologist including career opportunities, thinking critically about society, and conducting sociological inquiry. Emphasis is on identifying and using resources available to sociologists, communication skills for sociologists and acquisition of basic analytic techniques. Restricted to BA Sociology majors.  
Prerequisite(s): SOC 101G or consent of instructor.

SOC 351. Sociological Theory  
3 Credits  
Analysis of the main historical themes underlying contemporary sociological theory. May be repeated up to 3 credits.  
Prerequisite(s): SOC 101G.

SOC 352. Social Research: Methods  
3 Credits  
An introduction to research design and data collection strategies commonly employed in the social sciences. Topics include experiments, survey research and various other quantitative and qualitative methods. May be repeated up to 3 credits.  
Prerequisite(s): SOC 101G.

SOC 353. Sociological Research: Analysis  
3 Credits  
Elementary data analysis class emphasizing descriptive and inferential statistical techniques commonly employed in the social sciences. Topics range from one variable analysis through regression and correlation analysis of two variables. May be repeated up to 3 credits.  
Prerequisite(s): SOC 101G.

SOC 357. Gender and Society  
3 Credits  
Overview of issues related to gender, including how gender is constructed and reproduced in our society. Gender is examined from social psychological and institutional perspectives. Same as W S 357.

SOC 359. Sociology of the Family  
3 Credits  
Family patterns, dynamics, and processes in North American and other contemporary families. Emphasis on diversity.

SOC 360V. Introduction to Population Studies  
3 Credits  
Determinants and consequences of changes in fertility, mortality and migration patterns. Introduction to techniques of demographic analysis. Focus on U.S. and world population issues and their relation to social, cultural, and economic systems.

SOC 361V. Social Issues in the Rural Americas  
3 Credits  
Same as ANTH 361V.

3 Credits  
Identification and analysis of the causes and consequences of social issues in urban environments including poverty, crime, terrorism, urban social policy, suburban flight, disinvestment, and deindustrialization. Special emphasis on global forces affecting global urban environments around the world.

SOC 365. Environmental Sociology  
3 Credits  
Societal responses to environmental problems including social adjustments to natural and technological hazards, socio-cultural aspects of technological risk and impact assessment, and emergence of environmental social movements.

SOC 371. Race and Ethnic Relations  
3 Credits  
Dynamics of racial prejudice and patterns of racial and ethnic interaction in the United States.

SOC 374V. Comparative Family Systems  
3 Credits  
A comparative analysis of family forms and characteristics in various societies. An examination of the diversity of family practices among ethnic and class groups in the United States. Same as W S 374G.

SOC 375. Social Inequality  
3 Credits  
Analysis of the social distinctions arising from sex, age, occupation, and ethnicity. Emphasis on indicators of social class and patterns of social mobility.

SOC 376V. Social Change  
3 Credits  
Explanations of autonomous and directed social change as occurring at the individual, organizational, societal, and international levels. Case studies from around the world.

SOC 381. Individual and Society  
3 Credits  
Ways people influence each other and the mutual interaction of the individual and society. Topics include attitudes, attitude change, conformity, liking and friendship patterns.

SOC 390. Sociology of Childhood  
3 Credits  
This course examines theories, methods, and empirical research in several areas of the sociology of childhood. Major themes are: (1) how social structure constrains children’s lives, (2) how children negotiate, share, and create culture, and (3) how children’s experiences vary within and across societies.

SOC 391. Crime and Society  
3 Credits  
Analysis of crime at the interpersonal, organizational, and social structure levels in society. Exploration of contemporary images of crime in mass media. Examination of connections between race, class, gender, and crime in U.S. society.

SOC 392. Juvenile Delinquency  
3 Credits  
Nature, extent, and causes of juvenile delinquency; juvenile justice; modern methods of treatment; programs of prevention.
SOC 393. Youth and Society
3 Credits
Comparative historical analysis of social, economic and cultural forces affecting young people. Emphasis on organizational and institutional effects on the well being of children and young adults.

SOC 394V. Sports and Society: A Global Perspective
3 Credits
A critical examination of sports in a global context, emphasizing the social and cultural factors that shape the world of sports and the consequences of sports for societies. Course examines issues of social inequality, violence, media and corporate influence, religion and sports, and the student-athlete experience.

SOC 401. Introduction to Sociological Practice
3 Credits
The application of sociological theory and research method. May be taught as service learning course. May be repeated up to 3 credits. Restricted to: SOC majors.
Prerequisite(s): SOC 101G, senior standing or consent of instructor.

SOC 409. COMMUNITY DEVELOPMENT
3 Credits
This is a holistic view of community development with an emphasis upon how economic development efforts can become more inclusive and sustainable. Topics include examining what ‘community’ means, community development versus economic development, and alternative economic activities.
Prerequisite(s): SOC 101G.

SOC 430. Social Movement Theory
3 Credits
Overview of key theories in past and present social movement research. Includes a focus on rational or spontaneous choice theories, resource mobilization, and new social movement theories. Theoretical perspectives focus on analyses of case studies including women’s movement, civil rights, and environmental movements.

SOC 448. Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

SOC 449. Directed Readings
1-3 Credits
Individual readings or research for either majors or nonmajors. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

SOC 457. Gender, Science, and Technology
3 Credits
How gender, science and technology are interrelated social constructions. Science and technology are examined as social institutions. Explanations for different rates of participation based on race, class and gender are explored. Same as: W S 467.

SOC 458V. Comparative Global Family Systems
3 Credits
The study of families around the world. The comparison will include how capitalism and power differentials have affected the course of family history, gender relations, and family life today.

SOC 459. Advanced Issues in Sex and Gender
3 Credits
Comprehensive examination of current gender identity and gender stratification issues. Same as W S 459.

SOC 460. Sociology of Religion
3 Credits
Examination of religion in its social context to understand the intricate relations of religion, culture and U.S. society. Recommended preparatory courses: SOC 101G, SOC 273, SOC 376, ANTH 125G.

SOC 464. Human Society and the Environment
3 Credits
This course explores the relationship between human societies and the natural environment, with an emphasis on both sustainable human and environmental relationships.
Prerequisite(s): SOC 101G.

SOC 465V. Environmental Sociology
3 Credits
Advanced examination of societal responses to environmental problems including social adjustments to natural and technological hazards, sociocultural aspects of technological risk and impact assessment, and emergence of environmental social movements.

SOC 470. Sociology of Latinos/as in the United States
3 Credits
In-depth examination and comparative analysis of political and economic issues affecting Latino/a culture and behavior. Includes the Chicano/a and larger Latino/a movements, the border, immigration, language policies, education, religion, labor, and Latina women’s issues. Recommended preparatory courses: SOC 101G, SOC 270, SOC 371, or HIST 367.

SOC 471. Advanced Race and Ethnic Relations
3 Credits
In-depth analysis of the dynamics of prejudice, discrimination, and patterns of intergroup interaction in the U.S.

SOC 473. INTERNATIONAL MIGRATION
3 Credits
This course examines international migration as a social process, focusing on the American experience. Students will examine historical and comparative literature on immigration that puts contemporary questions about policy and immigrant assimilation into a broader sociological perspective.
Prerequisite(s): SOC 101G.

SOC 474. Sociology of Organizations
3 Credits
Sociological models of formal organizations relevant to business, education, government, healthcare, military, and religion. Focus on internal organizational structure and dynamics plus the reciprocal relationship between organizations and their operating environment.

SOC 477. Sociology of Education
3 Credits
Socio-political and economic factors that shape the structure and operation of educational institutions in modern complex societies. Sociohistorical development of the school as a microcosm of society, with examples from American and other school systems.

SOC 479. Sociology Perspectives on the U.S.-Mexico Border
3 Credits
Theoretical perspectives and current research on the U.S.-Mexico border region, including topics such as migration, identity, health, gender, and environment.
SOC 480. Diversity in Alternative Families
3 Credits
Cross-cultural examination of diversity among and within families: analysis of family diversity includes consideration of the theoretical frameworks, ideological commitments, personal experiences, and methodological approaches to examine family life.

SOC 481. Social Deviance
3 Credits
Theoretical approaches to the study of social deviance with emphasis on critical theories. Exploration of forms of deviance in society. Examination of social construction of deviance within mass media and systems of social control.

SOC 482. Advanced Individual and Society
3 Credits
Examines reciprocal relationship between individual and society. Topics include socialization, social influence and persuasion, group structure and performance, altruism, aggression, interpersonal attraction, group cohesion and conformity, and inter-group conflict.

SOC 486. Power and Politics in America
3 Credits
This course provides an introduction to the study of Political Sociology with a focus on the United States. Political Sociology studies the social bases of politics and political systems and facilitates the understanding of the processes and consequences of power distributions in the United States.

Prerequisite(s): SOC 101G.

SOC 489. Globalization
3 Credits
Analysis of the globalization process. Covers theories of globalization, the global economy, political globalization, global culture, transnational social movements, transnational migration and world labor market, global cities, and local-global linkages. Same as GOVT 469.

SOC 491. Criminological Theory
3 Credits
Schools of thought, contrasting approaches, and contemporary efforts in theory construction relevant to adult and juvenile offenders.

SOC 496. Internship
1-6 Credits
Supervised participation in an appropriate community setting. Taught with SOC 596. May be repeated up to 9 credits. Consent of Instructor required. S/U Grading (S/U, Audit).

SOC 501. Perspectives on Sociology
3 Credits
Overview of the field, subfields, and faculty available for students at NMSU. Emphasis on theories and research currently being developed in the Sociology program. Graded: S/U. May be repeated up to 3 credits. Restricted to: Soc majors. S/U Grading (S/U, Audit).

SOC 509. Advanced Seminar in Community Development
3 Credits
This is in an advanced seminar addressing a holistic view of community development with an emphasis upon how economic development efforts can become more inclusive and sustainable.

Prerequisite(s): Graduate student standing.

SOC 530. Advanced Social Movement Theory
3 Credits
Overview of key theories in past and present social movement research. Topics include a focus on rational or spontaneous choice theories, resource mobilization, and new social movement theories. Theoretical perspectives focus on analysis of case studies including women's movement, civil rights, and environmental movements.

SOC 548. Graduate Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes.

SOC 549. Special Research Problems
1-3 Credits
Individual analytic or experimental investigations. May be repeated for a maximum of 6 credits.

Prerequisite: consent of instructor.

SOC 551. Issues in Advanced Quantitative Analysis
3 Credits
Advanced methods of sociological analysis are examined in detail. Restricted to: SOC majors.

SOC 552. Seminar in Classical Social Theory
3 Credits
Analysis of classical social thought within the discipline. Restricted to: SOC majors.

SOC 553. Seminar in Sociological Research
3 Credits
Exploration of research methods, issues, and practical application. May be repeated up to 3 credits. Restricted to: Soc majors.

SOC 558. Seminar: Sociology of the Family
3 Credits
The family in various societies; evolution of the American family.

SOC 559. Graduate Seminar in Sex and Gender
3 Credits
Comprehensive examination of current gender identity and gender stratification issues. Same as WS 559.

SOC 560. Advanced Sociology of Religion
3 Credits
Examination of religion in its social context to understand the intricate relations of religion, culture and U.S. society.

SOC 564. Seminar in Human Society and the Environment
3 Credits
This is an advanced seminar exploring the relationship between human societies and the natural environment, with an emphasis on both sustainable human and environmental relationships.

Prerequisite(s): Graduate Student Status.

SOC 565. Advanced Environmental Sociology
3 Credits
Advanced examination of societal responses to environmental problems including social adjustments to natural and technological hazards, sociocultural aspects of technological risk and impact assessment, and emergence of environmental social movements.

SOC 569. Advanced Issues in Sexualities
3 Credits
Various issues in sexualities are addressed through a wide range of theoretical and empirical sociological literatures that involve quantitative and qualitative data. Advanced examination of the ways in which sexuality is constituted in local, cultural and institutional environments.
SOC 570. Advanced Sociology of Latinos/as in the United States
3 Credits
In-depth examination and comparative analysis of political and economic issues affecting Latino/a culture and behavior. Topics include the Chicano/a and larger Latina/o movements, the border, immigration, language policies, education, religion, labor and Latina/o women’s issues.

SOC 571. Advanced Race and Ethnic Relations
3 Credits
In-depth analysis of the dynamics of prejudice/discrimination and patterns of intergroup interaction in the U.S.

SOC 572. Advanced Sociology of Medical Ethics
3 Credits
Major issues in the roles and relationships of health care providers and consumers, problems in communication, malpractice, patients rights, and ethics. Taught with SOC 472 with additional work required at the graduate level.

SOC 574. Sociology of Organizations
3 Credits
Sociological models of formal organizations relevant to business, education, government, healthcare, military, and religion. Focus on internal organizational structure and dynamics plus the reciprocal relationship between organizations and their operating environment.

SOC 575. Graduate Social Stratification
3 Credits
Advanced examination of theories of stratification and current methods of stratification research. Focus on differences by ethnicity, race, class and gender.

SOC 577. Advanced Sociology of Education
3 Credits
Socio-political and economic factors that shape the structure and operation of educational institutions in modern complex societies. Soci-historical development of the school as a microcosm of society, with examples from American and other school systems.

SOC 578. Advanced Sociology of Development and the World System
3 Credits
Sociological approach to development and the global system. Theories of development, and underdevelopment; world poverty/inequality; Latin America; Africa and Asia in comparative perspectives; transnational borders/U.S.-Mexico border; current topics. Same as GOVT 577.

SOC 579. Advanced Sociological Perspectives on the U.S.-Mexico Border
3 Credits
Theoretical perspectives and current research on U.S.-Mexico border region, including migration, identity, health, gender, and environment.

SOC 580. Diversity in Alternative Families
3 Credits
Cross-cultural examination of diversity among and within families: analysis of family diversity includes consideration of the theoretical frameworks, ideological commitments, personal experiences, and methodological approaches to examine family life.

SOC 582. Individual and Society
3 Credits
Examines reciprocal relationship between individual and society. Topics include socialization, social influence and persuasion, group structure and performance, altruism, aggression, interpersonal attraction, group cohesion and conformity, and intergroup conflict.

SOC 583. Symbolic Interaction
3 Credits
Examination of the interaction of self and the social order including society as process, the negotiation of social order, identity as a social product, role taking and the situated self, the social construction of reality with an emphasis on phenomenology and ethnomethodology.

SOC 586. Advanced Seminar in Power and Politics in the United States
3 Credits
This is an advanced seminar addressing the study of Political Sociology with a focus on the United States. Political Sociology studies the social bases of politics and political systems. It facilitates an understanding of the processes and consequences of power distributions in the United States.

Prerequisite(s): Graduate student standing.

SOC 587. Advanced International Migration
3 Credits
This course examines international migration as a social process, focusing on the American experience. Students will examine historical and comparative literature on immigration that puts contemporary questions about policy and immigrant assimilation into a broader sociological perspective.

Prerequisite(s): Graduate student standing.

SOC 589. Advanced Issues in Globalization
3 Credits
Analysis of the globalization process. Covers theories of globalization; global economy; political globalization; global culture; transnational social movements; transnational migration and world labor market; global cities; local-global linkages. Same as GOVT 569.

SOC 596. Internship
1-6 Credits
Supervised participation in appropriate occupational setting. May be repeated for a maximum of 12 credits. Taught with SOC 496 with additional work required at the graduate level.

SOC 599. Master’s Thesis
6 Credits
Thesis. Consent of instructor required. Restricted to: Main campus only. Restricted to SOC majors.

Name:

Office Location:

Phone: (575) 646-3448

Website: http://sociology.nmsu.edu

Contemporary Social Studies - Undergraduate Minor

See requirements for this minor in the Department of History (p. 317) section.

Sociology - Bachelor of Arts

Departmental Requirements

SOC 101G Introductory Sociology 3
SOC 351 Sociological Theory 3
SOC 352 Social Research: Methods 1,2 3
SOC 353 Sociological Research: Analysis 1 3
SOC 401 Introduction to Sociological Practice 3

Departmental Electives
Select sufficient electives in sociology to bring total credits in major to 33, including 24 upper-division of which 6 credits must be 400 level (excluding SOC 401). 3

Total Credits 33

1 Criminal Justice/Sociology double majors may be permitted to substitute C J 300 Introduction to Criminal Justice Research for SOC 352 Social Research: Methods and C J 301 Advanced Research Methods for SOC 353 Sociological Research: Analysis.
2 Government/Sociology double majors may be permitted to substitute GOVT 300 Political Research Skills for SOC 352 Social Research: Methods upon approval of appropriate substitution/waiver forms.
3 The six credits of SOC 400 electives does not include SOC 401 Introduction to Sociological Practice. SOC 449 Directed Readings can be applied to this requirement. A maximum of six credits of SOC 449 Directed Readings is allowed. In addition, for those in the Master's Accelerated Program, SOC 500 electives can be used to meet the six credit requirement.

In addition, substitution/waivers for courses may be available upon consultation with the Department Head in the Department of Sociology. In all cases, the total number of sociology credits (courses with SOC prefix) must be a minimum of 33.

Degree Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>General Education Courses</td>
<td>35</td>
</tr>
<tr>
<td>Viewing a Wider World Courses</td>
<td>6</td>
</tr>
<tr>
<td>Departmental Requirements</td>
<td>33</td>
</tr>
<tr>
<td>Electives: to bring total to 120 credits, with 48 credits being upper-division</td>
<td>46</td>
</tr>
</tbody>
</table>

Total Credits 120

Second Language
A second language is not required.

Sociology - Master of Arts

Thesis Program Requirements

In addition to the successful completion of an acceptable master's thesis, students who choose this option will take a minimum of 36 credit hours of graduate work distributed as follows:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 501 Perspectives on Sociology</td>
<td>2</td>
</tr>
<tr>
<td>SOC 548 Graduate Special Topics: Qualitative Methods</td>
<td>2</td>
</tr>
<tr>
<td>SOC 551 Issues in Advanced Quantitative Analysis</td>
<td>2</td>
</tr>
<tr>
<td>SOC 552 Seminar in Classical Social Theory</td>
<td>2</td>
</tr>
<tr>
<td>SOC 553 Seminar in Sociological Research</td>
<td>2</td>
</tr>
<tr>
<td>SOC 599 Master's Thesis</td>
<td>6</td>
</tr>
<tr>
<td>Select an additional 15 credits from 500 level Sociology course work to be taken in consultation with the sociology graduate student's advisor.</td>
<td>15</td>
</tr>
</tbody>
</table>

Final master's oral examination covering all general coursework and the thesis.

Total Credits 36

1 To be taken within the first 27 hours of graduate credit. A grade of B- or better is required to receive credit for each of these core courses.

Non-Thesis Program Requirements:

Coursework Only

Students who choose this option will take a minimum of 36 credit hours of graduate work distributed as follows:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 501 Perspectives on Sociology</td>
<td>2</td>
</tr>
<tr>
<td>SOC 548 Graduate Special Topics: Qualitative Methods</td>
<td>2</td>
</tr>
<tr>
<td>SOC 551 Issues in Advanced Quantitative Analysis</td>
<td>2</td>
</tr>
<tr>
<td>SOC 552 Seminar in Classical Social Theory</td>
<td>2</td>
</tr>
<tr>
<td>SOC 553 Seminar in Sociological Research</td>
<td>2</td>
</tr>
<tr>
<td>Select an additional 21 credits from 500 level Sociology course work to be taken in consultation with the sociology graduate student's advisor.</td>
<td>21</td>
</tr>
</tbody>
</table>

Final master's written examination covering all general coursework.

Total Credits 36

2 To be taken within the first 27 hours of graduate credit. A grade of B- or better is required to receive credit for each of these core courses.

Admission Requirements

To apply for admission to the Sociology MA Program and the Graduate School, applicants must meet the following criteria and submit the following through http://prospective.nmsu.edu/graduate/apply/index.html

- Application form and fees
- An undergraduate cumulative GPA of at least 3.0 on a 4.0 scale.
- A record of professional, ethical, and collegial behavior.
- Official undergraduate and graduate transcripts from all colleges and universities attended.
- A well written statement of purpose from the candidate addressing graduate school objectives and interests.
- Three letters of recommendation describing personal qualities and achievements that suggest the applicant will be successful in the program. We prefer that letters of recommendation come from faculty members familiar with the academic work and professional conduct of the applicant.

Failure to meet any of the above criteria may result in the student not being accepted into our program. However, in cases when an otherwise outstanding student does not meet the GPA requirements, the student may be accepted provisionally into the program.

The GRE is not required for admission. Students may be required to take prerequisites prior to gaining admission.
For priority consideration, the deadline for application is March 15 for Fall admission.

Sociology - Undergraduate Minor

Students who earn a Bachelor of Arts in Sociology may not also earn a minor in Sociology. Students earning the minor must pass 18 credits with grades of C- or higher. Students may count S grades only in courses in which all grades are S/U. Students may substitute an upper division social research methods course for the required SOC 352 Social Research: Methods from the Departments of Criminal Justice and Government. Additional research methods courses may be considered. Please contact the Department Head of the Department of Sociology for further consideration. Students making this substitution must still pass 18 total credits in Sociology in order to earn this minor.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 101G Introductory Sociology</td>
<td>3</td>
</tr>
<tr>
<td>SOC 351 Sociological Theory</td>
<td>3</td>
</tr>
<tr>
<td>SOC 352 Social Research: Methods</td>
<td>3</td>
</tr>
<tr>
<td>Additional Sociology credits, of which at least 6 are upper division</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

Theatre Arts

Undergraduate Program Information

With strong emphases in acting, musical theatre, new works and design/technical theatre, the program prepares students for graduate study, life in the profession, or a myriad of related job fields. Students gain practical experience through a wide array of courses designed to expose them to the varied aspects and job positions involved in theatrical production. The faculty is augmented by nationally-renowned guest theatre artists.

A minimum of 62 credits with a grade of C- or higher in theatre arts is required for the major. Theatre Arts does not require a second language.

Students enrolled in this department’s major or minor may count credits in required applied courses toward their degrees beyond the normal maximum of 9 credits allowed in the College of Arts and Sciences. However, if a student changes the major or does not complete the requirements for the minor at the time of graduation, they may only count a maximum of 9 credits of the applied credits toward graduation.

Students preparing to teach in public schools may qualify for certification by completing the Bachelor of Science in Education degree with theatre arts as a teaching field. (See curricula in the College of Education (p. 452) section).

At any time the Theatre Arts program may be undergoing curriculum changes. For the most up-to-date information about degree requirements please visit www.nmsutheatre.com (http://www.nmsutheatre.com) or visit the Theatre Arts Department at room 321 in the Center for the Arts Building.

Degrees for the Department

Theatre Arts - Bachelor of Arts (p. 412)

Minors for the Department

Theatre Arts - Undergraduate Minor (p. 413)
THTR 200. Theatre Workshop I  
0.5 Credits  
Required for all freshman and sophomore theatre majors, this course coordinates all processes within Theatre Arts, providing a forum for discussion and feedback. May be repeated up to 4 credits. Restricted to Las Cruces campus only.

THTR 210. Intermediate Acting: Scene Study and Monologues  
3 Credits  
Monologues and scene work, using character and script analysis. 
Prerequisite(s)/Corequisite(s): THTR 205. Prerequisite(s): THTR 110 with C- or above.

THTR 220. Vocal Production for the Actor  
3 Credits  
Exploration and development of the actor’s vocal instrument, including relaxation, projection, diction and articulation. May be repeated up to 3 credits. Restricted to THTR majors.

THTR 222. Theatre Topics  
1-3 Credits (1-3)  
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 9 credits.

THTR 249. Running Crew II  
1 Credit  
Students work on a technical aspect of a production in a rehearsal and performance environment.

THTR 250. Introduction to Design  
3 Credits  
Introduction into our visual world via the language of designers, focusing on collaboration, creative thinking and presentation skills. The varied design professions in theatre and the performing arts will be explored. Restricted to: Required of all THTR Majors majors.

THTR 300. Theatre Workshop II  
0.5 Credits  
Required for all junior and senior theatre majors, this course coordinates all processes within Theatre Arts, providing a forum for discussion and feedback. May be repeated up to 4 credits. Restricted to Las Cruces campus only.

THTR 303. Theatre History I  
3 Credits  
History of theatre and drama from ancient Greece to the English Renaissance.

THTR 304. Theatre History II  
3 Credits  
History of theatre and drama from the Restoration to the 20th century. May be repeated up to 3 credits.

THTR 306. Screenwriting I  
3 Credits  
Same as CMI 309, ENGL 309. Consent of instructor required. Crosslisted with: CMI 309 and ENGL 309  
Prerequisite(s): ENGL/CMI 235.

THTR 307V. Society in Style: Fashion, History and Culture  
3 Credits  
History of clothing for theatrical purposes, origins and evolution of period clothing in relation to social, political, and aesthetic factors of different periods.

THTR 308. Creative Writing: Playwriting  
3 Credits  
Technique of one-act playwriting, and analysis of dramatic structure. Crosslisted with: ENGL 308  
Prerequisite(s): ENGL 111G.

THTR 310. Styles in Acting  
3 Credits  
Analysis of differing styles of acting through scene work representing various time periods and genres.  
Prerequisite(s): THTR 210.

THTR 312. Acting Shakespeare  
3 Credits  
Acting Shakespeare’s tragedies and comedies, including text work, scansion, movement, scene work, and monologues.  
Prerequisite(s): THTR 210.

THTR 313. Improvisation  
3 Credits  
Long and/or short form improvisation techniques in addition to a variety of exercises exploring terminology, character work and the elements of comedy.  
Prerequisite(s): THTR 105 or THTR 110.

THTR 314. Scene Study  
3 Credits  
Studio class focusing on scene work and acting processes.  
Prerequisite(s): THTR 210.

THTR 317. Musical Theatre  
3 Credits  
Acting class focused on developing and refining skills necessary for performing in musicals. Pre/ May be repeated up to 9 credits.  
Prerequisite(s)/Corequisite(s): THTR 210.

THTR 320. Auditioning and Marketing  
3 Credits  
Techniques for choosing and preparing effective monologues, cold and prepared readings, head shots and resumes, and interview skills.  
Prerequisite(s): THTR 210.

THTR 321V. Modern European Drama  
3 Credits  
Masterworks of European drama from the 19th century to the present. Crosslisted with: ENGL321V.

THTR 322. Dramatic Character  
3 Credits  
How characters have been created for the stage from the beginning of theatrical performances in ancient Greece to the present day. Exploring characterization related to dramatic structure, style, and genre, and how dramatic characters differ from those in literary fiction. May be repeated up to 3 credits. Crosslisted with: ENGL 322.

THTR 323. American Drama  
3 Credits  
Masterworks of American drama from the 20th century to the present. Crosslisted with: ENGL323.

THTR 329. Studies in Drama  
3 Credits  
Subtitles vary. Study of a group of related works of drama, theory, or theatre practice. Crosslisted with: ENGL329 and CMI329.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>THTR 334.</td>
<td>Introduction to Stage Makeup</td>
<td>3 Credits</td>
<td>Basic principles of stage makeup: straight, character, and specialty. Includes study of various products, methods of application, and the effects of lighting on makeup.</td>
</tr>
<tr>
<td>THTR 337.</td>
<td>Independent Study</td>
<td>1-3 Credits</td>
<td>Students propose and design their own course not covered through regular course offerings under the guidance of faculty. May be repeated up to 6 credits. Consent of Instructor required.</td>
</tr>
<tr>
<td>THTR 341.</td>
<td>Scene Painting</td>
<td>3 Credits</td>
<td>Use of historical painting techniques in a project-driven classroom. Projects include 2-D and 3-D work, color mixing and theory, painting scenery, and the use of paint for effects. Pre/ Corequisite(s): THTR 141.</td>
</tr>
<tr>
<td>THTR 343.</td>
<td>Costume Patterning</td>
<td>3 Credits</td>
<td>Basic techniques in the production of flat patterns for modern and period silhouettes including some draping techniques. Consent of Instructor required.</td>
</tr>
<tr>
<td>THTR 345.</td>
<td>Costume Practicum</td>
<td>1 Credit</td>
<td>A practical course intended to provide students additional experience and greater responsibility within the workings of the Costume Shop. Pre/ Corequisite(s): THTR 142.</td>
</tr>
<tr>
<td>THTR 346.</td>
<td>Scenic Practicum</td>
<td>1 Credit</td>
<td>A practical course intended to provide students additional experience and greater responsibility within the workings of the Scene Shop. Pre/ Corequisite(s): THTR 141.</td>
</tr>
<tr>
<td>THTR 347.</td>
<td>Lighting Practicum</td>
<td>1 Credit</td>
<td>A practical course intended to provide students hands-on experience executing theatrical lighting.</td>
</tr>
<tr>
<td>THTR 348.</td>
<td>Running Crew III</td>
<td>1 Credit</td>
<td>Students will work on a technical aspect of a production in a rehearsal and performance environment. Pre/ Corequisite(s): THTR 149.</td>
</tr>
<tr>
<td>THTR 349.</td>
<td>Running Crew IV</td>
<td>1 Credit</td>
<td>Students will work on a technical aspect of a production in a rehearsal and performance environment. Pre/ Corequisite(s): THTR 149.</td>
</tr>
<tr>
<td>THTR 352.</td>
<td>Costume Design</td>
<td>3 Credits</td>
<td>Basic principles of costume design, including script analysis, principles of design, drawing and painting.</td>
</tr>
<tr>
<td>THTR 353.</td>
<td>Scene Design</td>
<td>3 Credits</td>
<td>Design for the performing arts. Basic design skills and projects to exercise those skills, history of design in the theatre and the designer’s role in the production process. Final project includes a finished scene design. Pre/ Corequisite: THTR 141 or consent of instructor.</td>
</tr>
<tr>
<td>THTR 354.</td>
<td>Sound Design</td>
<td>3 Credits</td>
<td>Hands-on training in theatrical sound design and implementation.</td>
</tr>
<tr>
<td>THTR 355.</td>
<td>Lighting Design</td>
<td>3 Credits</td>
<td>Basic aspects of theatre lighting, including electricity, color theory, history, and types of lighting instruments.</td>
</tr>
<tr>
<td>THTR 356.</td>
<td>Theatre Production</td>
<td>1-3 Credits</td>
<td>Participation in the production of theatrical performances by stage managing, acting, designing, dramaturgy, or directing. May be repeated for a maximum of 6 credits. Graded S/U.</td>
</tr>
<tr>
<td>THTR 357.</td>
<td>Computer Scenographics</td>
<td>3 Credits</td>
<td>Project-oriented course teaching basic computer modeling skills. Projects focus on the creation of communication tools designers use in the theatrical process. Students will develop portfolios of completed projects. Consent of instructor required. Pre/ Corequisite(s): THTR 352, THTR 353, or THTR 355.</td>
</tr>
<tr>
<td>THTR 358.</td>
<td>Creative Drama</td>
<td>3 Credits(2+2P)</td>
<td>Methods of developing original dramatizations. Emphasis on curriculum problems and teaching techniques in elementary and secondary schools.</td>
</tr>
<tr>
<td>THTR 366.</td>
<td>Summer Theatre</td>
<td>1-3 Credits</td>
<td>Experience in professional or academic summer theatre. May be repeated for a maximum of 3 credits. Graded: S/U. Restricted to THTR majors. Pre/ Corequisite(s): Consent of department head.</td>
</tr>
<tr>
<td>THTR 384.</td>
<td>Stage Management</td>
<td>3 Credits</td>
<td>Study of stage management techniques and their application to play production. A working knowledge of union rules, and the procedure to facilitate these through proper communication skills.</td>
</tr>
<tr>
<td>THTR 395.</td>
<td>Directing I</td>
<td>3 Credits</td>
<td>Study and application of basic stage directing techniques. Pre/ Corequisite(s): THTR 105 or THTR 110.</td>
</tr>
<tr>
<td>THTR 396.</td>
<td>Theatre Management</td>
<td>3 Credits</td>
<td>Study of issues related to managing a theatre company and producing plays. May be repeated up to 3 credits.</td>
</tr>
<tr>
<td>THTR 408.</td>
<td>Shakespeare I</td>
<td>3 Credits</td>
<td>Same as ENGL 408.</td>
</tr>
<tr>
<td>THTR 409.</td>
<td>Shakespeare II</td>
<td>3 Credits</td>
<td>Same as ENGL 409.</td>
</tr>
<tr>
<td>THTR 410.</td>
<td>Advanced Acting: Contemporary Methods</td>
<td>3 Credits</td>
<td>Acting techniques will be explored focusing on current trends in the profession, from Stanislavski, to Hagen to Meisner. Pre/ Corequisite(s): THTR 205.</td>
</tr>
<tr>
<td>THTR 414.</td>
<td>Collaborative Theatre-Making</td>
<td>3 Credits</td>
<td>This course introduces students to the techniques, skills and practice of the collaborative creation of new theatrical material. Pre/ Corequisite(s): THTR 110.</td>
</tr>
</tbody>
</table>
THTR 417. Musical Theatre II
3 Credits
A continuation of THTR 317, allowing for more advanced musical theatre techniques.
Prerequisite(s): THTR 317.

THTR 430. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 9 credits.

THTR 435. Directed Reading
1-3 Credits
Directed individualized studies. May be repeated for a maximum of 3 credits.

THTR 439. Senior Seminar
3 Credits
Course preparing students for professions in and related to the theatre. Restricted to: THTR majors.

THTR 440. Senior Seminar Practicum
1 Credit
Capstone course preparing students to apply knowledge of theatre arts toward advanced training or career objectives in the discipline. Consent of instructor required. Pre/ Restricted to THTR majors.
Corequisite(s): THTR 439.

THTR 450. The Michael Chekhov Acting Intensive
3 Credits
An intensive overview of the performance techniques attributed to Michael Chekhov, applied to theatrical scenes and presentations. May be repeated up to 6 credits. Consent of Instructor required.

THTR 457. Advanced Computer Scenographics
3 Credits
Project-oriented course for the advanced modeler. Projects focus on the creation of complex models, custom texturing and shading, virtual lighting, postproduction image work, and animation techniques. Students will develop digital portfolios.
Prerequisite: THTR 357 and consent of instructor.

THTR 535. Directed Study
1-3 Credits (1-3)
For the highly motivated student. Independent projects and individual guidance. Graduate standing and consent of instructor required. May be repeated up to 6 credits.

Name: Wil Kilroy, Department Head
Office Location: ASNMSU Center for the Arts, Room 321
Phone: (575) 646-4517
Website: http://www.nmsutheatre.com

Theatre Arts - Bachelor of Arts

Concentration: Musical Theatre
The musical theatre concentration is designed to provide students with training in musical theatre performance, including singing, dancing and acting.

Departmental Requirements
All courses required for the Theatre Arts major must be met, except for the requirement of 9 additional THTR courses.

Electives
Select sufficient electives to bring total to 120, including 48 upper-division.

Total Credits 62

1 Courses from this category must not duplicate selections above.
2 Theatre majors must enroll in Theatre Workshop each semester. THTR 200 for freshmen and sophomores and THTR 300 for juniors and seniors, 2 credits total for each course equaling a total of 4 credits.
3 Complete a minimum of 120 credits, with 48 credits at the 300 level or above, including all general education and viewing a wider world requirements.

DANC 124 Jazz Technique I 1
DANC 224 Jazz Technique II 2
THTR 317 Musical Theatre 3
THTR 417 Musical Theatre II 3
Select 3 credits from the following: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANC 127</td>
<td>Tap Dance I</td>
</tr>
<tr>
<td>DANC 227</td>
<td>Tap Dance II</td>
</tr>
<tr>
<td>DANC 123</td>
<td>Ballet Technique I</td>
</tr>
<tr>
<td>DANC 126</td>
<td>Modern Dance Technique I</td>
</tr>
<tr>
<td>DANC 223</td>
<td>Ballet Technique II</td>
</tr>
<tr>
<td>DANC 226</td>
<td>Modern Dance Technique II</td>
</tr>
<tr>
<td>DANC 323</td>
<td>Ballet Technique III</td>
</tr>
<tr>
<td>DANC 326</td>
<td>Modern Dance III</td>
</tr>
</tbody>
</table>

Voice or Applied Music-Vocal
Select a minimum of six credits from the following: 2 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUS 130</td>
<td>Applied Music</td>
</tr>
<tr>
<td>MUS 160</td>
<td>University Singers</td>
</tr>
<tr>
<td>MUS 161</td>
<td>Concert Choir</td>
</tr>
<tr>
<td>MUS 162</td>
<td>Master Works Chorus</td>
</tr>
<tr>
<td>MUS 251</td>
<td>Opera Workshop</td>
</tr>
<tr>
<td>MUS 351</td>
<td>Opera Workshop</td>
</tr>
<tr>
<td>MUS 361</td>
<td>Concert Choir II</td>
</tr>
<tr>
<td>MUS 368</td>
<td>University Singers II</td>
</tr>
</tbody>
</table>

Total Credits 18

2 Two of the required vocal credits may be in choral ensemble or opera workshop.

Theatre Arts - Undergraduate Minor

The Department of Theatre Arts has one minor in Theatre Arts. Students must pass a minimum of 9 lower division and 9 upper division THTR credits with grades of C- or higher to earn the minor. A student cannot earn both a BA in Theatre Arts and a minor in Theatre Arts.
Requirements for the Bachelor Degrees

- Successful completion of the New Mexico General Education Common Core and NMSU Viewing a Wider World Courses.
- Successful completion of College of Business Requirements below and major requirements. For the Bachelor of Arts in Economics, see the Economics and International Business (p. 426) section for specific requirements.
- A minimum cumulative grade point average (GPA) of 2.0 in all courses taken at NMSU to meet lower and upper division business core and major requirements.
- All majors except Economics and International Business require a minimum cumulative GPA of 2.0 in all courses taken to meet the requirements of the major. For Economics and International Business majors, a minimum cumulative GPA of 2.5 is required for courses taken to meet the requirements for the major.
- A minimum of 50% of business credits required for a Bachelor of Accountancy or Bachelor of Business Administration degree or 18 business credits required for a Bachelor of Arts in Economics degree must be completed in the College of Business and a minimum of 12 credits required in the major must be completed in the College. See sections below for major-specific transfer criteria. A total of no more than six credits of courses designated as 300E may be used to satisfy the required upper division business elective, the ECON/A ST elective, and electives in the major.

The only courses that may be taken on an S/U option by students in the College of Business are those designated S/U only, general electives outside the college, and up to 9 credits of HON courses used to fulfill General Education requirements.

Before taking upper-division courses (numbered 300 or above) offered by the College of Business, students must complete all lower-division course requirements with the required minimum grades or better.

Business course credits completed more than ten years prior to the degree application will be reviewed by the course department head and dean (or a designee) to determine their continued suitability to satisfy current degree, major and minor requirements and learning objectives.

Course Requirements

General Education Requirements

Students are advised to take ENGL 203G as their second writing course and ECON 251G and ECON 252G to satisfy the social and behavioral science category. Grades of C- or better are required in general education communications courses.
Associate in Prebusiness Degree

To complete the associate degree, 60 credits are required, including the General Education Requirements, College of Business Foundation and Business Core (lower division) requirements.

A minimum cumulative grade point average of 2.0 is also required. The last 15 credits towards the degree must be earned through the NMSU system.

Minors in Business

Minors are available in

- accounting,
- advertising,
- banking and financial planning,
- business administration,
- business law,
- economics,
- enterprise systems,
- entrepreneurship and innovation,
- finance,
- information systems,
- international business,
- management,
- marketing,
- professional selling,
- risk management and insurance,
- sports marketing, and
- sustainability.

Students pursuing the Bachelor of Individualized Studies or the Bachelor of Applied Studies are not eligible for minors from the College of Business other than the minor in business administration. At least 12 credits of the minor must be completed at the NMSU College of Business.

Prelaw Students

Because the practice of law often involves business-related problems, the majors in the college provide an excellent preparation for the prelaw student. The college has attorneys on the faculty who are available as advisors. Please contact the Finance Department for more information.

Undergraduate Minor: Business Administration

This minor is available to all bachelors degree seeking students, except those seeking the Bachelor of Accountancy and the Bachelor of Business Administration degrees. It is the only minor in Business open to students in the Bachelor of Applied Studies and the Bachelor of Interdisciplinary Studies. At least 12 of the credits for the minor must be completed in the NMSU College of Business.

Minor Requirements

Choose 18 credits of coursework from these business core courses: Nine of the credits must be at the upper division level.

<table>
<thead>
<tr>
<th>Lower Division</th>
<th>Upper Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 221</td>
<td>Management Accounting $^1$</td>
</tr>
<tr>
<td>ACCT 222</td>
<td>Introduction to Computerized Information Systems</td>
</tr>
<tr>
<td>BCIS 110</td>
<td>Business in a Global Society</td>
</tr>
<tr>
<td>BUSA 111</td>
<td>Principles of Macroeconomics $^1$</td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Microeconomics</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Business Information Systems I</td>
</tr>
<tr>
<td>FIN 341</td>
<td>Legal Environment of Business</td>
</tr>
<tr>
<td>MGT 309</td>
<td>Financial Analysis and Markets $^1$</td>
</tr>
<tr>
<td>MKTG 303</td>
<td>Human Behavior in Organizations</td>
</tr>
<tr>
<td>MGT 344</td>
<td>Principles of Marketing $^1$</td>
</tr>
<tr>
<td>or MGT 470</td>
<td>Production and Operations Management $^2$</td>
</tr>
<tr>
<td>or BCIS 485</td>
<td>Project Management in Organizations</td>
</tr>
<tr>
<td></td>
<td>Enterprise Resource Planning</td>
</tr>
</tbody>
</table>

$^1$ Courses satisfy background knowledge requirements for the MBA program when completed with a B- grade or better.

$^2$ Only one course may be applied to this minor.

Notes: At least 9 of the 18 credits for the minor must be upper division and at least 12 of the 18 credits must be completed at NMSU. A minimum GPA of 2.0 is required in the coursework for the minor.

Several courses listed above have prerequisites. It is the responsibility of the student to determine course prerequisites and other registration requirements.

Transferring Business Courses

The following business courses have been identified as transferable from NMSU to other public two year and four year institutions in New Mexico. The equivalent course at other institutions can be identified using the common course number which appears in parentheses below. Similarly, students from other institutions can use the common course number to identify business courses that can be transferred to NMSU.

<table>
<thead>
<tr>
<th>NMSU Course</th>
<th>Equivalent Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ST 251G</td>
<td>Statistics for Business and the Behavioral Sciences (MATH 2313)</td>
</tr>
<tr>
<td>STAT 251G</td>
<td>Statistics for Business and the Behavioral Sciences (MATH 2313)</td>
</tr>
<tr>
<td>ACCT 221</td>
<td>Financial Accounting (ACCT 2123)</td>
</tr>
<tr>
<td>ACCT 222</td>
<td>Management Accounting (ACCT 2123)</td>
</tr>
<tr>
<td>BCIS 110</td>
<td>Introduction to Computerized Information Systems (BCIS 1113)</td>
</tr>
<tr>
<td>BLAW 418</td>
<td>Uniforms Commercial Code and Advanced Business Law Topics $^1$</td>
</tr>
<tr>
<td>BMGT 231</td>
<td>Legal Issues in Business (BLAW 2113)</td>
</tr>
<tr>
<td>BUSA 111</td>
<td>Business in a Global Society (BUS 1113)</td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics (ECON 2113)</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics (ECON 2123)</td>
</tr>
<tr>
<td>FIN 206</td>
<td>Introduction to Finance (FIN 2113) $^1$</td>
</tr>
<tr>
<td>MGT 201</td>
<td>Introduction to Management $^1$</td>
</tr>
<tr>
<td>BMGT 210</td>
<td>Marketing (MKTG 2113)</td>
</tr>
</tbody>
</table>

$^1$ Courses satisfy background knowledge requirements for the MBA program when completed with a B- grade or better.
Count as general electives in the College of Business.

**Bachelors Degrees**

Bachelor of Accountancy (p. 416)

Bachelor of Arts in Economics (p. 426)

Bachelor of Business Administration (p. 422)

**Majors in:**
- Economics
- Finance
- General Business
- Information Systems
- International Business
- Management
- Marketing

**Masters Degrees**

Master of Accountancy (p. 416)

Master of Science - Applied Statistics (p. 426)

Master of Business Administration - Business Administration (p. 422)
  - Agribusiness (p. 422)
  - Finance (p. 422)
  - Information Systems (p. 422)

Master of Arts - Economics (Public Utility Policy and Regulation) (p. 426)

**Graduate Certificates**

Graduate Certificates - Public Utility Regulations and Economics (p. 426)

Graduate Certificates - Finance (p. 441)

**Dual Degrees**

BS in Engineering/Master of Business Administration (p. 422)

**Doctoral Degrees**

Doctor of Philosophy - Business Administration (p. 422)
  - Management (p. 422)
  - Marketing (p. 422)

Doctor of Economic Development - Economics (p. 426)

**Undergraduate Minors**
- Accounting (p. 416)
- Advertising (p. 447)
- Banking and Financial Planning (p. 439)
- Business Administration (p. 414)
- Business Law (p. 440)
- Economics (p. 426)
- Entrepreneurship and Innovation (p. 440)
- Enterprise Systems (p. 416)

**Graduate Minors**
- Applied Statistics (p. 426)
- Economics (p. 426)
- Information Systems (p. 416)

**Accreditation**

New Mexico State University has been accredited since 1926 by the Higher Learning Commission of the North Central Association of Colleges and Secondary Schools as a degree-granting institution. The university was accredited in 1954 by the American Association of University Women.

The baccalaureate and graduate degree programs in business and accounting offered in the College of Business are accredited by AACSB International—The Association to Advance Collegiate Schools of Business.

**Accounting and Information Systems**

**Undergraduate Program Information**

The Bachelor of Accountancy degree is available to students choosing accounting as a major. The curriculum is designed to prepare you for the excellent opportunities that exist in public accounting practice and in business, government and nonprofit organizations. It is also appropriate for those who may choose to seek either the Master of Accountancy or the Master of Business Administration degree after graduation.

The Information Systems program has a focus on cyber security that prepares you for a variety of administrative and technical positions associated with the security of information systems. Potential employers include information system service organizations, public accounting/consulting firms, manufacturing and merchandising business, banks and other financial institutions, government and others that rely on information systems to support their business.

**Graduate Program Information**

The last two decades have witnessed a tremendous expansion in the knowledge base required for accounting professionals. The business environment has become increasingly complex, as evidenced by the growth in the body of national and international accounting and auditing standards, taxation, SEC and other regulatory requirements. The accountant must also be well versed in communications and analytical skills, computer-based information systems, professional ethics and global issues.

Neither the traditional four-year accounting program nor the MBA provides the educational breadth and depth necessary to fully prepare students for the demands now imposed by many accounting careers. The major objective of the Master of Accountancy (MAcc) program...
is to provide for these increased educational needs and to prepare students more adequately for careers as professional accountants in financial institutions, government, not-for-profit organizations and public practice. The program is designed to provide a technical and theoretical foundation in accountancy at the advanced level and yet allow the student to take courses to accommodate individual needs.

**Degrees for the Department**

Accounting - Bachelor of Accountancy (p. 419)

Information Systems - Bachelor of Business Administration (p. 421)

Accounting - Master of Accountancy (p. 419)

**Minors for the Department**

Accounting - Undergraduate Minor (p. 420)

Enterprise Systems - Undergraduate Minor (p. 421)

Information Systems - Undergraduate Minor (p. 421)

Information Systems - Graduate Minor (p. 421)

**Professor, Larry Tunnell, Department Head**

_Professors_ Mora, Oliver, Seipel, Tunnell; _Associate Professors_ Billiot, Kreie, Melendrez, Nelson; _Assistant Professors_ Clemmons, Ewing, Joo, Zhang; _College Associate Professor_ Spencer; _College Assistant Professor_ Taylor; _Emeritus Professor_ Foster, Mills, Scribner


**ACCT 101. Supplemental Instruction to ACCT 221**

1 Credit

Collaborative workshop for students in ACCT 221 – Financial Accounting. Course does not count toward departmental degree requirements. May be repeated up to 2 credits. Restricted to Las Cruces campus only.

**Corequisite(s):** ACCT 221.

**ACCT 200. A Survey of Accounting**

3 Credits

Emphasis on financial statement interpretation and development of accounting information for management. For engineering, computer science, and other non business majors. Community Colleges only.

**Prerequisite:** one C S course or consent of instructor.

**ACCT 221. Financial Accounting**

3 Credits

Interpretation and use of financial accounting information for making financing, investing, and operating decisions.

**ACCT 222. Management Accounting**

3 Credits

Development and use of accounting information for management decision making.

**Prerequisite(s):** ACCT 221.

**ACCT 301. Financial Accounting I**

3 Credits

Concepts, principles, and practices of financial accounting, stressing the determination of income and financial position. A student who does not pass the class within three attempts will not be allowed to take class for a fourth.

**Prerequisite(s):** C or better in ACCT 221 and ACCT 222.

**ACCT 302. Financial Accounting II**

3 Credits

A continuation of ACCT 301.

**Prerequisite(s):** C or better in ACCT 301.

**ACCT 351. Accounting Systems**

3 Credits

Covers accounting information systems as processors of data for financial reporting and control of economic organizations.

**Prerequisite(s):** ACCT 221 and ACCT 222.

**ACCT 353. Cost Accounting**

3 Credits

The development and use of cost accounting information for inventory valuation, income determination, and cost control. A student who does not pass the class within three attempts will not be allowed to take class for a fourth.

**Prerequisite(s):** C or better in both ACCT 221 and ACCT 222.

**ACCT 403. Federal Taxation I**

3 Credits

Basic federal income tax laws; emphasis on determination of taxable income of individuals. A student who does not pass the class within three attempts will not be allowed to take class for a fourth.

**Prerequisite(s):** A "C" or better in ACCT 221 and ACCT 222.

**ACCT 451. Auditing Theory and Practices**

3 Credits

Auditing standards, audit evidence, auditors reports and opinions, and professional responsibilities.

**Prerequisite(s):** ACCT 351 and C or better in ACCT 302.

**ACCT 455. Federal Taxation II**

3 Credits

Federal income tax laws applicable to partnerships, corporations, fiduciaries, tax research, tax planning.

**Prerequisite(s):** C or better in ACCT 403 or consent of instructor.

**ACCT 456. Accounting for Nonprofit Organizations**

3 Credits

Control and reporting problems unique to governmental units and other nonprofit organizations. Fund accounting principles, procedures, and reports.

**Prerequisite(s):** C or better in ACCT 302.
ACCT 460. Fraud Examination and Prevention
3 Credits
Covers business fraud as it is occurring in American society. Emphasis is on occupational fraud and financial statement fraud. Examines various types of fraud, its symptoms and effective investigation techniques. Effective fraud prevention measures are discussed throughout the course. Emphasizes case studies and the application of principles to actual fraud cases.
Prerequisite(s): a C- or better in ACCT 451 or concurrent enrollment.

ACCT 490. Selected Topics
1-3 Credits
Current topics in accounting. Prerequisites vary according to the seminar offered. May be repeated for a maximum of 12 credits under different subtitles.

ACCT 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

ACCT 500. Concepts in Accounting
1 Credit
Development, interpretation, and use of accounting information for financing, investing, operating, and managerial decision making.
Prerequisite(s): Admitted to MBA program.

ACCT 503. Accounting for Managers
3 Credits
Concepts and principles of financial and managerial accounting. Presents techniques used to measure business transactions, prepare financial statements, techniques for management decision-making, planning, and control. Not open to MAcc students.
Prerequisite(s): B or better in both ACCT 221 and ACCT 222.

ACCT 510. Technical and Professional Communication for Accountants
3 Credits
Effective writing strategies for professional communications. Students will learn to write with a professional style and proper English usage and to work with a variety of technical and lay audiences. Emphasis on initiation, planning, composition, and evaluation of business and accounting workplace scenarios to develop communication skills used in a business environment. Restricted to: Master of Accountancy majors.

ACCT 525. Advanced Cost-Managerial Accounting
3 Credits
Advanced cost-managerial concepts with a quantitative emphasis. Integrates cost-managerial concepts, quantitative tools, organization theory, behavioral concepts and computer methodology. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 353.

ACCT 530. Advanced Accounting
3 Credits
This course is designed to provide in-depth study of current financial accounting concepts related to business combinations, financial statement consolidations, and foreign currency transactions and translations. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 302 with a grade of C or better.

ACCT 544. Financial Statement Analysis and Valuation
3 Credits
Valuation of firms using financial information, financial statement analysis, and the valuation of individual assets and liabilities. Restricted to: Master of Accountancy majors.
Prerequisite(s): Acct 302; Graduate students only.

ACCT 550. Special Topics
3 Credits
Seminars in current topics in various areas of accounting including financial, managerial, auditing, taxation, systems, and fund accounting. Prerequisites vary according to topic being offered.

ACCT 551. Advanced Auditing Theory and Practice
3 Credits
Understanding and evaluating internal control in an EDP environment. Statistical sampling applications and current issues in auditing. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 451.

ACCT 554. Accounting Theory
3 Credits
Prerequisite(s): ACCT 302.

ACCT 555. Federal Tax Research
3 Credits
Tax research methodology including case materials, critical judicial decisions, journal articles, and research services. Emphasis on tax planning. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 403.

ACCT 559. Ethics and Professionalism in Accounting
3 Credits
Introduction to ethical reasoning, integrity, objectivity, independence, and professional accounting issues. Students will apply the concepts and theories to accounting-specific cases. Restricted to: Master of Accountancy majors.
Prerequisite(s): C or better in ACCT 451.

ACCT 560. Taxation of Corporations and Shareholders Advanced
3 Credits
Effects of taxation on the organization, operation, and reorganization of corporations and on their shareholders. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 403.

ACCT 564. Financial Accounting Research
3 Credits
Interpretation and application of accounting principles to financial reporting issues of business and nonbusiness organizations. Consent of Instructor required. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 302.

ACCT 570. Taxation of Partnerships
3 Credits
Taxation of partnership contributions and distributions, transfer of partnership interests, and allocations of partnership income. Also includes taxation of S corporations. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 403.
ACCT 580. Professional Accountancy  
3 Credits  
Prepares students for the accounting profession and professional certification through study of a wide range of topics similar to those a student might encounter in their first year of employment. Restricted to: Master of Accountancy majors.

ACCT 598. Independent Study  
1-3 Credits  
Individual studies directed by consenting faculty with prior approval of the department head. A maximum of 3 credits may be earned.  
Prerequisite: consent of instructor.

ACCT 599. Master's Thesis  
15 Credits  
Thesis.

Department of Accounting and Information Systems

Business Complex, Suite 232  
Phone: (575) 646-4901, Fax: (575) 646-1552  
Website: https://business.nmsu.edu/departments/accounting/

Accounting - Bachelor of Accountancy

Every candidate for the Bachelor of Accountancy degree must fulfill the following requirements in addition to the general education common core, College of Business foundation and the business core courses, Viewing a Wider World requirements and general electives. Please see the College of Business (p. 414) section for these requirements

Requirements

These requirements combined with the accounting courses required as part of the business core courses provide a minimum of 30 credits in accounting.

<table>
<thead>
<tr>
<th>Major Courses</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 301</td>
<td>Financial Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 302</td>
<td>Financial Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 351</td>
<td>Accounting Systems</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 353</td>
<td>Cost Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 403</td>
<td>Federal Taxation I</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 451</td>
<td>Auditing Theory and Practices</td>
<td>3</td>
</tr>
<tr>
<td>Elective in business, upper-division</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electives in accounting, upper-division</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 27

1 A student who does not pass ACCT 301 Financial Accounting I, ACCT 353 Cost Accounting, or ACCT 403 Federal Taxation I within three attempts will not be allowed to take the class for a fourth.

In order to count toward the Bachelor of Accountancy, upper-division transfer courses in accounting

1. must have been taken at an institution with AACSB Accounting accreditation or
2. be part of the New Mexico Business Articulation Matrix.

Accounting - Master of Accountancy

The MAcc program is recommended for those students wishing to fulfill the 150-hour education requirement which most states, including New Mexico, have legislated as a requirement for taking the Uniform CPA Examination.

Graduate assistantships are available for a limited number of qualified students. Interested persons are urged to apply well within the deadlines set by the Graduate School. Inquiries should be addressed to the Director.

Admission requirements of the Graduate School must be met before the applicant may be admitted to the Master of Accountancy program. Consideration for admissions to the Master of Accountancy program is dependent on an applicant’s undergraduate record and score on the Graduate Management Admissions Test (GMAT). Specifically, an applicant’s undergraduate GPA is multiplied by a factor of 200 and the result is added to his/her GMAT score. The required total is 1100. Applicants scoring between 1000 and 1100 will be admitted to the program only with approval of the MAcc Admissions Committee. The minimum acceptable GMAT score is 400. An acceptable score on the GMAT should be submitted at least one month prior to the student’s first enrollment unless the student meets one of the GMAT waivers listed below.

In addition to the aforementioned entrance requirements, an applicant’s GPA in 7 upper division accounting prerequisites must be at least 3.0. For those students not receiving their undergraduate accounting degree at NMSU, it is expected that substantially all of the accounting prerequisite classes be from an AACSB accredited business school or the application will need to be approved by the MAcc Admissions Committee. In this case the Admissions Committee may require that some of these prerequisite courses be retaken at an AACSB institution such as NMSU.

All grades, including those from the first attempt at repeated classes, will be used to compute upper division accounting prerequisite grade point averages to determine admission to the graduate program. At the suggestion of any faculty member, the MAcc Admissions Committee will review the application of a student whose potential might not be accurately reflected by this calculation.

GMAT Waivers

The GMAT requirement is waived for those who:

1. Are graduates of an undergraduate program in accounting from a US AACSB accredited business school with at least a 3.25 GPA overall and a 3.25 GPA in their eight upper division accounting courses; or
2. Are graduates of NMSU’s undergraduate accounting program with at least a 3.25 GPA overall and a 3.0 GPA in six core upper division accounting classes; or
3. Hold a post baccalaureate degree (such as MBA, MS, MA, JD) from an approved, AACSB-accredited US university with a minimum 3.0 GPA in graduate course work.

Candidates for the Master of Accountancy degree who have an undergraduate degree in accounting must successfully complete a minimum of 30 graduate credits. Qualifying NMSU undergraduate accounting students can apply to have two graduate courses count for their undergraduate program as well as their graduate program. Candidates with an undergraduate degree in a field other than accounting must complete additional prerequisite work dependent upon previous
courses taken. In any case, all candidates must present or fulfill the following requirements:

**Foundation Courses**

These courses are required of every student unless they can be waived. As a general policy, the courses upon which waivers are claimed must have been taken within seven years of enrollment in the program with a grade of B or better. A final decision regarding a waiver is based on an evaluation of each student’s total educational and professional background.

(for a description of these courses, see the New Mexico State University Catalog)

### Foundation Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 221</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 222</td>
<td>Management Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 338</td>
<td>Business Information Systems I</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 485</td>
<td>Enterprise Resource Planning</td>
<td>3</td>
</tr>
<tr>
<td>BLAW 316</td>
<td>Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>FIN 341</td>
<td>Financial Analysis and Markets</td>
<td>3</td>
</tr>
<tr>
<td>MGT 309</td>
<td>Human Behavior in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 303</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>A ST 251G</td>
<td>Statistics for Business and the Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td>or A ST 311</td>
<td>Statistical Applications</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits** 33

### Accounting and Related Prerequisites (21 Credits)

In addition to the foundation requirements, each student must present or complete the equivalent of an undergraduate major in accounting. This requires, at a minimum, 21 credits of accounting above the elementary level.

No coursework applied toward the MAcc degree, including the foundation requirements and the undergraduate accounting prerequisites, may be taken on an S/U basis.

### Core and Other Courses (30 Credits)

#### Core Courses

Each student must complete 21 credits in accounting courses numbered above 520. These courses must include a research class (either ACCT 555 Federal Tax Research or ACCT 564 Financial Accounting Research) and Ethics in Accounting (ACCT 559 Ethics and Professionalism in Accounting) unless a student has already taken an equivalent course. In addition, three of the credits may be in upper division undergraduate elective accounting courses numbered 450 or higher. Other specific courses to be completed by each candidate will be determined in the advisement process.

#### Other Courses

All students must complete a total of 9 additional credits in other courses. Three of the credits must be ACCT 510 Technical and Professional Communication for Accountants, and the rest must be from the approved list of electives or a waiver must be received to take a course not on the list. Neither ACCT 503 Accounting for Managers nor any course fulfilling the foundation requirement may be included. Any student wishing to be waived from any of the above requirements may submit a petition in writing to the MAcc Director. Each request will be considered individually by the MAcc Committee.

### General

The Graduate School requires that students maintain a grade-point average of at least 3.0 in all courses taken as a graduate student, as well as a 3.0 grade-point average in all graduate courses taken as a graduate student at NMSU. The Department of Accounting and Information Systems requires, in addition, that every candidate for the MAcc degree maintain at least a 3.0 grade-point average in all accounting courses used to satisfy the core and elective course requirement. MAcc students may not retake 500-level accounting courses for which they have previously received a grade without approval of the MAcc Admissions Committee.

### Comprehensive Examination

Satisfactory performance on a comprehensive examination or similar assignment is required for the degree.

**Thesis:** No thesis is required; however, under special approval, a candidate may elect to write a thesis under ACCT 599 Master’s Thesis. Up to 6 credits may be earned for the thesis.

### Admission to Master of Accountancy

Class registration in any Accounting course numbered above ACCT 503 Accounting for Managers requires

1. prior full admission to the MAcc program, or
2. prior consent of the Director of the MAcc program.

### Accounting - Undergraduate Minor

To obtain a minor in Accounting, a student must complete 18 or more credit hours of approved course work in Accounting (ACCT), of which at least 12 hours are in courses numbered 300, or higher. All courses for the minor must be completed with a grade of C- or better. At least 12 credits must be completed at NMSU. This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

#### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 221</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 222</td>
<td>Management Accounting</td>
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<tr>
<td>ACCT 301</td>
<td>Financial Accounting I</td>
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<tr>
<td>ACCT 302</td>
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<td>Federal Taxation II</td>
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<td>ACCT 456</td>
<td>Accounting for Nonprofit Organizations</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 460</td>
<td>Fraud Examination and Prevention</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 485</td>
<td>Enterprise Resource Planning</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits** 18
Of the 12 hours of upper-division Accounting classes required for the minor, a minimum of 6 must be taken at NMSU. At least 12 credit hours must be completed at the NMSU College of Business. To count toward the minor, upper-division transfer courses must have been taken at an institution with AACSB Accounting accreditation.

Enterprise Systems - Undergraduate Minor

To obtain a minor in Enterprise Systems, a student must complete 18 or more credit hours of approved course work. A cumulative grade point average of at least 2.0 over the 18 hours must be earned. At least 12 credits must be completed at NMSU. This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 351</td>
<td>Accounting Systems</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 485</td>
<td>Enterprise Resource Planning</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 482</td>
<td>Management of Information Security</td>
<td>3</td>
</tr>
<tr>
<td>FIN 360</td>
<td>Financial Information Technology</td>
<td>3</td>
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</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 351</td>
<td>Supply Chain Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 344</td>
<td>Production and Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 466</td>
<td>Managing Electronic Commerce: A Business Models Perspective</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 18

Information Systems - Bachelor of Business Administration

Every candidate for this major must fulfill the following requirements in addition to the general education common core, College of Business foundation and business core (p. 414), Viewing a Wider World requirements and general electives.

In the upper-division core IS majors must take ECON 405 Introductory Econometrics, as their ECON or A ST elective.

Major Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCIS 350</td>
<td>Information Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 475</td>
<td>Database Management Systems</td>
<td>3</td>
</tr>
<tr>
<td>ICT 377</td>
<td>Computer Networking I</td>
<td>3</td>
</tr>
<tr>
<td>ICT 477</td>
<td>Computer Networking II</td>
<td>3</td>
</tr>
<tr>
<td>ICT 339</td>
<td>Introduction to Digital Forensics and Incident Response</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 480</td>
<td>E-Commerce Security</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 482</td>
<td>Management of Information Security</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 24

Please note that some of the courses listed may have a prerequisite which would require a student to take an additional course. Substitutions for some of these courses may be considered if a student makes this request to the department.

Information Systems - Graduate Minor

This minor is for master’s-level students who are not in the Masters of Business Administration (MBA) program. Students in the MBA program may choose a concentration in Information Systems (see the Business Administration (p. 422) section).

To obtain a graduate minor in Information Systems (IS) students must satisfy the requirements as stated in the Graduate Catalog for a minor at the master’s level. For it to appear on the transcript, the student must list the minor on the Program of Study and Committee for Master’s Student (Application for Admission to Candidacy) and have it signed by the head of the department offering the minor.

Requirements

The minor requires a minimum of 9 credits of graduate work.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCIS 550</td>
<td>Information Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 575</td>
<td>Database Management Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 3 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCIS 580</td>
<td>E-Commerce Security</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 582</td>
<td>Management of Information Security</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 585</td>
<td>Enterprise Resource Planning &amp; Business Processes</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 9

Information Systems - Undergraduate Minor

To obtain a minor in Information Systems (IS), a student must complete 18 or more credit hours of approved coursework in IS, of which at least 12 hours are in courses numbered 300 or higher. A cumulative grade point average of at least 2.0 over the 18 hours must be earned. At least 12 credits must be completed at NMSU. This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCIS 338</td>
<td>Business Information Systems I</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 350</td>
<td>Information Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 482</td>
<td>Management of Information Security</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 9 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 351</td>
<td>Accounting Systems</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 475</td>
<td>Database Management Systems</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 480</td>
<td>E-Commerce Security</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 24

Information Systems - Graduate Minor

This minor is for master’s-level students who are not in the Masters of Business Administration (MBA) program. Students in the MBA program may choose a concentration in Information Systems (see the Business Administration (p. 422) section).

To obtain a graduate minor in Information Systems (IS) students must satisfy the requirements as stated in the Graduate Catalog for a minor at the master’s level. For it to appear on the transcript, the student must list the minor on the Program of Study and Committee for Master’s Student (Application for Admission to Candidacy) and have it signed by the head of the department offering the minor.

Requirements

The minor requires a minimum of 9 credits of graduate work.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCIS 550</td>
<td>Information Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 575</td>
<td>Database Management Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 3 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
</tr>
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<tbody>
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</tr>
<tr>
<td>BCIS 582</td>
<td>Management of Information Security</td>
<td>3</td>
</tr>
<tr>
<td>BCIS 585</td>
<td>Enterprise Resource Planning &amp; Business Processes</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 9
and environmental economics.; Y. F. Lee, Ph.D. (Southern Illinois-Carbondale)— international finance, international trade, international monetary system, economic development; J. Loveland, Ph.D. (Emeritus); R. Macy, Ph.D. (Oregon) - strategic management, entrepreneurship; K. J. Martin, Ph.D. (Purdue)— financial management, corporate control; R. McFerrin, Ph.D. (Texas A&M)— microeconomics, macroeconomics, economic history; J. T. McGuckin, Ph.D. (Emeritus); K. D. Melendrez, Ph.D. (Arizona)— financial accounting; S. K. Mills, Ph.D. (Emeritus); C. Mora-Monge, Ph.D. (Toledo)— supply chain management, information systems; J. A. Nelson, Ph.D. (Missouri)— information systems; M. Niculescu, Ph.D. (University of Cincinnati)— modeling consumer behavior; R. Oliver, Ph.D. (New Mexico State)— information systems; N. A. Oretskin, J.D. (Case Western School of Law)— contract law/negotiation; C. R. Payne, Ph.D. (Brigham Young)— marketing and consumer behavior; J. T. Peach, Ph.D. (Texas)— quantitative economics, economic development; R. T. Peterson (Emeritus); J. Tim Query, Ph.D. (Georgia)— insurance, finance, risk management; S. Rahman, Ph.D. (Texas-El Paso)— personal financial planning, financial analysis and markets; C. Ricketts, Ph.D. (Mississippi State)— labor, health, development; G. A. Rosile, Ph.D. (Pittsburgh)— narrative research, organizational studies; H. Sankaran, Ph.D. (Houston)— corporate finance, investments; E. T. Sautter, Ph.D. (Emeritus); E. A. Scribner, Ph.D. (Emeritus); C. Seipel, Ph.D. (Oklahoma State)— C.P.A.-financial accounting, auditing; W. L. Smith, Ph.D. (New Mexico State)— C.P.A.- taxation; C. Sroka, Ph.D. (Ohio State)— count data models; R. L. Steiner, Ph.D. (Oklahoma State)— likelihood methods, discrete distributions; J. E. Teich, Ph.D. (Emeritus) P. L. Tunnell, Ph.D. (Oklahoma State)— C.P.A.-taxation; D. M. VanLeeuwen, Ph.D. (Oregon State)— statistics; B. Widner, Ph.D. (Colorado State)— urban/regional, public finance, development; Y. Zhang, Ph.D. (Texas Tech) financial accounting

**Business Administration**

**Graduate Program Information**

The Master of Business Administration (MBA) program is a professional program designed to provide students with a solid background in business practices and the problem-solving and people skills needed to become successful leaders in the global business environment. Program graduates are prepared for administrative or managerial positions in a wide variety of organizations, both private and governmental. The business and accounting programs at NMSU, including the MBA program, are accredited by AACSB International - The Association to Advance Collegiate Schools of Business. The MBA program is offered in a traditional classroom with some online delivery and in a cohort-based distance program with a synchronous online component. Details are available at http://business.nmsu.edu/mba (http://business.nmsu.edu/mba).

The Ph.D. program in Business Administration offers the opportunity to specialize in either Marketing or Management.

**Degrees for the Department**

**Business Administration - Master of Business Administration** (p. 424)

**Engineering/MBA Program — Dual Degree** (p. 425)

**Business Administration - Doctor of Philosophy** (p. 423)

R. Adkisson, Ph.D. (Nebraska)— economic development, public finance, institutional economics; T. R. Adler, Ph.D. (Cincinnati)— policy and strategy, collaborative networks, information systems; P. G. Benson, Ph.D. (Colorado State)— international human resource management, wage and salary administration; M. J. Billiot, D.B.A. (Mississippi State, C.P.A.)— managerial accounting; J. W. Bishop, Ph.D. (Virginia Tech)— human resource management and organizational behavior; L. Blank, Ph.D. (Tennessee)— micro economics, economics of regulated utilities; D. M. Boje, Ph.D. (Illinois)— organizational behavior, storytelling, organizational change; K. Brook, Ph.D. (Texas)— money and banking, macroeconomic theory; G. Clarkson, J.D., D.B.A. (Harvard) - American Indian law, tribal economic development, intellectual property strategy, business law; R. Clemons, Ph.D. (Texas A&M) - C.P.A., taxation, N. H. Compton, J.D. (Emeritus); W. Crawford, Ph.D. (Alabama)— organizational behavior, human resources; B. F. Daily, Ph.D. (Emeritus); D. L. Daniel, Ph.D. (Southern Methodist)— non parametrics; M. E. de Boyrie, Ph.D. (Florida International)— international finance and trade issues; P. W. Dorfman, Ph.D. (Emeritus); C. E. Enomoto, Ph.D. (Texas A&M)— microeconomic theory; C. A. Erickson, Ph.D. (Arizona State)— monetary theory, macroeconomics; C. Flinchbaugh, Ph.D. (Kansas)— organizational behavior, human resources; R. D. Fortin, Ph.D. (Kansas)— corporate finance and investments; C. Gard, Ph.D. (University of Washington)— biostatistics; D. A. Gegax, Ph.D. (Wyoming)— managerial economics, microeconomic theory; W. R. Gould, Ph.D. (North Carolina State)— biological sampling, wildlife and fisheries estimation; M. Holt, J.D. (University of New Mexico)— business law, employment law; M. Hyman, Ph.D. (Purdue)— marketing theory and research; I. M. Jasso, Ph.D. (Houston)— advertising, strategy; M. Jun, Ph.D. (Georgia State)— production and operations management; J. Kreie, Ph.D. (Arkansas)— information systems; L. LaPlue, Ph.D (Tennessee) — international
BA 391. Business Administration and Economics Internship and Cooperative Education II
1-3 Credits
Applications of the principles of business administration and economics. Registration in one course allowed per co-op work phase; a minimum of 12 work weeks is required. Open only to students in the College of Business. Option of S/U or a grade. The amount of academic credit (1-3 cr.) will be determined by the academic experience and not by the work experience.

BA 490. Selected Topics
3 Credits
Prerequisites vary according to the seminar being offered.

BA 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. A maximum of 3 credits may be earned.
Prerequisite: junior or above standing and consent of instructor.

BA 500. Macroeconomic Essentials
1 Credit
Macroeconomic theory and public policy, national income concepts, unemployment, inflation, economic growth and international payment problems. Restricted to: MBA Major majors majors.

BA 501. Quantitative Tools for the MBA
1 Credit
An overview of critical topics in math and statistics that will provide a quantitative foundation for students entering the Master of Business Administration program. Admission to the MBA program.

BA 550. Special Topics
3 Credits
Interdisciplinary seminar in selected current business topics.
Prerequisite(s): Prerequisites vary according to the seminar being offered.

BA 590. Professional Paper/Presentation
3 Credits
Paper written in close coordination with sponsoring professor and presented near the end of the student's final semester in the M.B.A. program. The paper will consist of a professional business report, a case study of a business or organization or a research report. Restricted to: MBA majors.
Prerequisite(s): Minimum of 3.0 average in: ACCT 503, BLAW 502, FIN 503, and MKTG 503 or AECC 551.

BA 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. A maximum of 3 credits may be earned.
Prerequisite: consent of instructor.

BA 599. Master's Thesis
15 Credits
Thesis.

Name: College of Business MBA Program
Office Location: Guthrie Hall 114
Phone: (575) 646-8003
Website: http://business.nmsu.edu/academicprograms

Name: College of Business Ph.D., Management
Office Location: Business Complex 220
Phone (575) 646-1201

Name: College of Business, Ph.D., Marketing
Office Location: Business Complex 209
Phone: (575) 646-3341

Business Administration - Doctor of Philosophy
Concentration: Management
Phone: (575) 646-1201
http://business.nmsu.edu/academics/graduate-programs/mgt-phd/

The College of Business offers a program leading to a PhD in Business Administration with a concentration in Management. Our program meets the requirements of AACSB international by providing students with advanced management-related theoretical, research and applied knowledge and skills. We are committed to educating researchers, teachers, and scholars who will lead and shape business and organizational life in the decades to come. We prepare you to understand the complexities of business and its social and international contexts while you develop a specialized area of expertise. Our program is flexible in order to align programs of study with job opportunities and students’ interest areas. Research skills are developed through course work and mentoring relationships, as you will work with faculty to pursue joint research according to your interest and faculty members’ expertise. Our faculty prepare students for academic research and teaching careers in managerial and organizational sciences; consulting careers with industrial, governmental, health, or educational institutions; or leadership careers in organizational management and administration.

Concentration: Marketing
Phone: (575) 646-3341
http://business.nmsu.edu/academics/graduate-programs/mktg-phd/

The College offers a program leading to a Ph.D. degree. The faculty of the PhD Program in Business Administration is committed to training researchers and educators who will shape business scholarship, practice and pedagogy. The program emphasizes preparing candidates to understand the complexities of modern business while they develop a specialized area of expertise in marketing or management. The PhD in Business Administration provides graduates with the opportunity to pursue a variety of career paths within academia and within industry. Currently concentrations are offered in management and marketing, and each admits students independently.

Program Requirements
• demonstrate competency in statistics and research methods;
• complete studies in a major field of concentration chosen from the departments of management or marketing in the College of Business;
• complete studies in a minor field of concentration or interest area that supports the student’s research, teaching and/or career goals;
• pass qualifying and comprehensive exams; and
• complete and successfully defend a doctoral dissertation.

Business Administration - Master of Business Administration

The Master of Business Administration (MBA) program is a professional program designed to provide students with a solid background in business practices and the problem-solving and people skills needed to become successful leaders in the global business environment. Program graduates are prepared for administrative or managerial positions in a wide variety of organizations, both private and governmental. The business and accounting programs at NMSU, including the MBA program, are accredited by AACSB International - The Association to Advance Collegiate Schools of Business.

The MBA program is offered in a traditional classroom with some online delivery and in a cohort-based distance program with a synchronous online component. Details are available at http://business.nmsu.edu/mba (http://business.nmsu.edu/mba).

Admissions

Applicants must meet the basic admission requirements of the Graduate School before they are considered for admission to the MBA program. To be considered for admission to the MBA program, applicants must have:

1. completed an undergraduate degree with a GPA of at least 3.5 from an institution with business accreditation by AACSB International or ACBSP, or
2. completed the Graduate Management Admission Test (GMAT) with a minimum score of 400 and a combined GMAT score and undergraduate GPA such that (GPA x 200)+ GMAT is greater than or equal to 1050, or
3. received a graduate degree from a regionally accredited U.S. college or university, or
4. completed at least four years of relevant, full-time, post-degree, professional work experience with an undergraduate GPA of at least 3.25 from an institution with business accreditation by AACSB International or ACBSP.

If required, official GMAT scores must be submitted to the MBA Program Office at least one month prior to initial enrollment in the program. A maximum of 9 credit hours of the required MBA courses may be completed prior to the student’s acceptance into the MBA degree program.

Background Knowledge

Although the MBA program is designed to encourage participation by students with a variety of educational backgrounds, the curriculum is fast paced. As a consequence, a minimum level of background knowledge is expected of all entering students, and those who lack the necessary background in any of the knowledge areas will be required to make up their deficiencies early in the program. Students may complete no more than 9 credits of required MBA courses prior to completion of the background knowledge courses.

Background knowledge may be demonstrated by successful completion (with a grade of A or B) of undergraduate courses in managerial accounting, financial accounting, macroeconomics, finance, marketing, statistics and calculus. At NMSU, the relevant courses are

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 221</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 222</td>
<td>Management Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>FIN 341</td>
<td>Financial Analysis and Markets</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 303</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>A ST 251G</td>
<td>Statistics for Business and the Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or STAT 251G</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or A ST 311</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Statistical Applications</td>
<td></td>
</tr>
<tr>
<td>MATH 142G</td>
<td>Calculus for the Biological and Management Sciences</td>
<td>3</td>
</tr>
</tbody>
</table>

Knowledge of each of these subjects may also be demonstrated by completing examinations as designed by the College of Business or by completing intensive one-credit courses in the summer. For more information on intensive courses and examinations, contact the MBA Office.

Program Requirements (36 credits)

The MBA program consists of twelve courses beyond the background knowledge requirements. Eleven are required courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 503</td>
<td>Accounting for Managers</td>
<td>3</td>
</tr>
<tr>
<td>B CIS 502</td>
<td>Business Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>BLAW 502</td>
<td>Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>ECON 503</td>
<td>Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>FIN 503</td>
<td>Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 502</td>
<td>Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 503</td>
<td>Organizational Behavior and Management Processes</td>
<td>3</td>
</tr>
<tr>
<td>MGT 512</td>
<td>Quantitative Analysis for Business Decisions</td>
<td>3</td>
</tr>
<tr>
<td>MGT 590</td>
<td>Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 503</td>
<td>Marketing Management</td>
<td>3</td>
</tr>
<tr>
<td>B A 590</td>
<td>Professional Paper/Presentation</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective course 1

Total Credits 36

1 This elective must be selected from the approved course list on the MBA web page.

The Graduate School requires that students maintain a grade point average of at least 3.0 in all courses taken as a graduate student at NMSU. The MBA program requires, in addition, that every candidate for the MBA degree must graduate with at least a 3.0 grade point average in all courses required for the basic MBA degree.

The following course sequencing requirements must be satisfied:

1. B A 590 Professional Paper/Presentation must be completed during the final term of the student’s program and is only open to students who have been accepted into the MBA degree program. Effective with students entering in summer 2011, ACCT 503 Accounting for Managers, BLAW 502 Legal Environment of Business, FIN 503 Financial Management and MKTG 503 Marketing Management must
be completed prior to enrollment in B A 590 Professional Paper/Presentation.

2. MGT 590 Strategic Management must be completed at the end of the student’s program of study and is only open to students who have been accepted into the MBA degree program. All MBA coursework other than B A 590 Professional Paper/Presentation must be completed prior to or during the same term as MGT 590 Strategic Management.

Students requesting transfer credit for any graduate courses taken before admission to the MBA program must submit appropriate written justification, including course descriptions, syllabi, transcripts, etc. Up to nine credits of transfer work can be applied to meet MBA requirements if the credits were earned in a program accredited by AACSB International. Transfer credits for courses taken after admission to the program are generally not permitted, but advance approval should be requested and may be granted in exceptional situations.

Oral defense of the paper written in fulfillment of the requirements of B A 590 Professional Paper/Presentation will constitute the final examination as required by the Graduate School and will be scheduled and completed in accordance with timetables prescribed by, and other requirements of, the Graduate School. A thesis is not required. With special approval, however, a degree candidate may elect to write a thesis with a least 6 credit hours earned under B A 599 Master's Thesis in lieu of B A 590 Professional Paper/Presentation.

MBA students may elect to pursue one of several MBA specializations as described below.

**Concentration: Agribusiness**

Students who want to specialize in Agribusiness must take the following set of five AEEC courses in substitution of five courses included in the above list of required MBA courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEEC 511</td>
<td>Advanced Futures and Options Markets</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 520</td>
<td>International Agricultural Trade Theory and Policy</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 526</td>
<td>Global Food Supply Chain Management</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 551</td>
<td>Advanced Agribusiness Marketing</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 556</td>
<td>Advanced Agribusiness Management</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

The five AEEC courses collectively substitute for the following five required MBA courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 503</td>
<td>Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>MGT 502</td>
<td>Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 512</td>
<td>Quantitative Analysis for Business Decisions</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 503</td>
<td>Marketing Management</td>
<td>3</td>
</tr>
<tr>
<td>Elective course (from the approved list)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

Students in the concentration in Agribusiness who have not previously taken a course in Agricultural Policy will be required to take AEEC 545 Advanced Agricultural Policy prior to taking the five concentration courses.

**Concentration: Finance**

MBA students who want to specialize in Finance must complete the following four Finance courses. These courses can be used as substitutes for MGT 512 and BA 590.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 535</td>
<td>Investment Concepts</td>
<td>3</td>
</tr>
<tr>
<td>FIN 545</td>
<td>Money and Capital Markets</td>
<td>3</td>
</tr>
<tr>
<td>FIN 555</td>
<td>Derivative Markets and Securities</td>
<td>3</td>
</tr>
<tr>
<td>FIN 566</td>
<td>Advanced Financial Management</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

**Concentration: Information Systems**

Students who want to specialize in Information Systems must take additional coursework beyond that required to complete the MBA degree program. BCIS 502 Business Information Systems is a required MBA course and a prerequisite for each of the courses in the concentration.

Any of these courses may also be used to fulfill the MBA elective requirement.

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credits</th>
</tr>
</thead>
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<td>Investment Concepts</td>
<td>3</td>
</tr>
<tr>
<td>FIN 545</td>
<td>Money and Capital Markets</td>
<td>3</td>
</tr>
<tr>
<td>FIN 555</td>
<td>Derivative Markets and Securities</td>
<td>3</td>
</tr>
<tr>
<td>FIN 566</td>
<td>Advanced Financial Management</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

**Concentration: Public Utility Regulation**

The concentration in Public Utility Regulation consists of the following courses. One of these courses will serve as the elective in the MBA program and two of the courses will substitute for courses MGT 512 and B A 590 in the standard MBA program (because the learning objectives of the utility regulation courses meet the learning objectives of the two basic MBA courses).

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 571</td>
<td>Regulatory Policy and Industry Analysis: Electricity I</td>
<td>3</td>
</tr>
<tr>
<td>ECON 572</td>
<td>Regulatory Policy and Industry Analysis: Water and Natural Gas</td>
<td>3</td>
</tr>
<tr>
<td>ECON 573</td>
<td>Regulatory Policy and Industry Analysis: Electricity II</td>
<td>3</td>
</tr>
<tr>
<td>ECON 574</td>
<td>Advanced Seminar Regulatory Policy and Industry Analysis</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

**Engineering/MBA Program – Dual Degree**
Highly motivated undergraduate engineering students who would like to apply their quantitative skills and technical expertise to the business environment should consider the dual degree program offered through the College of Engineering and the College of Business. Undergraduate students who are accepted into this program can, with full time enrollment and careful scheduling of their coursework, complete the MBA degree requirements in as little as one year beyond completion of the BS degree. Information regarding the dual degree program may be obtained from the College of Engineering or the MBA Program Office (GU 114).

**Economics, Applied Statistics, and International Business**

**Undergraduate Program Information**

The Department of Economics, Applied Statistics, and International Business offers undergraduate degrees in two majors. Students can earn a Bachelor of Business Administration (BBA) in either economics or international business. Economics majors also have the opportunity to earn a Bachelor of Arts degree. Economics majors work in business, government, and the non-profit sector. The economics major is also a good choice for students who plan to attend graduate school in economics, law, business and other areas. In addition the department teaches economics and applied statistics to support the college’s business core and the university’s general education requirements.

**Graduate Program Information**

The Department of Economics, Applied Statistics and International Business cooperates with the Department of Agricultural Economics and Agricultural Business in offering graduate programs in economics, agricultural economics and economic development. The programs are jointly administered by faculty from the two departments. The objective of the master’s program is to prepare students for professional positions in business, government, or research institutions and/or for further graduate studies. The Department of Economics, Applied Statistics and International Business offers a Master of Arts in economics degree requirements in as little as one year beyond completion of the BS degree. Information regarding the dual degree program may be obtained from the College of Engineering or the MBA Program Office (GU 114).

**Economics, Applied Statistics, and International Business**

**Undergraduate Program Information**

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**Graduate Study in Business Administration**

The Department of Economics, Applied Statistics and International Business cooperates with other departments of the College of Business to offer a Master of Business Administration degree and a PhD in Business Administration. Within the PhD program, the department offers a minor area of study and provides statistics courses to support the doctoral program. More information about these programs is available in this catalog under College of Business (p. 414).

**Degrees for the Department**

Economics - Bachelor of Art in Economics (p. 432)

Economics - Bachelor of Business Administration (p. 433)

International Business - Bachelor of Business Administration (p. 435)

Applied Statistics - Bachelor of Science (p. 433)

Economics - Master of Science (p. 431)

Economics - Master of Arts (p. 434)

Public Utility Regulation and Economics - Graduate Certificate (p. 436)

Economics - Doctor of Economic Development (p. 434)

**Minors for the Department**

Economics - Undergraduate Minor (p. 435)

International Business - Undergraduate Minor (p. 436)

Applied Statistics - Graduate Minor (p. 431)

Economics - Graduate Minor (p. 434)

**Professor, Christopher Erickson, Interim Department Head**

Department of Economics, Applied Statistics and International Business:

R. Adkisson, Ph.D. (Nebraska) – international economics, public finance, economic development; B. Bai, MS (New Mexico State University)-Applied Statistics; Larry Blank, Ph.D. (University of Tennessee, Knoxville) – microeconomic theory, managerial economics and regulatory economics; K. Brook, Ph.D. (Texas-Austin) – macroeconomic theory, monetary policy; D. L. Daniel, Ph.D. (Southern Methodist) – nonparametrics; C. Enomoto, Ph.D. (Texas A&M) – econometrics, economic theory; C. A. Erickson, Ph.D. (Arizona State) – monetary theory, macroeconomics; C. Gard, Ph.D. (University of Washington) – biostatistics; D. A. Gegax, Ph.D. (Wyoming) – public utility economics, industrial organization; K.R. Geisler, Ph.D. (Neva) - regional, applied micro, environmental; W. R. Gould, Ph.D. (North Carolina State) – biological sampling, wildlife and fisheries estimation; L. LaPlue (Tennessee) – international and environmental economics; Y. F. Lee, Ph.D. (Southern Illinois-Carbondale) – international finance, international trade, international system, economic development; Randy McFerrin, Ph.D. (Texas A & M University) – micro theory, principles and American economic history; J. T. Peach, Ph.D. (Texas-Austin) – quantitative economics, border studies, economic development; C. Ricketts, Ph.D. (Mississippi State) – labor, health, development; C. Sroka (Ohio State) – count data models; R. L. Steiner, Ph.D. (Oklahoma State) – likelihood methods, discrete distributions; D. VanLeeuwen, Ph.D. (Oregon State) – statistics; B. Widner, Ph.D. (Colorado State) – urban/regional, public finance, development;D.L. Clason, (Emeritus) Ph.D. (Kansas State); M. Ellis (Emeritus), Ph.D. (California-Riverside); B. N. Matta, (Emeritus) Ph.D. (Texas at Austin); J. T. McGuckin (emeritus), Ph.D. (Wisconsin-Madison); A.V. Popp, (Emeritus), Ph.D., (Northern Illinois); D.B. Smith, (Emeritus), Ph.D. (Nebraska); E. S. Willman, (Emeritus) Ph.D. (Indiana)

A ST 251G. Statistics for Business and the Behavioral Sciences

3 Credits

Techniques for describing and analyzing data; estimation, hypothesis testing, regression and correlation; basic concepts of statistical inference. Same as STAT 251G.

**Prerequisite:** C- or better in MATH 120.

A ST 311. Statistical Applications

3 Credits

Techniques for describing and analyzing economic and biological data; estimation, hypothesis testing, regression and correlation; basic concepts of statistical inference.

**Prerequisite(s):** MATH 120.

A ST 450. Special Topics

1-4 Credits

Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.
A ST 456. Statistical Methods and Data Analysis
3 Credits
Methods for sampling and estimation; analysis of variance and elementary experimental designs; linear regression and correlation; multiple regression, variable selection methods and residual analysis; introduction to statistical packages.
Prerequisite(s): A ST 251, A ST 311, or equivalent.

A ST 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval of the department head. Maximum of 3 credits per semester and a grand total of 3 credits.

A ST 503. SAS Basics
2 Credits (1+2P)
An introduction to the statistical software package, SAS, and its utilization in an interactive computing environment, primarily PC/SAS. Provides a fundamental understanding of the structure of SAS, its data management capabilities, and how to invoke a variety of descriptive and simple statistical SAS procedures.
Corequisite(s): A ST 505, or consent of instructor.

A ST 504. Statistical Software Applications
1 Credit
Optional Computing course to accompany A ST 506. Computer analysis of topics covered in A ST 505 and A ST 506.
Prerequisite(s): A ST 503 or consent of instructor.
Corequisite(s): A ST 506.

A ST 505. Statistical Inference I
4 Credits (3+2P)
A qualitative introduction to the concepts and methods of statistical inference. Sampling, frequency distributions (z, t, x², F), estimation, and testing. One-way analysis of variance. Simple linear regression.
Prerequisite: consent of the instructor.

A ST 506. Statistical Inference II
3 Credits (2+2P)
Introduction to multiple regression; the analysis of variance for balanced studies; multiple comparisons, contrasts, factorials, experimental designs through split plots.
Prerequisite: A ST 505 and the ability to use a standard computer package such as SAS (may be satisfied by A ST 503) or consent of instructor.

A ST 507. Advanced Regression
3 Credits
Examination of multiple regression; residual analysis, collinearity, variable selection, weighted least squares, polynomial models, and nonlinear regression: linearizable and intrinsically nonlinear models.
Prerequisites: A ST 503 and A ST 505 or consent of instructor.

A ST 508. Analysis of Advanced Designs and Related Topics
3 Credits
Complete and incomplete block designs; fixed, mixed, and random models; unbalanced data; analysis of covariance; nested experiments; fractional factorials.
Prerequisite(s): A ST 503 and A ST 506; or consent of instructor.

A ST 515. Statistical Analysis with R
3 Credits
Introduction to R data types, basic calculations and programming, data input and manipulation, one and two sample tests, ANOVA, regression, diagnostics, graphics, probability distributions, and basic simulations in the R software environment.
Prerequisite(s): A ST 505 or equivalent with consent of instructor.

A ST 521. Sampling Methodology
3 Credits (3+2P)
Methodology of sampling finite populations using design-based (simple random, stratified, systematic, cluster, and multistage), model-based (regression and ratio estimators), and adaptive sampling. Properties of estimators under all designs are discussed.
Prerequisite(s): Either A ST 505 or A ST 565, or consent of instructor.

A ST 522. Survey Sampling
2 Credits (3+2P)
Techniques of survey sampling (mail questionnaire and telephone surveys) applicable to social sciences. Techniques of questionnaire preparation and methods of evaluating results are presented.
Prerequisite: A ST 521, or consent of instructor.

A ST 523. Biological Sampling (s)
3 Credits
Methods of sampling biological populations: area frame, quadrant, line intercept, line transect, and mark-recapture. May be repeated up to 3 credits.
Prerequisite(s): A ST 505 or consent of instructor.

A ST 524. Time Series Analysis and Applications
3 Credits
A systematic exposition of the methods for analyzing, modeling, and forecasting time series. Emphasizes underlying ideas and methods rather than detailed mathematical derivations, using SAS, BMDP, IMSL, and Fortran. May be repeated up to 3 credits.
Prerequisite(s): A ST 505 or consent of instructor.

A ST 525. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

A ST 551. Introduction to Statistical Consulting
1 Credit
Consideration of published material in the consulting process. Restricted to majors. Graded S/U.
Prerequisite: consent of instructor.

A ST 552. Advanced Statistical Consulting
1 Credit
Continuation of A ST 551 with emphasis on dealing with clients in order to identify statistically relevant features of a research study. Restricted to majors. Graded S/U.
Prerequisite: A ST 551.

A ST 553. Practicum in Statistical Consulting
1 Credit
Supervised experience under the guidance of senior faculty. May be repeated for a maximum of 2 credits. Restricted to majors. Graded S/U.
Prerequisite: A ST 552.
A ST 555. Applied Multivariate Analysis
3 Credits
Multivariate analysis of linear statistical models, including MANOVA and repeated measures. Analysis of correlation and covariance structures, including principal components, factor analysis, and canonical correlation. Classification and discrimination techniques.
Prerequisite(s): A ST 506 and A ST 504 or consent of instructor.

A ST 556. Statistical Analysis I
4 Credits (3+2P)
An analytic introduction to the theory and methods of statistical inference. Sampling, frequency distributions (z, t, x², F), estimation, testing, and simulation.
Prerequisite: MATH 291G or consent of instructor.

A ST 556. Statistical Analysis II
4 Credits (3+2P)
Continuation of A ST 556.
Prerequisite: A ST 556 or consent of instructor.

A ST 567. Applied Linear Models I
3 Credits
The mean model, including constraints, approach to linear models; nonidentity variance-covariance matrices. Some emphasis on computational aspects and relation to statistical packages.
Prerequisite: A ST 566 or consent of instructor.

A ST 568. Applied Linear Models II
3 Credits
The relation of full to less-than-full rank linear models; complex data structures, including messy data, empty cells, and components of variance: extensions to categorical data analysis and nonparametric methods. Continues some emphasis on computational aspects.
Prerequisite: A ST 567.

A ST 596. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval by department head. May be repeated for a maximum of 3 credits.
Prerequisite: consent of instructor.

A ST 598. Special Research Problems
1-6 Credits
Individual analytical or experimental projects. Restricted to majors. Graded S/U.

A ST 599. Master's Thesis
1-6 Credits
Thesis.

ECDV 550. Introduction to Local and Regional Development
3 Credits
Serves as the introductory course in the Doctor of Economic Development program. Overview of the economic development field.

ECDV 590. Special Topics
1-3 Credits (1-3)
Selected topics in the area of Economic Development. Subtitle reflects content. May be repeated up to 9 credits. Consent of instructor required.

ECDV 596. Individual Study
1-3 Credits (1-3)
Individual studies directed by consenting faculty with the prior approval of the Department Head. May be repeated up to 6 credits.
ECDV 683. Seminar in National Economic Development
3 Credits
Explores specific examples and cases of rural and urban economic development. Involves applied analysis of specific rural and/or urban economic issues/projects.
Prerequisite(s): ECDV 681 and ECDV 682.

ECDV 685. Seminar in International Economic Development
3 Credits
Explores specific examples and cases of economic development in an international context. Focuses on the application of theories and methods in prerequisite courses to the problems of nations lagging in economic development.
Prerequisite(s): AEEC 528, AEEC 520 or ECON 581.

ECDV 692. Seminar in Economic Development
3 Credits
Seminars in selected topics in economic development.Subtitle reflects content. May be repeated up to 9 credits.
Prerequisite: Completion of core requirements of Doctor of Economic Development.

ECDV 694. Internship
1-9 Credits (1-9)
Internship in Economic Development. May be repeated up to 9 credits. Restricted to: ECDV majors. S/U Grading (S/U, Audit).
Prerequisite(s): Completion of core requirements of Doctor of Economic Development.

ECDV 699. Doctoral Project
1-9 Credits (1-9)
Doctoral Project. May be repeated up to 9 credits. Completion of all DED coursework and successful completion of comprehensive exams.

ECON 201G. Introduction to Economics
3 Credits
Economic institutions and current issues with special emphasis on the American economy.

ECON 251G. Principles of Macroeconomics
3 Credits
Macroeconomic theory and public policy: national income concepts, unemployment, inflation, economic growth, and international payment problems.

ECON 252G. Principles of Microeconomics
3 Credits
Microeconomic theory and public policy: supply and demand, theory of the firm, market allocation of resources, income distribution, competition and monopoly, governmental regulation of businesses and unions.

ECON 304. Money and Banking
3 Credits
Income measurement and determination, monetary and fiscal policies.
Prerequisite: ECON 251G or equivalent, or consent of instructor.

ECON 311. Intermediate Macroeconomic Theory
3 Credits
Analysis of gross domestic product, the Classical, Keynesian, and Neo-Keynesian theories of income, employment, inflation and growth.
Prerequisite(s): ECON 251G or equivalent.

ECON 312. Intermediate Microeconomic Theory
3 Credits
Contemporary economic theory with emphasis upon value and distribution.
Prerequisite(s): ECON 252G or equivalent.

ECON 324V. Developing Nations
3 Credits
Economic analysis of problems related to development of developing nations. Issues such as growth, industrialization, poverty, population, international trade, foreign debt, and international economic relations.

ECON 325V. Economic Development of Latin America
3 Credits
Economic analysis of problems related to development in Latin America, including the agrarian problem, debt and austerity programs, industrialization, inflation and unemployment, the drug trade, U.S.-Latin American relations, development strategies. Also individual countries problems.

ECON 332. Public Finance
3 Credits
This course will examine the roles of government in modern, market-oriented, mixed economies. It will examine justifications for government participation in resource allocation, income distribution, and economic stabilization focusing primarily on the fiscal functions of government, taxation and public expenditure. Students will apply basic microeconomic analysis to analyze the impacts of public taxation and expenditures on economic decisions made elsewhere in the economy. In this course the emphasis will be on understanding the workings of public finance in fiscal federalist systems like the United States, but the principles taught will be applicable across other economic systems. Prerequisite(s): ECON 252.

ECON 335V. Business and Government
3 Credits
Relation of government to business through regulation; political, legal, and social implications. Crosslisted with: MGT 335G

ECON 336. Labor Economics
3 Credits
This course aims at developing students’ understanding of how the labor market works. Topics to be covered include: labor supply and demand, wage differentials, wage structure, unemployment, gender issues, labor market discrimination, and migration. May be repeated up to 3 credits.
Prerequisite(s): ECON 252G.

ECON 337V. Natural Resource Economics
3 Credits
Same as AG E 337V.
Prerequisite: ECON 201 or ECON 252.

ECON 340. American Economic History
3 Credits
The rise of big business and organized labor, increasing price rigidities, and growing government intervention. Same as HIST 340.

ECON 384V. Water Resource Economics
3 Credits
Use of economic principles to evaluate current and emerging issues in water resources. Applications focus on use of economic methods of analysis to current policy decisions surrounding agricultural, municipal, industrial, and environmental uses of water. Same as AG E 384V.
Prerequisite: AG E 100 or ECON 252G.

ECON 401. Managerial Economics
3 Credits
Application of economic theory to problems of business management.
Prerequisite(s): ECON 252G and MATH 142 or equivalent, or consent of instructor.
ECON 404. Collegiate Advisory Board, Federal Reserve
3 Credits
Students serve on the Collegiate Advisory Board of the El Paso branch of the Federal Reserve Bank of Dallas. Guest speakers provide an overview of the Federal Reserve System, role of monetary policy, and issues facing specific industries in the local, national, and global economies. Students prepare reports, including a final paper, on an assigned industry in the regional or state economy and the current economic performance of their industry. Students must be of junior rank or higher with a GPA of at least 3.5. Consent of Instructor required.

ECON 405. Introductory Econometrics
3 Credits
Multiple regression and correlation applied to economics and business; inference techniques; significance tests; simultaneous equations, estimation, and problems. May be repeated up to 3 credits.
Prerequisite(s): A ST 251G or STAT 251G or A ST 311 (or equivalent).

ECON 406. The Economics of Sports
3 Credits
Applying the tools of economic analysis to a particular industry and gaining an in-depth knowledge of the interaction of professional sports teams and leagues with the economy and society. Same as AG E 406.
Prerequisites: one previous course in economics or consent of instructor.

ECON 432V. Economics of Health Care
3 Credits
Analysis of the allocation of resources in the field of health and medical care.

ECON 449. Open Economy Macroeconomics
3 Credits
This course studies theoretical and empirical macroeconomics in international dimension. It covers from the fundamental concepts of national income and growth, monetary/fiscal and exchange rate policies, foreign exchange markets, international trade and finance, and regionalization/economic integration to the impact analysis of these macroeconomic fundamentals in the open economy. Crosslisted with: I B 449.
Prerequisite(s): FIN 341 OR ECON 372.

ECON 450. International Economics
3 Credits
Trade and capital flows between countries, international payments, government policy in balance-of-payments and tariff matters, international organizations. Crosslisted with: I B 450
Prerequisite(s): ECON 251G and ECON 252G.

ECON 457. Mathematical Economics
3 Credits
Application of mathematical tools, especially the calculus, to economic theory.
Prerequisite: one upper-division economics course.

ECON 489. Senior Economics Seminar
3 Credits
Seminar primarily for economics majors in their final semester. Provides an opportunity to apply economic theory to a broad variety of topics.
Prerequisite: ECON 371 or ECON 372.

ECON 490. Selected Topics
1-3 Credits
Current topics in economics. Subject matter to be designated for each semester.

ECON 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. May be repeated for a maximum of 3 credits.
Prerequisite: junior or above standing and consent of instructor.

ECON 503. Managerial Economics
3 Credits
Theory and application of microeconomics to the management of organizations.
Prerequisite(s): A ST 251G or 311 or equivalent with B or better.

ECON 545. Econometrics II
3 Credits
Application of statistical techniques to estimation of economic relationships: demand functions, production and cost functions, and macroeconomic equations. May be repeated up to 3 credits.
Prerequisite(s): ECON 251G, ECON 252G, STAT 251G or A ST 311, and AEEC 540.

ECON 550. Special Topics
1-3 Credits
Seminars in selected current topics in the various areas of economics. Prerequisites vary according to the topic being offered.

ECON 571. Regulatory Policy and Industry Analysis: Electricity I
3 Credits
Regulatory policy and economic analysis related to the Electric Industry. Topics include: characteristics of a utility and legal justification for regulation; characteristics and functions of a regulatory commission; history and structure of the industry; technology and network design; revenue requirements; cost allocation; and basic retail rate design. May be repeated up to 3 credits.
Prerequisite(s): ECON 252G, FIN 341, or consent of instructor.

ECON 572. Regulatory Policy and Industrial Analysis: Water and Natural Gas
3 Credits
Regulatory policy and economic analysis related to the Natural Gas and Water industries. Topics include: history and structure of the industry; technology and network design; revenue requirements; cost allocation; and retail rate design.

ECON 573. Regulatory Policy and Industry Analysis: Electricity II
3 Credits
Regulatory policy and economic analysis related to the Electric industry. Topics include: optimal generation mix; ancillary services; environmental policies; rate case procedures and strategies for effective testimony; advanced retail rate design; wholesale exchanges; unbundled transmission tariffs; market institutions and how different markets function; state and federal deregulation policies; Federal Energy Regulatory Commission orders and policies; demand-side management; and regulatory treatment of non-traditional retail services. Consent of instructor required.
Prerequisite(s): ECON 571 or consent of instructor.

ECON 574. Advanced Seminar Regulatory Policy and Industry Analysis
3 Credits
Advanced seminar and writing course specializing in regulatory policy and regulatory casework. Topics include: special policy & regulatory issues in telecommunications, electricity, natural gas, and water; preparation of written testimony; expert witness effectiveness including cross-examination; and contested case management. This course involves extensive reading and writing assignments. Consent of instructor required.
Prerequisite(s): ECON 571 or consent of instructor.
ECON 581. International Economics
3 Credits
Trade and capital flows between countries, international payments, government policy in balance-of-payments and tariff matters, international organizations. Recommended preparation, ECON 371 and 372. May be repeated up to 3 credits.
Prerequisite(s): ECON 251G and ECON 252G.

ECON 582. Economics of Health Care
3 Credits
Analysis of the allocation of resources in the field of health and medical care. Taught with ECON 432V with differentiated assignments for graduate students.

ECON 596. Independent Study
3 Credits
Individual study program. Each offering will cover a subtitle. Maximum of 3 credits in a semester and 6 credits in a program. Consent of instructor required.

I B 317. International Marketing
3 Credits
Same as MKTG 317.

I B 351. International Business
3 Credits
The various aspects of international business, and identification and analysis of problems encountered by multinational companies.
Prerequisite: junior standing or consent of instructor.

I B 398. International Business and Economic Environments
3 Credits
Description and analysis of various world regions, e.g., Pacific Rim, Eastern Europe, South Asia. Region will vary from semester to semester.

I B 449. Open Economy Macroeconomics
3 Credits
This course studies theoretical and empirical macroeconomics in international dimension. It covers from the fundamental concepts of national income and growth, monetary/fiscal and exchange rate policies, foreign exchange markets, international trade and finance, and regionalization/economic integration to the impact analysis of these macroeconomic fundamentals in the open economy. Crosslisted with: ECON 449.
Prerequisite(s): FIN 341 OR ECON 372.

I B 450. International Economics
3 Credits
Trade and capital flows between countries, international payments, government policy in balance-of-payments and tariff matters, international organizations. Crosslisted with: ECON 450G
Prerequisite(s): ECON 251G and ECON 252G.

I B 458. Comparative International Management
3 Credits
Cultural influences on management are examined in a global business environment with a particular emphasis on human behavior in multinational organizations and the management of human resources. Same as Mgt. 458.

I B 475. International Finance
3 Credits
Same as FIN 475. May be repeated up to 3 credits. Crosslisted with: FIN 475 and FIN 575.

I B 489. Senior Seminar in International Business
3 Credits
Capstone class for I B majors. Integration of previous classwork via the examination of case studies and completion of a major project.
Prerequisite: I B core.

Name:

Office Location:

Phone: (575) 646-7211

Website: https://business.nmsu.edu/departments/economics/

Applied Statistics - Graduate Minor
Master’s level students wishing to minor in applied statistics at the master’s level must have at least 10 credits of 500-level applied statistics courses. The recommended courses for a general master’s-level minor are:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ST 503</td>
<td>SAS Basics</td>
<td>2</td>
</tr>
<tr>
<td>A ST 504</td>
<td>Statistical Software Applications</td>
<td>1</td>
</tr>
<tr>
<td>A ST 505</td>
<td>Statistical Inference I</td>
<td>4</td>
</tr>
<tr>
<td>A ST 506</td>
<td>Statistical Inference II</td>
<td>3</td>
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</table>

Total Credits 10

Depending on a particular student’s background, it may be desirable to substitute other A ST courses for the minor. In accordance with Graduate School requirements, doctoral students must have at least 12 credits of 500-level applied statistics courses for a minor at the doctoral level.

Students wishing to obtain the minor in applied statistics should contact an applied statistics faculty member to recommend appropriate applied statistics course work to be included in the plan of study and to serve as the graduate committee representative from the minor area.

Applied Statistics - Master of Science
Offered by the Department of Economics, Applied Statistics and International Business, the Master of Science (MS) degree in applied statistics is designed to produce graduates proficient in current practices in statistics and able to enter directly into positions in industry, government or private business. A person completing this degree will have the requisite skills to help researchers outside of statistics execute data analyses, design experiments and/or plan and analyze biological surveys or surveys obtained by mail, phone or personal interview. In addition, a person completing this degree will be familiar with the major statistical packages for computers. Students in the program will receive instruction in both theory and application of statistics, oriented strongly towards linear models and sampling, as well as extensive training and experience in statistical consulting.

The MS degree serves two basic groups of students:

1. Students with degrees in areas other than mathematics who wish to strengthen their quantitative skills and
2. Students with a degree in mathematics or statistics or those with a strong minor in mathematics who wish to apply statistics in one or more subject matter areas.

Applied Statistics - Master of
Admission
Requirements for regular admission to the MS in Applied Statistics include the following:

- A minimum 3.0 grade-point average overall or in the last two years of study. Complete graduate and undergraduate transcripts must be supplied.
- Three semesters of engineering calculus, equivalent to MATH 191G Calculus and Analytic Geometry I, MATH 192G Calculus and Analytic Geometry II, and MATH 291G Calculus and Analytic Geometry III at NMSU, completed with B or better grades.
- A one-semester course in introductory statistics. Students entering with only one undergraduate course in statistics will generally take A ST 505 Statistical Inference I. NOTE: A ST 505 Statistical Inference I does not carry credit toward the MS in applied statistics.
- Three letters of reference from former professors or others able to evaluate the student’s academic potential.
- A one- to two-page typewritten letter of application, discussing academic objectives, and professional plans, plus giving specific reasons for selecting statistics as a field for advanced studies.

In addition to the formal requirements above, some expertise in computer use or programming experience is strongly recommended.

Applicants whose native language is not English must take the Test of English as a Foreign Language (TOEFL). Fluency in written and spoken English is essential to successful completion of the program. Further information regarding the TOEFL can be obtained from:

Test of English as a Foreign Language
CN 6151
Princeton, NJ 08541-6151
USA

Course Requirements
Credit Requirements (Minimum)

Theory
A ST 565 Statistical Analysis I 4
A ST 566 Statistical Analysis II 4
A ST 567 Applied Linear Models I 3
A ST 568 Applied Linear Models II 3

Methods
A ST 503 SAS Basics 2
A ST 504 Statistical Software Applications 1
A ST 506 Statistical Inference II 3

Research (Research Option)
A ST 598 Special Research Problems 4-6
or A ST 599 Master’s Thesis

Elective Requirements
Select 6-8 credits in research option electives and 12 credits of course-only option electives

Consulting
A ST 551 Introduction to Statistical Consulting 1
A ST 552 Advanced Statistical Consulting 1
A ST 553 Practicum in Statistical Consulting 1

Total Credits 47-49

Economics - Bachelor of Arts in Economics

This program is suitable for, among others, students who plan to go to graduate school in economics, law, business or other areas. It has the advantage of including a large number of general electives. This feature provides great flexibility to the student who, in addition to completing the courses for a major in economics, may wish to take a double major or take courses from a wide variety of other subjects of his or her own choosing.

Every candidate for this degree must complete the following requirements. In addition, the following courses must be completed with a grade of C- or better:

ECON 251G Principles of Macroeconomics 3
ECON 252G Principles of Microeconomics 3
A ST 311 Statistical Applications (or equivalent) 3
MATH 142G Calculus for the Biological and Management Sciences 3
or MATH 191G Calculus and Analytic Geometry I

Economics majors must earn a minimum cumulative GPA of 2.5 in the 27 credits of departmental requirements.

General Education Common Core

The College of Business abides by the university’s New Mexico General Education Common Core requirements as outlined in this catalog. To minimize the number of courses taken, students should first review the General Degree requirements listed below. Students who follow the recommendations below will satisfy the university’s general education requirements.

Requirements
Area I: Communications
Select one from the following:

ENGL 111G Rhetoric and Composition
ENGL 111GH Rhetoric and Composition Honors
SPCD 111G Advanced ESL Composition
or ENGL 111 Rhetoric and Composition for International and Multilingual Students

Select one from the following:

ENGL 203G Business and Professional Communication
ENGL 211G Writing in the Humanities and Social Sciences
ENGL 218G Technical and Scientific Communication
ENGL 311G Advanced Composition
ENGL 318G Advanced Technical and Professional Communication

Select one from the following:

COMM 253G Public Speaking
COMM 265G Principles of Human Communication
HON 265G Principles of Human Communication Honors
AXED 201G Effective Leadership and Communication in Agricultural Organizations
Area II: Mathematics
Select 3-4 credits from the following:

- A ST 251G Statistics for Business and the Behavioral Sciences
- MATH 121G College Algebra
- MATH 142G Calculus for the Biological and Management Sciences
- MATH 190G Trigonometry and Precalculus
- MATH 191G Calculus and Analytic Geometry I

Area III: Laboratory Sciences
Select 8 credits with labs from the approved New Mexico General Education Common Core List

Area IV & V: Social Behavioral Sciences and Humanities and Fine Arts
Select a total of 15 credits combined from Areas IV and V:

Area IV: Social and Behavioral Sciences
- ECON 251G Principles of Macroeconomics
- ECON 252G Principles of Microeconomics

Area V: Humanities and Fine Arts (select 6 credits from the approved list)

Additional course from approved list for Area IV or V.

Foundation and General Program Requirements
- ACCT 221 Financial Accounting
- MATH 120 Intermediate Algebra
- MATH 121G College Algebra
- MATH 142G Calculus for the Biological and Management Sciences
- ECON 251G Principles of Macroeconomics
- ECON 252G Principles of Microeconomics

Select one of the following:
- A ST 251G Statistics for Business and the Behavioral Sciences
- STAT 251G Statistics for Business and the Behavioral Sciences
- A ST 311 Statistical Applications

Departmental Core Courses
- ECON 304 Money and Banking
- ECON 311 Intermediate Macroeconomic Theory
- ECON 312 Intermediate Microeconomic Theory
- ECON 405 Introductory Econometrics
- ECON 457 Mathematical Economics
- ECON 489 Senior Economics Seminar

Electives in Economics, Upper-Division
Select 9 credits numbered 300 or above, including at least one course from the following to bring the total upper-division credits in major to 27

- ECON 332 Public Finance
- ECON 336 Labor Economics
- ECON 449 Open Economy Macroeconomics
- ECON 450 International Economics

Viewing a Wider World (VWW)
Select 6 credits from Viewing a Wider World (VWW)

General Electives
Select sufficient additional credits to bring total degree credits to a minimum of 120 and upper division credits to 48. The number of general elective credits varies by student.

Total Credits 120

1. Complete with a grade of C- or better.
2. MATH 142G Calculus for the Biological and Management Sciences: Students planning to do graduate work in mathematical economics or statistics are urged to take MATH 190G Trigonometry and Precalculus, MATH 191G Calculus and Analytic Geometry I and MATH 192G Calculus and Analytic Geometry II, rather than MATH 142G Calculus for the Biological and Management Sciences.
3. 33-40 credits, dependent upon mathematics placement.
4. A grade of C- or better required to advance to the next level.
5. Students must earn a cumulative GPA of 2.5 in courses counted toward the economics major.
6. A description of the requirement and a listing of approved VWW courses can be found in this catalog under Required Courses (p. 47).

Economics - Bachelor of Business Administration

This program is especially suitable for students who find economics interesting and who intend, perhaps without additional formal education beyond the Bachelor degree, to take jobs in business or government. This degree prepares you for a wide variety of jobs including those leading eventually to positions of executive responsibility. It is also appropriate for those who may choose to seek a Master of Business Administration degree after graduation.

In addition to completing general (p. 47) education common core (p. 47), College of Business foundation and business core (p. 414), Viewing a Wider World (p. 47) requirements, and general electives (see above), every candidate for this major must complete each of these courses with a grade of C- or better:

- ECON 251G Principles of Macroeconomics
- ECON 252G Principles of Microeconomics
- A ST 251G Statistics for Business and the Behavioral Sciences (or equivalent)
- ECON 304 Money and Banking
- ECON 311 Intermediate Macroeconomic Theory
- ECON 312 Intermediate Microeconomic Theory
- ECON 405 Introductory Econometrics
- ECON 457 Mathematical Economics
- ECON 489 Senior Economics Seminar

Electives in Economics, Upper-Division
Select at least 9 credits from 300 or 400 level economics courses including three credit hours from the following:

- ECON 332 Public Finance
- ECON 336 Labor Economics
- ECON 449 Open Economy Macroeconomics
- ECON 450 International Economics
- MATH 190G Trigonometry and Precalculus
- MATH 191G Calculus and Analytic Geometry I

Every candidate must earn a minimum cumulative GPA of 2.5 in the following major course requirements:

- ECON 304 Money and Banking
- ECON 311 Intermediate Macroeconomic Theory
- ECON 312 Intermediate Microeconomic Theory
- ECON 405 Introductory Econometrics
- ECON 489 Senior Economics Seminar

Electives in Economics, Upper-Division
Select at least 9 credits from 300 or 400 level economics courses including three credit hours from the following:

- ECON 332 Public Finance
- ECON 336 Labor Economics
- ECON 449 Open Economy Macroeconomics
- ECON 450 International Economics
- MATH 190G Trigonometry and Precalculus
- MATH 191G Calculus and Analytic Geometry I
**Economics - Doctor of Economic Development**

The Doctor of Economic Development (DED) is a professional doctorate designed to provide advanced training for economic development professionals. It is not designed to prepare graduates for academic careers.

**Requirements**

Candidates for the DED enter the program with the equivalent of a master’s degree. DED students must successfully complete 60 graduate credits beyond the hours required for entry. All students must meet the requirements specified in the general regulations and requirements for admission to the Graduate School and to candidacy. DED minimum admission requirements include:

1. related master’s degree or equivalent coursework;
2. one course in intermediate microeconomic theory and one course in intermediate macroeconomic theory with minimum grades of B;
3. one course in college-level calculus with a minimum grade of B; and
4. one course in statistics, including simple regression with a minimum grade of B.

Additionally, students who have not completed graduate level courses in AEEC 501 Microeconomic Theory, AEEC 502 Macroeconomic Theory, AEEC 540 Econometrics I with grades of B or better will be required to successfully complete these courses early in the DED program.

All students in the DED program must successfully complete the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECDV 550</td>
<td>Introduction to Local and Regional Development</td>
<td>3</td>
</tr>
<tr>
<td>ECDV 651</td>
<td>Economic Development Theory</td>
<td>3</td>
</tr>
<tr>
<td>ECDV 661</td>
<td>Regional Economic Modeling I</td>
<td>3</td>
</tr>
<tr>
<td>ECDV 662</td>
<td>Regional Economic Modeling II</td>
<td>3</td>
</tr>
<tr>
<td>ECDV 664</td>
<td>Population Economics</td>
<td>3</td>
</tr>
<tr>
<td>ECDV 668</td>
<td>Economic Development Finance</td>
<td>3</td>
</tr>
<tr>
<td>ECDV 671</td>
<td>Sustainable Economic Development</td>
<td>3</td>
</tr>
<tr>
<td>ECDV 692</td>
<td>Seminar in Economic Development (take twice)</td>
<td>3+3</td>
</tr>
<tr>
<td>ECDV 681</td>
<td>Urban Economic Development</td>
<td>3</td>
</tr>
<tr>
<td>ECDV 682</td>
<td>Rural Development</td>
<td>3</td>
</tr>
<tr>
<td>ECDV 683</td>
<td>Seminar in National Economic Development</td>
<td>3</td>
</tr>
</tbody>
</table>

| Specialty area (six semester hours) | 6 |
| 12-15 semester hours of internship and final project | 12-15 |

Select sufficient elective credits to fulfill the 60 hour requirement. 3

Total Credits 60

Note: Doctor of Economic Development (DED) students who enter the DED with a master’s degree may, upon completion of all requirements for the MA in Economics, apply for the MA in Economics degree and count courses that overlap with the DED requirements toward the DED. Students must apply separately for the MA Econ program and master’s degree must be conferred before the DED.

Comprehensive and oral exams will be given and will determine eligibility to continue in the program and/or to graduate.

Teaching and research assistantships are available to qualified applicants however admission to the program does not imply or guarantee funding.

Detailed and updated information is available on the departmental website: [https://business.nmsu.edu/academics/graduate-programs/ded/](https://business.nmsu.edu/academics/graduate-programs/ded/)

**Economics - Graduate Minor**

Graduate students wishing to earn a minor in economics must complete 12 semester credit hours, including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEEC 501</td>
<td>Microeconomic Theory</td>
<td>6</td>
</tr>
<tr>
<td>AEEC 502</td>
<td>Macroeconomic Theory</td>
<td></td>
</tr>
<tr>
<td>AEEC 540</td>
<td>Econometrics I</td>
<td></td>
</tr>
<tr>
<td>ECON or AEEC 500 or higher courses (excluding ECON 503)</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 12

1. ECON 503 Managerial Economics cannot be counted toward the minor.

Students pursuing the economics minor must fulfill the course prerequisites before enrolling in the graduate courses.

**Economics - Master of Arts**

Candidates for the Master of Arts in economics must successfully complete a minimum of 30 graduate credits (concentrations may require more than 30 graduate credits). At least 12 credits beyond the core courses (AEEC 501 Microeconomic Theory, AEEC 502 Macroeconomic Theory, AEEC 540 Econometrics I) must be earned by taking courses taught by economics faculty members in the Department of Economics, Applied Statistics and International Business. At least two of the three core courses must be completed at NMSU. Twenty-one of the credits must have one of the four following prefixes: AEEC, ECON, ECDV, or AG E. At least twenty-four of the credits must be associated with courses numbered 500 or above. All students must meet the requirements specified in the general regulations and requirements for admission to the Graduate School and to candidacy. Students preparing to enter the program are encouraged to complete the following:

1. one course in intermediate microeconomic theory and one course in macroeconomic theory with minimum grades of B;
2. one course in college-level calculus; and
3. one course in statistics, including simple regression.

Those students not having completed these courses may be admitted with the requirement that the deficiencies be completed at the beginning of the graduate program. Those students interested in the concentration in regulatory economics are advised to complete two courses in college-level statistics.
All students in the program must successfully complete a minimum of 30 credits including the following:

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEEC 501</td>
<td>Microeconomic Theory</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 502</td>
<td>Macroeconomic Theory</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 540</td>
<td>Econometrics I</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives, subject to the restrictions above. 21

Total Credits 30

**Notes:**

1. No more than one course with a grade less than B can be used to fulfill the requirements for the MA Econ degree.
2. ECON 503 cannot be counted toward the major in Economics.
3. A maximum of nine hours of approved transfer credit (with minimum grades of A) may be applied toward the degree.

Teaching and research assistantships are available to qualified applicants however admission to the program does not imply or guarantee funding. It is not necessary to have a degree in economics to enter the graduate program or to receive financial assistance. An application and three letters of reference are required to be considered for any available assistantships. These forms can be obtained from the department.

**Concentration: Public Utility Policy and Regulation**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 571</td>
<td>Regulatory Policy and Industry Analysis: Electricity I</td>
<td>3</td>
</tr>
<tr>
<td>ECON 572</td>
<td>Regulatory Policy and Industrial Analysis: Water and Natural Gas</td>
<td>3</td>
</tr>
<tr>
<td>ECON 573</td>
<td>Regulatory Policy and Industry Analysis: Electricity II</td>
<td>3</td>
</tr>
<tr>
<td>ECON 574</td>
<td>Advanced Seminar Regulatory Policy and Industry Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 12

**Option: Public Policy**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEEC 522</td>
<td>Public Sector Economics I</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 523</td>
<td>Public Sector Economics II</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 530</td>
<td>Seminar in Public Policy</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select one from the following:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GOVT 537</td>
<td>Issues in Public Policy</td>
</tr>
<tr>
<td></td>
<td>GOVT 540</td>
<td>Seminar in Public Administration</td>
</tr>
<tr>
<td></td>
<td>GOVT 541</td>
<td>Public Budgeting</td>
</tr>
<tr>
<td></td>
<td>GOVT 544</td>
<td>Public Policy Analysis</td>
</tr>
</tbody>
</table>

Total Credits 12

**Option: Econometrics**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEEC 540</td>
<td>Econometrics I</td>
<td>3</td>
</tr>
<tr>
<td>ECON 545</td>
<td>Econometrics II</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 6 graduate credits of A ST (Applied Statistics) at the 500 level 6

Total Credits 12

1 Excluding A ST 505 Statistical Inference I, independent study, thesis, project and dissertation credits.

All students in the program must successfully complete a minimum of 30 credits including the following:

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEEC 501</td>
<td>Microeconomic Theory</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 502</td>
<td>Macroeconomic Theory</td>
<td>3</td>
</tr>
<tr>
<td>AEEC 540</td>
<td>Econometrics I</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 9

**Economics - Undergraduate Minor**

A minor in economics consists of 18 or more credit hours of approved course work in economics (ECON), of which at least 12 are numbered 300 or higher, all completed with a grade of C- or higher. At least 12 credits must be completed at NMSU. This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 304</td>
<td>Money and Banking</td>
<td>3</td>
</tr>
<tr>
<td>or ECON 311</td>
<td>Intermediate Macroeconomic Theory</td>
<td></td>
</tr>
<tr>
<td>ECON 401</td>
<td>Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>or ECON 312</td>
<td>Intermediate Microeconomic Theory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper-division courses (300 or higher) in economics</td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credits 18

1 ECON 201G Introduction to Economics may be substituted for one of these with the approval of the Head of the Department of Economics.

**International Business - Bachelor of Business Administration**

This program is intended for those who plan to work for government agencies or firms with operations abroad or between the United States and foreign countries. The program prepares you for positions requiring knowledge of international payments, foreign exchange markets, world marketing techniques for products, export and import procedures, and international investments.

In addition to completing the general education common core (p. 47), College of Business foundation and business core (p. 414), Viewing a Wider World requirements, (p. 47) and general electives (to bring the total credits to 120), every candidate for this major must complete these courses with a grade of C- or better:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>A ST 251G</td>
<td>Statistics for Business and the Behavioral Sciences (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>or A ST 311</td>
<td>Statistical Applications</td>
<td></td>
</tr>
</tbody>
</table>
Candidates must earn a minimum cumulative GPA of 2.5 in the following major course requirements:

**International Business Core Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>I B 351</td>
<td>International Business</td>
<td>3</td>
</tr>
<tr>
<td>I B 450</td>
<td>International Economics</td>
<td>3</td>
</tr>
<tr>
<td>I B 475</td>
<td>International Finance</td>
<td>3</td>
</tr>
<tr>
<td>or I B 449</td>
<td>Open Economy Macroeconomics</td>
<td></td>
</tr>
<tr>
<td>I B 489</td>
<td>Senior Seminar in International Business</td>
<td>3</td>
</tr>
<tr>
<td>Select 3 credits from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 324V</td>
<td>Developing Nations</td>
<td>3</td>
</tr>
<tr>
<td>ECON 325V</td>
<td>Economic Development of Latin America</td>
<td></td>
</tr>
<tr>
<td>I B 398</td>
<td>International Business and Economic Environments</td>
<td></td>
</tr>
<tr>
<td>HON 380V</td>
<td>Comparative Economic Systems</td>
<td></td>
</tr>
</tbody>
</table>

Functional area in business (15 credits of upper-division courses in a single functional area of business beyond those elsewhere required for the I B major) 2

Total Credits 30

1 At least 12 of the 15 credit hours counted toward the international business core courses must be earned at NMSU (not to include courses completed on study abroad).

2 At least 9 of the 15 credit hours counted toward the international business functional area must be earned at NMSU (not to include courses completed on study abroad).

### Other Requirements for the Major

**Students must earn a cumulative GPA of 2.5 in courses counted toward the I B major (core and functional area).**

**Foreign language:** Students must demonstrate oral and written proficiency at the intermediate mid-level according to ACTFL (American Council on the Teaching of Foreign Languages) proficiency guidelines. (Process for demonstrating proficiency to be coordinated with the NMSU Department of Languages and Linguistics. Any costs associated with proficiency demonstration will be paid by the student.)

**International experience requirement:** Students must partake of an international experience equivalent to a semester abroad in a university where the language of instruction is not English. The department will determine appropriateness of international experience. Study abroad programs must be pre-approved by IB advisors and Department Head.

### International Business - Undergraduate Minor

A minor in international business consists of 18 or more credit hours of approved course work in the International Business core, all completed with a grade of C- or higher. At least 12 credits must be completed at NMSU. This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>I B 351</td>
<td>International Business</td>
<td>3</td>
</tr>
</tbody>
</table>

**International Business Core Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>I B 351</td>
<td>International Business</td>
<td>3</td>
</tr>
<tr>
<td>I B 450</td>
<td>International Economics</td>
<td>3</td>
</tr>
<tr>
<td>I B 475</td>
<td>International Finance</td>
<td>3</td>
</tr>
<tr>
<td>or I B 449</td>
<td>Open Economy Macroeconomics</td>
<td></td>
</tr>
<tr>
<td>I B 489</td>
<td>Senior Seminar in International Business</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 324V</td>
<td>Developing Nations</td>
<td>3</td>
</tr>
<tr>
<td>ECON 325V</td>
<td>Economic Development of Latin America</td>
<td></td>
</tr>
<tr>
<td>I B 398</td>
<td>International Business and Economic Environments</td>
<td></td>
</tr>
<tr>
<td>HON 380V</td>
<td>Comparative Economic Systems</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 18

In addition, I B minors must meet the foreign language proficiency requirement described below.

Students must demonstrate oral and written proficiency in a foreign language at the intermediate mid-level according to the ACTFL (American Council on the Teaching of Foreign Languages) proficiency guidelines. (Process for demonstrating proficiency to be coordinated with the NMSU Department of Languages and Linguistics. Any costs associated with proficiency demonstration will be paid by the student.)

### Public Utility Regulation and Economics - Graduate Certificate

The certificate in Public Utility Regulation and Economics (PURE) is a professional educational program designed for post-baccalaureate students pursuing a career in the utility sector, with an electric utility company, natural gas utility, water distribution utility, or with a government agency regulating these types of companies. PURE students must meet the general regulations and minimum requirements for admission to the graduate school and complete 12 credit hours including

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 571</td>
<td>Regulatory Policy and Industry Analysis: Electricity I</td>
<td>3</td>
</tr>
<tr>
<td>ECON 572</td>
<td>Regulatory Policy and Industrial Analysis: Water and Natural Gas</td>
<td>3</td>
</tr>
<tr>
<td>ECON 573</td>
<td>Regulatory Policy and Industry Analysis: Electricity II</td>
<td>3</td>
</tr>
<tr>
<td>ECON 574</td>
<td>Advanced Seminar Regulatory Policy and Industry Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 12

For details see https://business.nmsu.edu/academics/graduate-programs/certificate-public-utility/

### Finance

#### Undergraduate Program Information

Finance is the management of money and cash flow for business organizations, government and individuals. The study of finance involves examining the theory and techniques of managing money, including analysis and management of risk. Finance students learn to apply tools and concepts from mathematics, statistics, economics and accounting to financial decision-making. With this knowledge, finance graduates are in high demand by employers and command some of the highest salaries for college graduates. Depending upon their career goals and interests,
finance majors may use the electives in the major to focus their program of study on financial management, financial planning, investments, banking, and/or risk management and insurance.

Degrees for the Department
Finance - Bachelor of Business Administration (p. 440)
Finance - Graduate Certificate (p. 441)

Minors for the Department
Finance - Undergraduate Minor (p. 441)
Banking and Financial Planning - Undergraduate Minor (p. 439)
Risk Management and Insurance - Undergraduate Minor (p. 442)
Business Law - Undergraduate Minor (p. 440)
Entrepreneurship and Innovation - Undergraduate Minor (p. 440)

Professor, Harikumar Sankaran, Department Head
Professors de Boyrie, Fortin, Martin, Oretskin; Query; Sankaran; Associate Professors Clarkson; Assistant Professors Holt, Rahman; College Professor Macy; College Assistant Professor Groves; McGonigle

FIN 206. Introduction to Finance
3 Credits
Theory and techniques of financial management for business firms. Includes application of financial analysis tools and techniques needed for business financial administration and decision making. Restricted to Community Colleges campuses only.
Prerequisite(s): BOT 106 or higher; BOT 120 or ACCT 221; ECON 201 or ECON 251.

FIN 210. Financial Planning and Investments
3 Credits
Individual financial planning and related financial markets and institutions. Community Colleges only.

FIN 303V. Personal Financial Planning and Investing in a Global Economy
3 Credits
Provides a framework for successful personal financial planning within an individual's career and income. Covers personal money management, federal and state taxation, the mathematics of finance and credit, housing, inflation, insurance, savings, and investments. Majors and minors may not use this course to satisfy their finance requirements.

FIN 311. Financial Futures Markets
3 Credits
Same as AG E 311.

FIN 322. Principles of Insurance
3 Credits
Theory and practice of insurance and its economics and social significance; review of the major lines of insurance including life, health, and property liability insurance.

FIN 323. Life/Health/Employee Benefits
3 Credits
Approaches to problems of employee security from the perspective of businesses. Topics including pensions, profit-sharing plans, 401(k) plans, group life and health plans, and flexible benefit programs. The course also addresses individual life, health, and annuity contracts within a financial planning context.
Prerequisite: FIN 322.

FIN 324. Property and Liability Insurance
3 Credits
Analysis of property and liability insurance with emphasis on handling of commercial exposures. Review of property and liability company operations including rate making and insurance accounting. Prerequisite: FIN 322

FIN 325. Real Estate Principles and Law I
3 Credits
Real estate law and the fundamental aspects of the real estate purchase transaction and the real estate lease agreement. Topics include real estate brokerage, marketing of real estate, fundamental legal aspects of real estate, present and future interests, air and water rights, methods of transfer, basics of financing and liens, and real estate leases. Same as BLAW 325.

FIN 326. Business Risk Management
3 Credits
The operational risks faced by firms and the study of various methods of handling these risks, including loss prevention, risk retention, self-insurance, corporate insurance programs, and capital markets. Prerequisites: FIN 322

FIN 327. Analysis of the Excess and Surplus Lines Insurance
3 Credits
Analysis of excess and surplus lines segment of the insurance industry, including ratemaking, pricing of insurance, regulation, marketing of insurance, reinsurance, and product development. Students groups will research and design a new insurance product as part of the class.

FIN 331. Business Creation and Valuation
3 Credits
This course is designed to provide a first look at the entrepreneurship process by focusing how the firm will/do create value in the marketplace. As such, it is designed to integrate knowledge of business functions and apply business analysis techniques to the valuation of new ventures/entrepreneurial firms.

FIN 332. Entrepreneurial Finance
3 Credits
The course is structured to provide a parallel learning experience of financing methods/theory and project work focused on financing early stage start-up companies. Students will learn a broad range of early stage financing techniques. In addition to explorations is class of the theory of entrepreneurial finance students will hear actual young companies from different industries present their opportunities and challenges to the class.

FIN 333. Business Analysis and Turnaround
3 Credits
This course provides students an opportunity to draw upon previous experiences and education to apply various business concepts and analytical tools to complex problems and issues in organizational settings. Business Analysis is an integrative course in two respects. First, it takes a broad view of the environment that includes competitive dynamics and macro-environmental trends and developments. Second, it takes the perspective of the firm as a whole and examines how each of the functional areas can be integrated into overall operational strategies to address the firm's key organizational issues and environmental challenges.

FIN 334. Financial Analysis and Markets
3 Credits
Financial analysis for business financing and investing decisions. Prerequisites ACCT 221, ECON 251, ECON 252, MATH 121G or 230, A ST 251 or A ST 311 or STAT 251G.
FIN 355. Investments
3 Credits
Prerequisite(s): FIN 341 with a grade of C- or better.

FIN 360. Financial Information Technology
3 Credits
Integrated use of electronic financial information resources with spreadsheet and word processing applications in investigating financial issues and solving financial problems. FIN 341 with a grade of C- or better.
Prerequisite(s): FIN 341 or consent of instructor.

FIN 385. Analysis of Financial Markets and Institutions
3 Credits
Analysis of the financial system, emphasizing its institutions and instruments.
Prerequisite(s): FIN 341 with a grade of C- or better.

FIN 391. Finance Internship and Cooperative Education I
1-3 Credits
Introduction and application of finance principles in a work environment. Open only to students in the finance major or minor who will be working with an approved employer in a finance related position, over a period of 12 weeks or at least 300 work hours. Consent of instructor required.

FIN 392. Insurance Internship and Cooperative Education I
1-3 Credits (1-3)
Introduction and application of insurance principles in a work environment. Open only to students in the finance major or insurance minor who will be working with an approved employer in an insurance related position, over a period of 12 weeks or at least 300 work hours. Consent of instructor required. Restricted to Finance majors.

FIN 393. Banking Internship and Cooperative Education
1-3 Credits (1-3)
Professional banking experience with opportunities to engage in business analysis and to observe application of business principles in the management of a banking entity or a regulatory agency with banking oversight. Open only to students in the finance major or banking minor who will be working with an approved employer in a banking related position, over a period of 12 weeks or at least 300 work hours. Consent of instructor required. Restricted to Finance majors.

FIN 400. Theory of Financial Decisions
3 Credits
Contemporary financial theory. Firm valuation, investments and financing decisions, risk analysis.
Prerequisite(s): FIN 341 with a grade of C- or better.

FIN 421. Personal Financial Planning for Professionals
3 Credits
Introduction to personal financial planning, including goal setting and fact finding, cash management, credit, housing, retirement planning, taxation and estate planning. This course is intended for those planning careers in personal financial advising in one of the various financial services environments.
Prerequisite(s): FIN 341, or consent of Instructor.

FIN 435. Investment Analysis
3 Credits
Efficiency of capital markets, modern portfolio management, special topics of current interest to investment analysts.
Prerequisite: FIN 355.

FIN 436. Applied Security Analysis and Portfolio Management
1-3 Credits (1-3)
Application of analytical tools to security selection and portfolio management Pre/ Corequisite(s): FIN 435.

FIN 445. Fixed Income Markets, Instruments and Derivatives
3 Credits
Course provides a broad introduction to treasury, corporate, municipal, mortgage backed and asset backed bond markets. The analytical techniques for valuing bonds, quantifying their exposure to changes in interest rate and credit risk exposures and investment decision-making are explored.
Prerequisite(s): FIN 341.

FIN 455. Derivative Markets and Securities
3 Credits
Institutional aspects of derivative markets and the arbitrage based pricing of derivative instruments such as stock options, interest rate options, future contracts and swaps. The applied component of the course demonstrates use of these instruments as hedge and/or investment vehicles.
Prerequisite(s): FIN 355.

FIN 466. Financial Policy Decisions
3 Credits
Application and integration of financial theory, concepts, and practice using the case method.
Prerequisite: FIN 460 or consent of instructor.

FIN 470. Real Estate Appraisal
3 Credits (2+2P)
This course addresses issues influencing the value of real estate with some emphasis upon rural properties. Topics include courthouse records, property taxes, appraisal methodology, expert courtroom testimony, condemnation, and legal issues. Students will take field trips and write appraisals. Course material is relevant to student in Finance, Accounting, and Pre-Law, as well as Agriculture. Accredited for hours to apply to both pre-licensing and continuing education requirements of the New Mexico Real Estate Commission for both Appraisers and Real Estate Brokers. Crosslisted with: AG E 470.
Prerequisite(s): Junior or above standing.

FIN 475. International Managerial Finance
3 Credits
International aspects of financial transactions, decision-making, banking and financial markets. Same as I B 475.
Prerequisite: FIN 341.

FIN 480. Management of Financial Institutions
3 Credits
Asset and liability management of financial institutions; emphasis on commercial bank management.
Prerequisite: FIN 385 or consent of instructor.

FIN 490. Selected Topics
1-3 Credits
Current topics in finance.
Prerequisites: vary according to the seminar being offered.

FIN 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. A maximum of 3 credits may be earned.
Prerequisites: junior or above standing and consent of instructor.
FIN 500. Concepts in Finance
1 Credit
An overview of fundamental principles of finance necessary for prospective MBA students who do not have an undergraduate background in finance. Includes: Time value of money concepts and calculations; risk and calculation of return given appropriate risk measures; bond risk characteristics and calculation of the value of a bond; calculation of the value of common stock (determination as to whether a stock is over-valued or under-valued); and calculation of the costs of capital and capital budgeting problems using the cost of capital. 
Prerequisite(s): admitted to MBA Program or consent of course department.

FIN 503. Financial Management
3 Credits
Theory and application of financial analysis to asset management, project evaluation, capital structure, and dividend policy. Interrelationships among financial and other organizational decisions. 
Prerequisite(s): FIN 341 with a grade of B or better.

FIN 511. Financial Futures Markets
3 Credits
Same as AEEC 511.

FIN 521. Personal Financial Planning for Professionals
3 Credits
Introduction to personal financial planning, including goal setting and fact finding, cash management, credit, housing, retirement planning, taxation and estate planning. This course is intended for those planning careers in personal financial advising in one of the various financial services environments. 
Prerequisite(s): FIN 503 or FIN 341 or consent of Instructor.

FIN 535. Investment Concepts
3 Credits
Investments in common stocks and other securities. Risk and return, securities markets, portfolio theory and management. 
Prerequisite(s): FIN 535 or FIN 303.

FIN 536. Applied Security Analysis and Portfolio Management
1-3 Credits (1-3)
Application of analytical tools to security selection and portfolio management. Pre/ 
Corequisite(s): FIN 435 or FIN 535.

FIN 545. Money and Capital Markets
3 Credits
Examination of financial markets and institutions. Emphasis on interest rate determinants, bond markets, and fixed income portfolio management. Same as FIN 445 with differentiated assignments for graduate students. 
Prerequisite(s): FIN 503 or instructor permission.

FIN 555. Derivative Markets and Securities
3 Credits
Institutional aspects of derivative markets and the arbitrage based pricing of derivative instruments such as stock options, interest rate options, future contracts and swaps. The applied component of the course demonstrates use of these instruments as hedge and/or investment vehicles. Same as FIN 455 with differentiated assignments for graduated students. 
Prerequisite(s): FIN 503 or instructor permission.

FIN 566. Advanced Financial Management
3 Credits
Application and integration of financial theory, concepts, and practice using the case method. 
Prerequisite: FIN 503.

FIN 575. International Managerial Finance
3 Credits
International aspects of financial transactions, decision-making, banking and financial markets. 
Prerequisite(s): FIN 503 or FIN 341.

FIN 581. Management of Financial Institutions
3 Credits
Asset and liability management of financial institutions; emphasis on commercial bank management. 
Prerequisite(s): FIN 385 or FIN 503.

FIN 590. Selected Topics
1-3 Credits (1-3)
Current topics in finance. Taught with FIN 490 with differentiated assignments for graduate students. Consent of instructor required.

FIN 598. Special Research Programs
1-3 Credits
Directed individual reading or research. 
Prerequisite: consent of instructor.

Name: Hari Sankaran
Office Location: Business Complex, Room 215
Phone: (575) 646-3201
Website: http://business.nmsu.edu/academics/finance/

Banking and Financial Planning - Undergraduate Minor

This is an ideal minor for those seeking a career in the financial sector – banking, personal financial planning, investments, and wealth management. Money makes the world go around and in this career field, you are at the center of business and personal transactions. The courses in this minor help in gaining a broad knowledge of business activities as well as skills in financial accounting, sales and marketing, financial planning and investing. This minor is available to students in most majors (business and non-business) and provides a launch pad for what we hope will be many successful careers. Students are encouraged to pursue internships and co-op experiences in the areas of banking and financial planning.

This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

Requirements
Completion of the courses listed below (including any prerequisites) with a minimum cumulative GPA of 2.0 in these courses. At least twelve of the credits for the minor must be completed at NMSU.

Required Courses
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 341</td>
<td>Financial Analysis and Markets</td>
<td>3</td>
</tr>
<tr>
<td>FIN 385</td>
<td>Analysis of Financial Markets and Institutions</td>
<td>3</td>
</tr>
<tr>
<td>FIN 421</td>
<td>Personal Financial Planning for Professionals</td>
<td>3</td>
</tr>
</tbody>
</table>
Business Law - Undergraduate Minor

In a world that is increasingly subject to laws and regulations, every business needs employees who are savvy about the laws that affect business. The Business Law minor is comprised of a series of courses designed to provide a strong background in a wide range of laws that business need to be aware of, and provide students with the ability to recognize—and avoid—legal pitfalls. Additionally, the Business Law minor will provide students with a clear understanding of how legal disputes are resolved and the ability to appreciate the cost and complexity of disputes, and enable students to reduce the costs and complexities by being able to communicate clearly with lawyers about the legal issues.

Requirements

Completion of the courses listed below (including any prerequisites) with a minimum cumulative GPA of 2.0 in these courses. At least twelve of the credits for the minor must be completed at NMSU. This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

Required Courses

BLAW 316 Legal Environment of Business 3
BLAW 313 Sports and the Law 3
BLAW 385V Consumers and the Law 3
BLAW 330 Entrepreneurial Law 3

Take any 2 courses from the following: 6

BLAW 325 Real Estate Principles and Law I
BLAW 430V American Indian Law and Policy
BLAW 418 Uniforms Commercial Code and Advanced Business Law Topics
HRTM 304 Hospitality and Travel Law
AG E 314 Agricultural and Natural Resource Law
HON 335V Legal Issues in Modern Society
GOVT 391 Constitutional Law

Total Credits 18

Entrepreneurship and Innovation (Business Cluster) - Undergraduate Minor

The Entrepreneurship and Innovation minor is designed to promote entrepreneurship to students across the NMSU campus. This minor will appeal to creative and ambitious students who envision launching and managing their own business or entering careers in innovation-driven fields. The flexible design allows students to complete a designated, approved cluster of related courses that provide a discipline-specific entrepreneurial flavor. Such clusters are under development.

Requirements

Completion of the courses listed below (including any prerequisites) with at least twelve of the credits for the minor must be completed at NMSU. This minor is not open to students in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

Required Core Courses

FIN 331 Business Creation and Valuation 3
FIN 332 Entrepreneurial Finance 3
BLAW 330 Entrepreneurial Law 3

Business Cluster Courses: Choose any 3 from the following 9

B A 490 Selected Topics
FIN 333 Business Analysis and Turnaround
MKTG 312 Personal Selling
MKTG 324 Product/Service Development

Total Credits 18

Finance - Bachelor of Business Administration

Finance is the crossroads of economics, strategy and accounting, and the study of how firms and individuals allocate resources over time and under uncertain conditions. The finance curriculum provides a core foundation in corporate finance, investments, and financial institutions. The theory and concepts are then applied to problem-solving in a variety of areas including financial markets and institutions, corporate finance, international financial management, stock valuation and portfolio allocation, fixed-income markets, and derivatives.

Requirements

Completion of the courses listed below (including any prerequisites) with a minimum cumulative GPA of 2.0 in these courses. At least twelve of the credits for the major must be completed at NMSU.

Major Courses

FIN 355 Investments 3
FIN 360 Financial Information Technology 3
FIN 385 Analysis of Financial Markets and Institutions 3
FIN 406 Theory of Financial Decisions 3

Finance Electives

Select four additional, upper division, finance courses 12
Every candidate for this major must fulfill the general education common core (p. 47), College of Business foundation and business core (p. 414), Viewing (p. 47) a Wider World (p. 47) requirements and general electives, in addition to the requirement for the major. Given below is a suggested study plan for a student pursuing a Finance major.

**Suggested Plan of Study**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIN 341</td>
<td>Financial Analysis and Markets</td>
<td>3</td>
</tr>
<tr>
<td>FIN elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Credits</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIN 355</td>
<td>Investments</td>
<td>3</td>
</tr>
<tr>
<td>FIN 360</td>
<td>Financial Information Technology</td>
<td>3</td>
</tr>
<tr>
<td>FIN 385</td>
<td>Analysis of Financial Markets and Institutions</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Credits</strong></td>
<td><strong>9</strong></td>
</tr>
<tr>
<td>Senior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIN 406</td>
<td>Theory of Financial Decisions</td>
<td>3</td>
</tr>
<tr>
<td>FIN elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Credits</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIN elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>FIN elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Credits</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>27</strong></td>
</tr>
</tbody>
</table>

1. Finance elective must have a number greater than 310. The following courses: FIN 331, FIN 322, and FIN 333 may not be used as electives to satisfy the requirements for the major.

**Finance - Graduate Certificate**

**Admission requirements:**

1. Completion of a Bachelors or other advanced degree with a minimum GPA of 3.0.
2. Earned a B or better in the following NMSU courses — or their equivalents — within seven years prior to acceptance into the program:
   - FIN 341 | Financial Analysis and Markets | 3
   - MATH 142G | Calculus for the Biological and Management Sciences | 3
   - STAT 251G | Statistics for Business and the Behavioral Sciences | 3
   - or A ST 251G | Statistics for Business and the Behavioral Sciences | 3

Undergraduate GPA of at least 3.25 with 2 or more years of experience 1

1. Two or more years of relevant, full-time, post-degree, professional work experience in the finance industry. See http://gradfincert.nmsu.edu for more details.

3. Please visit gradschool@nmsu.edu and submit an application online. The application fee is $30 for U.S. residents and $40 for International Students. International students have to submit their TOEFL scores. All applicants will be notified via email of their acceptance into the program.

**Certificate Course Requirements**

Students admitted into the program will receive the Graduate Certificate in Finance after the completion of any of the four courses from the list below. Courses are offered in a traditional classroom and/or online.

**Choose four from the following:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 503</td>
<td>Financial Management</td>
<td></td>
</tr>
<tr>
<td>FIN 511</td>
<td>Financial Futures Markets</td>
<td></td>
</tr>
<tr>
<td>FIN 521</td>
<td>Personal Financial Planning for Professionals</td>
<td></td>
</tr>
<tr>
<td>FIN 535</td>
<td>Investment Concepts</td>
<td></td>
</tr>
<tr>
<td>FIN 545</td>
<td>Money and Capital Markets</td>
<td></td>
</tr>
<tr>
<td>FIN 556</td>
<td>Advanced Financial Management</td>
<td></td>
</tr>
<tr>
<td>FIN 575</td>
<td>International Managerial Finance</td>
<td></td>
</tr>
<tr>
<td>FIN 581</td>
<td>Management of Financial Institutions</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

**Finance - Undergraduate Minor**

The minor in Finance, available to students in most majors (business and non-business), affords students the opportunity to select their minor courses to provide a focus on any one of several sub-specialties within the field of Finance. Faculty advisors in the department can assist students in selecting their Finance electives to provide a focus in financial management, financial planning, or investments. (This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.)

**Requirements**

Completion of the courses listed below (including any prerequisites) with a minimum cumulative GPA of 2.0 in these courses and a minimum cumulative GPA of 2.0 in the FIN courses. At least twelve credits for the minor must be completed at NMSU.

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 221</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>FIN 341</td>
<td>Financial Analysis and Markets</td>
<td>3</td>
</tr>
<tr>
<td>Select any three additional, upper division, finance courses</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Select any additional upper division business course</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Select one from the following:</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 201G</td>
<td>Introduction to Economics</td>
<td></td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Macroeconomics</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>
Upper division Finance courses must have a number greater than 310. The following courses: FIN 331, FIN 322, and FIN 333 may not be used to satisfy this requirement.

Risk Management and Insurance - Undergraduate Minor

The minor in Insurance, available to students in most majors (business and non-business), affords students the opportunity to supplement their major field of study with specialized expertise in the field of insurance. Students pursuing this option will be advised by the director of the insurance studies program and will be encouraged to pursue internships and co-op experiences in the insurance industry.

Requirements

Completion of the courses listed below (including any prerequisites) with a minimum cumulative GPA of 2.0 in these courses. At least twelve of the credits for the minor must be completed at NMSU. The minor is not available to students in the Bachelor of Individualized Studies or the Bachelor of Applied Studies.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 322</td>
<td>Principles of Insurance</td>
<td></td>
</tr>
<tr>
<td>FIN 341</td>
<td>Financial Analysis and Markets</td>
<td>1-3</td>
</tr>
<tr>
<td>FIN 303V</td>
<td>Personal Financial Planning and Investing in a Global Economy</td>
<td>1-3</td>
</tr>
<tr>
<td>BLAW 316</td>
<td>Legal Environment of Business</td>
<td>1-3</td>
</tr>
<tr>
<td>BLAW 385V</td>
<td>Consumers and the Law</td>
<td>1-3</td>
</tr>
<tr>
<td>Any additional upper division business course</td>
<td>1-3</td>
<td></td>
</tr>
<tr>
<td>FIN 323</td>
<td>Life/Health/Employee Benefits</td>
<td>1-3</td>
</tr>
<tr>
<td>FIN 324</td>
<td>Property and Liability Insurance</td>
<td>1-3</td>
</tr>
<tr>
<td>FIN 326</td>
<td>Business Risk Management</td>
<td>1-3</td>
</tr>
<tr>
<td>FIN 392</td>
<td>Insurance Internship and Cooperative Education</td>
<td>1-3</td>
</tr>
<tr>
<td>FIN 498</td>
<td>Independent Study</td>
<td>1-3</td>
</tr>
<tr>
<td>FIN 421</td>
<td>Personal Financial Planning for Professionals</td>
<td>1-3</td>
</tr>
</tbody>
</table>

Total Credit Hours 18

1. FIN 421 cannot be taken if FIN 303V is applied toward the minor.

Management

Undergraduate Program Information

The major in general business is based on a broad range of course options rather than a narrow focus on a single discipline. Graduates find careers in large and small businesses, in government agencies and in the nonprofit sector. The general business major is well suited to the part-time and working student because it allows the student to select courses that will better meet their individual schedule. The entrepreneurship concentration is ideal for a student interested in starting or acquiring a small business or entering a family business upon graduation. The curriculum provides a focus on small and new enterprises, thus reflecting the entrepreneurial nature of contemporary business in the U.S.

Every candidate for this major must fulfill the following requirements in addition to the general education common core, College of Business foundation and business core, Viewing a Wider World requirements and general electives. Students will choose one of the three concentrations that follow.

Degrees for the Department

General Business - Bachelor of Business Administration (p. 445)
Management - Bachelor of Business Administration (p. 446)

Minors for the Department

Management - Undergraduate Minor (p. 446)
Sustainability - Undergraduate Minor (p. 446)

Professor, Carlo Mora-Monge, Interim Department Head

Professors Benson, Bishop, Boje, Elias, Hoffman, Jun, Rosile; Associate Professors Adler, Smith; Assistant Professors Flinchbaugh; Crawford

MGT 201. Introduction to Management
3 Credits
Covers the functioning and administration of different types of complex organizations. Concepts and theories of management and organizational behavior.

MGT 309. Human Behavior in Organizations
3 Credits
Interpersonal and organizational behavior, motivation, communication, team building, leadership, diversity management, legal and ethical issues, and politics in organizations. Credit may not be earned for both MGT 309 and MGT 315V.

MGT 315V. Human Relations in Organizations
3 Credits
Interactions among people and groups in societies where organizations abound. Focus on the behavior of people in organizational situations and approaches for understanding that behavior. Explores motivation, communication, leadership and team processes. Restricted to nonbusiness majors. Credit may not be earned for both MGT 309 and MGT 315V.

MGT 332. Human Resources Management
3 Credits
Survey course in human resources management. Includes recruitment, selection, equal employment opportunity, performance appraisal, training, compensation, safety, and union-management relations.

MGT 333. Training and Development
3 Credits
Training and development of human resources, including training needs assessment, training approaches and techniques, and evaluation of training effectiveness.

MGT 335V. Business and Government
3 Credits
Crosslisted with: ECON 335G

MGT 336. Management Communication
3 Credits
Communication models with emphasis on application to management problems. Management communication systems and techniques in organizations.
MGT 344. Production and Operations Management
3 Credits
Management of physical and human resources; management information systems in operations; applications in various organizations.
Prerequisite: STAT 251G or A ST 251G or A ST 311; and BCIS 338 or BCIS 350.

MGT 345V. Quality and Competitiveness: An International Perspective
3 Credits
Quality management and competitiveness are studied in manufacturing, services, and the public sector with an international perspective. Topics include: global history of quality, foreign competition and its impact on quality and productivity, quality management and continuous improvement, international operations management, quality assessment, and a review of the emergence of quality and competitiveness in government, education and health care.

MGT 347. Management Functions and Processes
3 Credits
Planning, organizing, directing, and controlling operating units in an organization. Applications to a variety of types of organizations.

MGT 351. Supply Chain Management
3 Credits
Acquisition and control and delivery of materials, parts, equipment, and services for end use in the organization. Applications to service and manufacturing industries, nonprofit, and governmental institutions.

MGT 359. The Management of Diversity
3 Credits
Management of diversity in the workplace. Includes concepts of appreciation and management of workforce diversity, a review of research on diversity and organizational performance, individual and group-level factors in understanding diversity, and organizational context factors in managing diversity.

MGT 360V. Negotiation and Business Conflict Resolution: Theory and Practice
3 Credits
Covers the basics of negotiation theory and practice including the use of quantitative methods and their realistic application in resolving disputes. Application of conflict resolution skills.

MGT 361. Managing a Startup
3 Credits
Exploration of the tensions and experiences of starting and growing a new company. The course will provide students with the knowledge and experience to increase the likelihood of success whether as a principal in a new company or an investor representative.

MGT 375V. Global Environmental Assessment and Management
3 Credits
Examines the principles of environmental assessment and management. Topics include global environmental concerns, industrial environmental management, life cycle assessment, system analysis, process improvement, and sustainable development, among others.

MGT 388V. Leadership and Society
3 Credits
Exploration of the multifaceted nature of leadership in modern society through readings and seminar discussion.

MGT 391. Management Internship and Cooperative Education I
1-3 Credits
Application of management skills to the work environment. Open only to students majoring or minoring in management. The amount of academic credit (1-3 cr.) will be determined by the academic experience and not by the work experience. May be repeated for a maximum of 3 credits. Restricted to majors and minors.
Prerequisite(s): MGT 309 and consent of instructor.

MGT 448. Business Consulting
3 Credits
Study, analysis, and presentation of recommendations for solving significant problems confronting businesses.

MGT 449. Strategic Management
3 Credits
Integrative approach to envisioning the future and shaping strategies for business success.
Prerequisite(s): BCIS 338 or 350; BLAW 316; FIN 341; MGT 309; MKTG 303; and one of the following: MGT 344 or MGT 470 or BCIS 485.

MGT 451. Selection, Placement, and Performance Evaluation
3 Credits
Staffing processes for organizations and the evaluation of employee performance. Use of selection methods and measurement of work behavior.

MGT 453. Leadership and Motivation
3 Credits
Theories of leadership and motivation. Motivational programs for complex organizations. Relationships between organizational power, authority, and management styles. Crosslisted with: IE 453

MGT 454. Work Teams in Organizations
3 Credits
Theories of small groups and their application to the work situation. Why and how groups form, grow, communicate, and maintain themselves.
Prerequisite(s): senior or above standing.

MGT 458. Comparative International Management
3 Credits
Cultural influences on management are examined in a global business environment with a particular emphasis on human behavior in multinational organizations and the management of human resources. Same as IB 458.

MGT 460. Compensation Management
3 Credits
An overview of wage and salary administration, including job evaluation, wage and salary surveys, program administration, legal aspects of pay systems, and benefits administration.
Prerequisite(s): MGT 332 or consent of instructor.

MGT 461. New Venture Creation
3 Credits
Via problem-based learning, teams define new business ventures to meet current market needs, develop business plans, and prepare to present to investors. SAME AS MKTG 461

MGT 465. Contemporary Issues in Human Resources Management
3 Credits
Integrative course in human resources management, emphasizing the application of advanced concepts to complex personnel cases.
Prerequisite: MGT 332.
MGT 466. Managing Electronic Commerce: A Business Models Perspective
3 Credits
Surveys the emerging Internet technology involving business to business, business to consumer, and consumer to consumer forms of trade. Covers quantitative decision and negotiation analysis techniques as well as auction and market trade mechanisms.

MGT 470. Project Management in Organizations
3 Credits
Roles, responsibilities, and techniques of project managers in managing projects effectively. Preparation for professional certification.

MGT 490. Selected Topics
1-18 Credits (1-18)
Seminars in selected current topics in the various areas of management and administration. Prerequisites vary according to the seminar being offered.

MGT 491. Management Internship and Cooperative Education II
1-3 Credits
Covers the application of management skills to the work environment. The amount of academic credit (1-3 cr.) will be determined by the academic experience and not the work experience. May be repeated for a maximum of 3 credits. Restricted to majors and minors. 
Prerequisite: MGT 409 and consent of instructor.

MGT 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. A maximum of 3 credits may be earned.
Prerequisites: junior or above standing and consent of instructor.

MGT 502. Operations Management
3 Credits
Systems and specialized models applied to the management of production facilities and service operations, including physical and human resources.
Prerequisite(s): Graduate students only.

MGT 503. Organizational Behavior and Management Processes
3 Credits
Covers the theory and practice related to the successful management of human resources in organizations operating within a dynamic global environment. Course goals include developing alternative frameworks for analyzing issues related to human behavior, management science, and organizational structure and theory.
Prerequisite: graduate students only.

MGT 512. Quantitative Analysis for Business Decisions
3 Credits
Identification, collection, and analysis of an organization's data both internal and external, and use of the resultant information in managerial decision making.
Prerequisite: graduate students only.

MGT 527. Negotiation and Business Dispute Resolution
3 Credits
Same as BLAW 527.

MGT 545. Seminar in Human Resources Management
3 Credits
Systems, theories, and methods of managing human resources for optimum productivity.

MGT 548. Business Consulting
3 Credits
Study, analysis, and presentation of recommendations for solving significant problems confronting businesses. Same as MGT 448 with differentiated assignments for graduate students.

MGT 590. Strategic Management
3 Credits
Covers the integration of functional, human, technological, and environmental aspects of business within the framework of management policy and strategy formulation. Formulate, implement, evaluate and control the various functions of the organization from a systems perspective. Understand the external environment and its impact on the organization. Restricted to majors.
Prerequisite: M.B.A. student in his or her final semester.

MGT 591. New Venture Creation
3 Credits
Via problem-based learning, teams define new business ventures to meet current market needs, develop business plans, and prepare to present to investors. Same as MGT 461 with differentiated assignments for graduate students. Crosslisted with: MKTG 591.

MGT 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. A maximum of 6 credits may be earned.
Prerequisite: consent of instructor.

MGT 600. Doctoral Research
1-15 Credits
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination. Restricted to management majors.

MGT 601. Research in Management
1 Credit
Ph.D. course provides opportunities for significant interaction between Management faculty and Management Ph.D. students. The course also provides opportunities for development of professional scholarly standards, ethics, and critiques, as well as insight into current research areas and topics supported by the Management Department and other relevant disciplinary areas. May be repeated for a maximum of 6 credits. Restricted to Ph.D. students. Graded S/U.

MGT 640. Instructional Development for Teaching Business
3 Credits
Pedagogical issues and techniques in collegiate business education. Includes course and curriculum development, outcomes assessment, class management, and teaching techniques. Practical issues faced in college instruction. Restricted to doctoral students.

MGT 645. Seminar in Human Resources Management
3 Credits
Seminar will address current issues in human resources management. Focus on research related to the selection, development, and effective use of human resources. Restricted to doctoral students.

MGT 650. Seminar in Organizational Behavior
3 Credits
Seminar will include specific organizational behavior topics; motivation, leadership, group and inter-group relations, and attitude theory. Focus on current research and theory. Restricted to doctoral students.
MGT 655. Seminar in Organizational Systems and Theory
3 Credits
Analysis of organizations from a macro perspective. Topics include organizational theory, organizational design, organizational environment, and sociotechnical systems. Restricted to doctoral students.

MGT 660. Research Design and Methodology
3 Credits
Topics will include philosophy of science, theory building, and research methods applicable to the study of organizational behavior. Restricted to doctoral students.

MGT 661. Qualitative Research Methods
3 Credits
In-depth coverage of selected topics in research methodology, including theory and logic of scientific investigation, grounded theory, action research, and ethnography. Restricted to doctoral students.

MGT 675. Seminar in Strategic Management
3 Credits
Survey of current and classical readings in strategy. Introduces the doctoral level student to strategic issues, strategic topics for research, and publication venues. Restricted to doctoral students.

MGT 685. Story Consulting to Organizations
3 Credits
Apply various qualitative story and narrative research methods (plot analysis, script analysis, life history, and restoring) to action research consulting project. Students will conduct story assessment and (propose or enact) intervention with a local consenting organization. Restricted to doctoral students.

MGT 690. Special Topics
3 Credits
Seminars in selected current topics in the various areas of management. May be repeated for unlimited credit. Restricted to doctoral students.

Prerequisite(s): Vary according to seminar being offered.

MGT 698. Special Topics
1-3 Credits
Prerequisite: consent of instructor.

MGT 700. Doctoral Dissertation
15 Credits
Prerequisite: advancement to candidacy.

Name: Carlo Mora-Monge, Interim Department Head
Office Location: Business Complex, Room 220
Phone: (575) 646-1201
Website: http://business.nmsu.edu/departments/mgt/

General Business - Bachelor of Business Administration
General Business Major

Major Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 332</td>
<td>Human Resources Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 361</td>
<td>Managing a Startup</td>
<td>3</td>
</tr>
<tr>
<td>MGT 461</td>
<td>New Venture Creation</td>
<td>3</td>
</tr>
<tr>
<td>MGT 448</td>
<td>Business Consulting</td>
<td>3</td>
</tr>
<tr>
<td>Major requirements (upper division)</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

Of the remaining 12 credits for the entrepreneurship option, no more than 9 credits may be taken in any one prefix

- Accounting (ACCT)
- Business Administration (B A)
- Business Computer Information Systems (BCIS)
- Business Law (BLAW)
- Economics (ECON)
- Finance (FIN)
- International Business (IB)
- Management (MGT)
- Marketing (MKTG)

Concentration: Tribal Management

This option is offered to students who complete the tribal management option offered at Southwestern Indian Polytechnic Institute and wish to complete a BBA with a major in general business at NMSU.

Major Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 391</td>
<td>Management Internship and Cooperative</td>
<td>3</td>
</tr>
<tr>
<td>MGT 491</td>
<td>Management Internship and Cooperative</td>
<td>3</td>
</tr>
<tr>
<td>Upper division electives in business</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

No more than 9 of the 18 credits may be taken in any one prefix

- Accounting (ACCT)
- Business Administration (B A)
- Business Computer Information Systems (BCIS)
- Business Law (BLAW)
- Economics (ECON)
Management - Bachelor of Business Administration

The Department of Management invites you to consider a major in management. Do you like to work with people? Need help solving people problems at work? Want to run an environmental project, or a bank, a store, a farm or a government agency? Are you interested in how people from diverse backgrounds work together to achieve common goals? If you answered yes to any of these questions, you should consider a major in management. The mission of the department is to prepare graduates, with a Bachelor of Business Administration, for management careers in a broad spectrum of New Mexico, national and globally oriented businesses. Management graduates work in small and large agricultural, manufacturing, government, transportation, public utility, merchandising, health care, environmental and communications organizations among others.

The study of management offers the opportunity to develop skills in utilizing human, physical and economic resources to achieve organizational objectives. These are important cross-functional skills in today’s competitive job market. Students will acquire the skills and knowledge to develop their potential and to lead others in a common mission. Management majors may choose from program options in human resource management, managerial leadership, project and supply chain management, or small business management and entrepreneurship.

Every candidate for this major must fulfill the following requirements in addition to the general education common core, College of Business foundation and the business core, Viewing a Wider World requirements and general electives (see above). Students will choose one or more of the four options that follow.

Concentration: Human Resource Management

Major Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>MGT 332</td>
<td>Human Resources Management</td>
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<tr>
<td>MGT 451</td>
<td>Selection, Placement, and Performance Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>MGT 460</td>
<td>Compensation Management</td>
<td>3</td>
</tr>
<tr>
<td>MGT 458 or MGT 465</td>
<td>Comparative International Management or Contemporary Issues in Human Resources Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives in management, upper division 12

Total Credits 24

Concentration: Project and Supply Chain Management

Major Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 345V</td>
<td>Quality and Competitiveness: An International Perspective</td>
<td>3</td>
</tr>
<tr>
<td>MGT 351</td>
<td>Supply Chain Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Concentration: Small Business Management and Entrepreneurship

Major Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<td>MGT 461</td>
<td>New Venture Creation</td>
<td>3</td>
</tr>
<tr>
<td>MGT 448</td>
<td>Business Consulting</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives in management, upper division 12

Total Credits 24

Management - Undergraduate Minor

The management minor requires 18 upper division credits in management. Business majors must take any six upper-division management courses (3 credits each). The management minor for non-business majors consists of:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 309</td>
<td>Human Behavior in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>or MGT 315V</td>
<td>Human Relations in Organizations</td>
<td>3</td>
</tr>
</tbody>
</table>

Select five other upper division Management courses 15

Total Credits 18

1 One 3-credit upper division course in the College of Business may substitute for one of the required five management courses.

At least 12 credits for the minor must be completed at NMSU. This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

To obtain a Management minor, a grade of C- or better must be attained in the courses required.

Sustainability - Undergraduate Minor

Students must complete 18 credits for the minor, nine credits of which must be upper division courses, and at least 12 credits of which must be completed at NMSU. A 2.0 GPA or better is required in the courses completed in fulfillment of the minor. This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

Requirements

Select 18 credits, 9 of which are upper division from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E S 110G</td>
<td>Introductory Environmental Science</td>
<td></td>
</tr>
<tr>
<td>PHLS 305V</td>
<td>Global Environmental Health Issues</td>
<td></td>
</tr>
<tr>
<td>HON 305V</td>
<td>Global Environment</td>
<td></td>
</tr>
<tr>
<td>HORT 100G</td>
<td>Introductory Plant Science</td>
<td></td>
</tr>
<tr>
<td>HORT 315</td>
<td>Crop Physiology</td>
<td></td>
</tr>
<tr>
<td>HRTM 430</td>
<td>Hospitality Facilities Management</td>
<td></td>
</tr>
<tr>
<td>HRTM 450</td>
<td>Special Topics</td>
<td></td>
</tr>
</tbody>
</table>
Marketing

Undergraduate Program Information

Marketing majors learn skills and knowledge relevant to the co-creation of goods, services and ideas that uniquely meet the needs and wants of global customer markets and society at large. Career opportunities exist in marketing management, advertising, market research, promotion management, sales and sales management, social media, distribution management, and retailing. The major is designed to allow a great deal of choice so students may emphasize any combinations of these areas.

Most marketing majors enter into careers in business firms, although some find job opportunities in governmental and other nonprofit organizations. Still others become involved in owning and managing their own companies. Opportunities in entrepreneurship and small business are expanding at a rapid pace.

Graduate Program Information

The College offers a program leading to a Ph.D. degree (Doctor of Philosophy in Business Administration) (p. 423). The faculty of the Ph.D. Program in Business Administration is committed to training researchers and educators who will shape business scholarship, practice, and pedagogy. The program emphasizes preparing candidates to understand the complexities of modern business while they develop a specialized area of expertise in marketing or management. The Ph.D. in Business Administration provides graduates with the opportunity to pursue a variety of career paths within academia and within industry. Currently a concentration is offered in marketing.

Degrees for the Department
Marketing - Bachelor of Business Administration (p. 450)

Minors for the Department
Advertising - Undergraduate Minor (p. 449)
Marketing - Undergraduate Minor (p. 450)
Professional Selling - Undergraduate Minor (p. 450)
Sports Marketing - Undergraduate Minor (p. 450)

Professor, Nancy A. Oretskin, Interim Department Head

Professors Hyman, Jasso, Plouffe, Payne; Associate Professor Niculescu; College Professor Gavin; College Assistant Professors Blaugrund, Holguin; Emeritus Professors Peterson, Sautter

MKTG 180. PGA Golf Management Freshman Orientation
3 Credits
Introduction to the Policies and Procedures of the PGA Golf Mgt. Program and the PGA of America Students will also be introduced to the Qualifying Level of the PGA's Educational Program, Rules of Golf, PGA Constitution and the History of the PAG. Additional course fee required. Consent of Instructor required. Restricted to: PGA Golf Management Students. MKTG/PGM majors.

MKTG 181. Level 1, PGA's PGM Education Program (Part 1)
3 Credits
Introduction of Level 1 of the PGA's Educational Program. This class will focus on Business Planning and Operations, Customer Relations, and the corresponding PGA Work Experience Activities. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 203. Introduction to Marketing
3 Credits
Covers processes, functions and principles in the current marketing system. Includes role of marketing in the economy, types of markets, product development, distribution channels, pricing and promotion strategies, market research and management of the processes. Community Colleges only.

MKTG 280. Level 1, PGA's PGM Education Program (Part 2)
3 Credits
Continuation of Level 1 of the PGA's PGM Education Program. This class will focus on Tournament Operations, Golf Car Fleet Management and the corresponding PGA Work Experience Activities. Students will also be required to provide an internship evaluation report. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 281. Level 1, PGA's PGM Education Program (Part 3)
1.5 Credits
Completion of Level 1 of the PGA's PGM Education Program. This class will focus on Introduction to Teaching and Golf Club Performance and the corresponding PGA Work Experience Activities. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 303. Principles of Marketing
3 Credits
Process, functions, and principles in the current marketing system.

MKTG 305. Marketing Food and Agricultural Products
3 Credits
Same as AG E 305. Crosslisted with: AG E 305.

MKTG 310. Marketing Research
3 Credits
Design, collection analysis, and presentation of research data. Prerequisites: A ST/STAT 251G or consent of instructor.

MKTG 311V. Consumer Behavior
3 Credits
The different aspects of consumer behavior and the variables affecting consumer decisions. Analysis of current concepts and models.

MKTG 312. Personal Selling
3 Credits
Implementation of the promotion process through interpersonal communications between salesperson and prospects. Serving customers by sales representatives.
MKTG 313. Retail Management
3 Credits
Investigates retail business operations and focuses on the strategic profit model, store location, layout, display, merchandising, operations, and personnel.

MKTG 314. Advertising Strategy
3 Credits
Utilization of advertising as a business administration function; communication with consumers as a means of attaining marketing goals.

MKTG 317. International Marketing
3 Credits
Focuses on decisions relating to entering markets, market segmentation, marketing strategies, and tactics in the international arena. Same as I B 317.

MKTG 324. Product/Service Development
3 Credits
Covers product innovation, development, commercialization and resource recovery, price determination and administration strategies, and complementing planning processes.

MKTG 354. Sports Marketing
3 Credits
The application of marketing concepts to the sports industry. Topics include fans/customers, products, and promotions across a range of sports.

MKTG 357. Internet and Social Media Marketing
3 Credits
Focuses on the consumer psychology and marketing strategies at work in advertising and selling brands via the Internet and social media networks.

MKTG 380. Level 2, PGA’s PGM Education Program (Part 1)
1.5 Credits
Introduction to Level 2 of the PGA’s PGM Education Program. This class will focus on Merchandising and Inventory Management, Golf Operations and the corresponding PGA Work Experience Activities. Students will also be required to provide an internship evaluation report. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 381. Level 2, PGA’s PGM Education Program (Part 2)
1.5 Credits
Completion of Level 2 of the PGA’s PGM Education Program. This class will focus on Turfgrass Management, Intermediate Teaching and Golf Club Alteration and corresponding PGA Work Experience Activities. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 400. Marketing Internship/Field Experience
3 Credits
Internship of field experience in application of marketing principles. The student must accept an internship before being allowed to enroll in the course. Consent of instructor required. Restricted to MKTG majors.

MKTG 404. Business-to-Business Marketing
3 Credits
Covers suppliers and buyers roles in industry; procurement, vendor selection, marketing research, selling techniques, sales force management; quality/quantity determination.

MKTG 414. Athletics Business Administration
3 Credits
This course examines the marketing and operations of sports programs with emphasis on Division I Collegiate Programs. Topics include event management, ticketing, marketing, trademark and licensing, NCAA compliance, development, finance, contracts, facility maintenance, television, and the roles and responsibilities of the coaches.

MKTG 449. Promotion Management
3 Credits
Covers concepts and problems in the use of advertising, internet marketing, social media marketing, personal selling, publicity, and other forms of promotion; planning, coordination, control, and evaluation of effectiveness.

MKTG 451. Food and Agribusiness Market Assessment and Research
3 Credits

MKTG 453. Sales Management
3 Credits
The nature of the sales management function in industry. Focuses on intra and interdepartmental sales management activities.

Prerequisite(s): MKTG 312.

MKTG 461. New Venture Creation
3 Credits
Via problem-based learning, teams define new business ventures to meet current market needs, develop business plans and prepare to present to investors. Same as MGT 461.

MKTG 462. Advanced Sales
3 Credits
Advanced instruction and skill development in interpersonal communication skills to broaden understanding of the professional sales role (especially in team selling situation), career management, personal productivity, negotiation, and coordination with other functional areas. May be repeated up to 3 credits.

Prerequisite(s): MKTG 312.

MKTG 480. Level 3, PGA’s PGM Education Program (Part 1)
1.5 Credits
Introduction to Level 3 of the PGA’s PGM Education Program. This class will focus on Human Resource Management/Supervising and Delegating, Food and Beverage and the corresponding PGA Work Experience Activities. Students will also be required to provide an internship evaluation report. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 481. Level 2, PGA’s PGM Education Program (Part 2)/ Final Experience
3 Credits
Completion of Level 3 of the PGA’s PGM Education Program. This class will focus on Advanced Teaching and Club fitting, Player Development/Teaching Business. The Final Experience and the corresponding PGA Work Experience Activities. Please note that the following are requirements for successful completion of this senior level PGA Golf Management capstone course: 16 months of internship, completion of the Qualifying Level, Level 1, Level 2, and Level 3 of the PGA’s PGM Education Program and successful completion of the PGA’s Playing Ability Test. Consent of Instructor required. Restricted to: MKTG/PGM majors.
New Mexico State University

MKTG 489. Strategy and Policy
3 Credits
Techniques and analysis of marketing strategy and policy planning and formulation.
Prerequisites: senior standing or consent of instructor.

MKTG 490. Selected Topics
1-18 Credits (1-18)
Covers materials and subjects not offered in regular Marketing courses. Students can take 18 credit hours of MKTG 490 if each class is a different subtitle. A maximum of 18 credit hours can be earned through MKTG 490.

MKTG 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. A maximum of 3 credits may be earned. Prerequisites: junior or above standing and consent of instructor.

MKTG 500. Concepts in Marketing
1 Credit
An overview of fundamental principles of Marketing necessary for prospective MBA students who do not have an undergraduate background in Marketing. Includes: Terminology, basic functions and responsibilities associated with practice of marketing.
Prerequisite(s): Admitted to MBA program or consent of course department.

MKTG 503. Marketing Management
3 Credits
Analysis of marketing problems and the integration of organizational resources as well as behavioral and quantitative techniques into the development and implementation of solutions. Graduate students only. Prerequisite(s): MKTG 303 or equivalent with a grade of B or better.

MKTG 591. New Venture Creation
3 Credits
Via problem-based learning, teams define new business ventures to meet current market needs, develop business plans and prepare to present to investors. Same as MKTG 461 with differentiated assignments for graduate students. Crosslisted with: MGT 591.

MKTG 601. Marketing Management
3 Credits
Covers the conceptual foundations of contemporary marketing management research, concepts, and literature. Fundamental to the understanding of contemporary marketing and the breadth of the field of marketing study.

MKTG 610. Marketing and the Scientific Method
3 Credits
Issues related to the evolution of research philosophies and methodologies. Critical to the development of appreciation for the value of research and experimentation.

MKTG 620. Research- Theory Interface
3 Credits
Theoretical and methodological issues involved in translating a theory into a research study. Prepares Ph.D. students to undertake dissertation research. Consent of instructor required.

MKTG 625. Consumer Behavior
3 Credits
Extensive reading of seminal and contemporary articles on consumer behavior and developing original research to explore cross-disciplinary issues relevant to the study of marketing.

MKTG 640. Measurement and Structural Equation Modeling
3 Credits
Explores theories of measurement that underlie all quantitative analysis, including the use of structural equation models. Contrasts classical test theory with item response theory and generalizability theory. Covers PRELIS and LISREL, and critiquing structural equation models by other researchers. Prerequisite: MKTG 630 or equivalent.

MKTG 670. Marketing Theory
3 Credits
The evolution, development, construction, and evaluation of the major theoretical perspectives of marketing. Fundamental to the understanding of contemporary marketing and preparation for investigations into the nature and role of theory in marketing.

MKTG 690. Special Topics in Marketing
3 Credits
A seminar on special topics in marketing. The topic of the course will vary according to the needs of the students in the program and the instructor. Ph.D. students may repeat this course up to three times for a maximum total of 9 credits.

MKTG 698. Selected Topics
1-9 Credits (1-9)
Materials and subjects not offered in regular marketing courses. May be repeated for a maximum of 18 credits under different subtitles.

MKTG 700. Doctoral Dissertation
15 Credits
Prerequisite: advancement to candidacy.

Name: Intern Dept. Head Nancy A. Oretskin
Office Location: BC Suite 212
Phone: (575) 646-3341
Website: https://business.nmsu.edu/departments/marketing/

PGA Golf Management Program
Name: Director Gavin; Program Specialist Salmon; Program Coordinator Stetina
Office Location: BC Suite 212
Phone: (575) 646-2814
Website: https://business.nmsu.edu/academics/undergraduate/golf/

Advertising - Undergraduate Minor

Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKTG 303</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 311V</td>
<td>Consumer Behavior</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 314</td>
<td>Advertising Strategy</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 449</td>
<td>Promotion Management</td>
<td>3</td>
</tr>
<tr>
<td>Additional credits from any College of Business prefix (including MKTG)</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 18

1. As soon as you consider a minor in Marketing, visit the Department of Marketing, Business Complex, room 209 to arrange a consultation.
with a Marketing Faculty member for guidance and a suggested plan of study for the minor.

2. All courses must be upper-division (300 level or above).
3. A cumulative grade point average of 2.0 for the 18 credits must be earned.
4. At least 12 credits for the minor must be completed at NMSU.
5. This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

Marketing - Bachelor of Business Administration

Marketing Major

Major Courses
MKTG 310 Marketing Research 3
MKTG 489 Strategy and Policy 3
Electives in Marketing, upper division 18
Total Credits 24

Note: The marketing major is offered through a Online Distance Education Degree Completion Program as well. Program information is available on the College of Business website: http://business.nmsu.edu/academics/undergraduate/online-programs/

Concentration: PGA Golf Management

Major Courses
MKTG 180 PGA Golf Management Freshman Orientation 3
MKTG 181 Level 1, PGA’s PGM Education Program (Part 1) 3
MKTG 280 Level 1, PGA’s PGM Education Program (Part 2) 3
MKTG 281 Level 1, PGA’s PGM Education Program (Part 3) 1.5
MKTG 310 Marketing Research 3
MKTG 313 Retail Management 3
MKTG 380 Level 2, PGA’s PGM Education Program (Part 1) 1.5
MKTG 381 Level 2, PGA’s PGM Education Program (Part 2) 1.5
MKTG 480 Level 3, PGA’s PGM Education Program (Part 1) 1.5
MKTG 481 Level 2, PGA’s PGM Education Program (Part 2)/ Final Experience 3
Elective in Marketing, upper division 9

Other Requirements
HORT 377 Introduction to Turfgrass Management 4
HRTM 420 Club Management and Marketing 3
HRTM 450 Special Topics 1-4
Total Credits 41-44

Note: Students must apply separately to the PGA Golf Management Program for acceptance. Acceptance is limited to the fall of every year.

Marketing - Undergraduate Minor

Requirements

| MKTG courses | 12 |
| Additional credits from any College of Business prefix (including MKTG) | 6 |
| Total Credits | 18 |

2 HRTM 301 Hotel, Restaurant, and Tourism Marketing may be substituted.

1. As soon as you consider a minor in Marketing, visit the Department of Marketing, Business Complex, room 209 to arrange a consultation with a Marketing Faculty member for guidance and a suggested plan of study for the minor.
2. All courses must be upper-division (300 level or above).
3. A cumulative grade point average of 2.0 for the 18 credits must be earned.
4. At least 12 credits for the minor must be completed at NMSU.
5. This minor is not open to majors in the Bachelor of Interdisciplinary Studies and the Bachelor of Applied Studies.

Professional Selling - Undergraduate Minor

If you are considering the Minor in Professional Selling, please visit the Department of Marketing, Business Complex, room 209 to arrange a consultation with a Marketing Faculty member for guidance and a suggested Plan of Study for the minor, etc. Students must have a cumulative grade point average of 2.0 in the 18 credits in order to earn the Minor in Professional Selling. Also, at least twelve credits for the minor must be completed at NMSU.

This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.

Requirements: 18 or more Credit Hours in an approved plan of study.

Required Courses
MKTG 303 Principles of Marketing 3
MKTG 312 Personal Selling 3
MKTG 462 Advanced Sales 3

Electives/Additional Coursework:
MGT 360 Negotiation and Business Conflict Resolution: Theory and Practice 3
MKTG 400 Marketing Internship/Field Experience 3
MKTG 404 Business-to-Business Marketing 3
MKTG 453 Sales Management 3

Total Credits 21

Sports Marketing - Undergraduate Minor

Requirements

| MKTG 303 Principles of Marketing | 3 |
| MKTG 313 Retail Management | 3 |
| MKTG 354 Sports Marketing | 3 |
Additional MKTG courses 3
Additional credits from any College of Business prefix 6
(including MKTG)

Total Credits 18

1. As soon as you consider a minor in Marketing, visit the Department of Marketing, Business Complex, room 209 to arrange a consultation with a Marketing Faculty member for guidance and a suggested plan of study for the minor.

2. All courses must be upper-division (300 level or above).

3. A cumulative grade point average of 2.0 for the 18 credits must be earned.

4. At least 12 credits for the minor must be completed at NMSU.

5. This minor is not open to majors in the Bachelor of Individualized Studies and the Bachelor of Applied Studies.
Competitive Undergraduate Admission Process for Teacher Education Program

Applicants who successfully complete the minimum requirements for admission will be reviewed by the Teacher Education Program admission committee. The admission committee will base acceptance decisions on the applicant’s academic qualifications, written communication, faculty recommendations, dispositions and the student’s portfolio.

Even though students declare their majors when they enter New Mexico State University, teacher candidates are not officially admitted to the Teacher Education Program until they formally apply and meet the following requirements:

1. A cumulative grade-point average of at least 2.5.
2. Must complete 55 credit hours.
3. Complete appropriate program prerequisites. See Office of Teacher Candidate Preparation for specific program prerequisites.
4. Demonstration of competence in reading, mathematics, and composition by passing the New Mexico Teacher Assessments Basic Skills Test or the Essential Academic Skills component of the Pearson NES test.
5. Students seeking admission to TEP must purchase TK20 Assessment Tool.
6. Submit a portfolio for admission to the Teacher Education Program. The portfolio will be reviewed by faculty. Admission to TEP is contingent on faculty approval. See the Office of Teacher Candidate Preparation for further clarification.

Applicants should be aware that admission to the Teacher Education Program is competitive and is based upon available faculty resources. Posted GPA and basic skills test scores are minimums which are necessary to be considered for admission by the Teacher Education Program committee and do not ensure admittance into programs. Applicants are encouraged to develop a strong student portfolio, achieve the highest GPA possible, and present the portfolio in a professional manner.

Transfer students will have their transcripts evaluated by the Registrar’s Office and must meet all basic skills requirements, as well as be admitted to the Teacher Education Program through the formal application procedures.

Students who are not admitted may not take designated professional education courses numbered above 299. Students with a bachelor's degree seeking teacher licensure must meet all admission criteria for the Teacher Education Program and be admitted to the Graduate School.

Students must be officially approved for student teaching during his/her senior year. Prior to student teaching, complete teaching field requirements, and pass the Pearson NES Assessments test.

Each student must possess the academic ability, character, and disposition suitable for teaching. A student who, in the professional judgment of the faculty and staff, does not possess these qualifications may be examined by a Selective Review Committee. The committee may recommend any of a variety of actions, ranging from remedial procedures to withdrawal from the College.

Students with a bachelor’s degree seeking teacher licensure must meet all admission criteria for the Teacher Education Program and be admitted to the Graduate School.

General Undergraduate Requirements

1. Entering freshman with an ACT score of 17 or lower will be invited to take a study skills class to ensure a successful college experience.
2. Complete at least 120 - 132 acceptable credits, including a minimum of 48 credits in courses numbered 300 or above with a cumulative GPA of 2.5 or above.
3. Satisfy the general education requirements. Detailed programs are available in the Center for Academic Advising and Support Services (CAASS) and the Office of Teacher Candidate Preparation.
4. Students must complete all professional education courses and all courses in their teaching field or major with a grade of C- or better.
5. All students, including transfer students, must complete the last 30 semester credits required for the baccalaureate degree on the New Mexico State University campus. The four-year Servicemen’s Opportunity College Program students are not exempt from this regulation.
6. All majors require a minimum 2.5 cumulative GPA to graduate, except Communication Disorders, which requires a 3.0 cumulative GPA.
7. Students in teacher preparation programs must be officially admitted to the Teacher Education Program. See requirements under Admission to the Teacher Education program and Competitive Admission Process.
8. In addition, if faculty at any time determine that a student is weak in a particular skill, the College of Education may require remedial procedures.

General Education Requirements

1. Nine to ten credits in General Education Area I (language arts); twelve to thirteen for elementary education
2. Six credits in General Education Area II (mathematics)
3. Eight credits in General Education Area III (laboratory science)
4. Nine credits from General Education Area IV (social/behavioral sciences)
5. Nine credits in General Education Area V (humanities and fine arts)

Transferring Undergraduate Courses

Certain College of Education courses have been identified as transferable from NMSU to other public two-year and four-year institutions in New Mexico. The equivalent course at other institutions can be identified using the common course number. Similarly, students from other institutions can use the common course number to identify education courses that can be transferred to NMSU.
Suggested Program of Study
Requirements of a general nature and for each endorsement are available in the Center for Academic Advising and Support Services (CAASS) and Office of Teacher Candidate Preparation. It is imperative that students, especially those new to the campus, report frequently to CAASS to have their programs carefully and continually monitored in line with newly developing requirements.

All students henceforth will pursue a baccalaureate program leading to a Level I Teaching License. All students must work with an academic advisor to ensure a complete program of study for their specific degree.

Undergraduate Students with Degrees Seeking Certification Only
All students who already have a bachelor’s degree and who are seeking licensure must be admitted through a graduate licensing program. Details are available in the advisement center.

Time Limit on Undergraduate Teacher Education Courses
Any education course more than seven years old taken at NMSU or at another institution will not be counted toward the student’s undergraduate program. A student may meet with the appropriate department to have the courses time limit reviewed. The department head and/or faculty may recommend accepting a course that is seven years old with approval from the Dean’s office. Any course not approved must be repeated by the student.

Withdrawing Undergraduate Teacher Education Students
The College of Education reserves the right to withdraw students who are registered in 300-level or above teacher education courses who are not admitted to the Teacher Education Program.

Undergraduate Admission to Student Teaching
To be admitted to student teaching a student must:

1. Students must be officially approved for student teaching during his/her senior year.
2. Submit complete formal application to the Office of Teacher Candidate Preparation by March 9 for spring and by October 9 for fall a year prior to student teaching.
3. Maintain a cumulative grade-point average of at least 2.5 prior to beginning student teaching.
4. Complete the teaching field requirements and pass the Subject Area Assessment tests of the Pearson NES or New Mexico Teacher Assessment Content test.
5. Complete all requirements to student teaching (details available from the Office of Teacher Candidate Preparation).
6. Students must complete all professional education courses and all courses in the student’s teaching field with a grade of C- or better.
7. Admission to Student Teaching is contingent upon faculty approval.

Students who do not meet all College of Education requirements for admission to student teaching will not be allowed to begin their student teaching until those requirements are met.

Student teachers can only be placed within an 80-mile radius of the campus within the state of New Mexico.

Undergraduate Student Teaching Expectations
During the senior year, students must keep their last semester free from other responsibilities so that they can fully devote their time to their student teaching responsibilities. Students are expected to follow the public school calendar rather than the university calendar. Student teachers should expect to meet all requirements of the school and school district in which they are working.

Undergraduate Licensure Requirements
In the event that state teacher licensure requirements change, students preparing for licensure to teach should keep abreast of the licensure requirements of the New Mexico Public Education Department. Copies of the rules and regulations governing licensure are available for students in the Office of Teacher Candidate Preparation. College of Education requirements meet or exceed the state licensure requirements. Whenever state licensure requirements are less than College of Education requirements, students must meet the College of Education requirements to receive a degree from or be recommended for licensure by NMSU. The College of Education reserves the right to change its requirements at any time in order to comply with changes in the regulations governing licensure.

Applying for teacher licensure is the responsibility of the student. The New Mexico Public Education Department grants licensure.

The State of New Mexico requires that all candidates for licensure take and pass the state license examination: NMTA Competency or the Pearson NES Profession Knowledge exam. In addition, for elementary education majors the NES: Essential Components of Elementary Reading Instruction is a requirement for licensure. The tests are administered throughout the year and information is available through NES website (http://nestest.com).

Graduate Work
The College of Education offers curricula leading to the degrees of

- Master of Arts,
- Master of Arts in Teaching (p. 463),
- Specialist in Education (p. 463),
- Doctor of Education and
- Doctor of Philosophy in Education.

Those interested in pursuing graduate degrees in education should consult the Graduate Catalog for full information. A copy may be procured by writing the dean of the Graduate School or visiting http://gradschool.nmsu.edu.

Bachelor Degrees
Bachelor of Applied Studies

Majors in:
• Zero to Four Non-Licensure Track (Early Childhood) (p. 463)

Bachelor of Arts in Dance (p. 488)
Bachelor of Science in Athletic Training (p. 488)
Bachelor of Science in Counseling and Community Psychology (p. 461)
Bachelor of Science in Education

Majors in:
• Communication Disorders (p. 508)
• Early Childhood Education (p. 474)
• Elementary Education (p. 463)
• Special Education (p. 508)
• Secondary Education (p. 463) with concentrations in:
  • Science
  • Language Arts
  • Math Education
  • Social Studies

Bachelor of Science in Kinesiology (p. 488)

• Clinical Exercise Science
• Exercise Science
• K-12 Physical Education
• Performance Psychology

Masters Degrees
Master of Arts
• Clinical Mental Health Counseling (p. 460)
• Communication Disorders (p. 508)
• Education (p. 463)
  • Bilingual Education
  • Curriculum and Instruction
  • Early Childhood Education
  • Early Childhood Special Education
  • Educational Learning Technologies
  • Language, Literature and Culture
  • Teaching English to Speakers of Other Languages
• Educational Administration (p. 481)
• Special Education (p. 508)

Master of Arts in Teaching (p. 463)
• Dance
• Math Science and
• Spanish

Specialist in Education:
• School Psychology (p. 455)

Graduate Certificates
Autism Spectrum Disorders (p. 508)

Doctoral Degrees
Doctor of Education
• Curriculum and Instruction (p. 463)
• Educational Administration (p. 481)
• Special Education (p. 508)

Doctor of Philosophy
• Counseling Psychology (p. 455)
• Curriculum and Instruction (p. 463)
• Educational Administration (p. 481)
• Kinesiology (p. 488)
• Special Education (p. 508)

Undergraduate Minors
• Counseling and Educational Psychology (p. 455)
• Dance (p. 488)
• Early Childhood Education (p. 463)
• Educational Leadership and Administration (p. 481)
• Exercise Science (p. 488)

Graduate Minors
• Educational Administration (p. 481)
  • Focus in: Higher Education Administration
  • Focus in: PK-12 School Administration
• Indigenous Ways of Knowing (p. 455)
• Integrated Behavioral Health Care (p. 455)
• Spanish Counseling (p. 455)
• Special Education (p. 508)

Accreditation
The College of Education provides undergraduate students with a broad general education and professional teacher preparation. The university’s teacher preparation program, which involves several colleges and which is directed by the College of Education, was accredited in 1962 by the National Council for the Accreditation of Teacher Education. Also in the College of Education the Communication Disorders master’s program in Speech-Language Pathology is accredited by the American Speech-Language-Hearing Association (CA-A - ASHA), and the undergraduate Athletic Training Degree in Human Performance, Dance and Recreation is accredited by the Commission on Accreditation of Athletic Training Education (CAATE). The undergraduate and graduate programs that prepare individuals for licensure to work in public and private schools in New Mexico have been approved by the New Mexico State Board of Education.

Other programs with national recognition include the Master of Arts (MA) in Clinical Mental Health Counseling, accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP); the Specialist in Education (Ed. S.) in school psychology, accredited by the National Association of School Psychologists (NASP) and the doctoral (Ph. D.) program in counseling psychology accredited by the American Psychological Association (APA). The post-doctoral program in Clinical Psychopharmacology holds APA designation.
Counseling and Educational Psychology

Undergraduate Program Information

The BS in Counseling and Community Psychology (CCP) prepares students to work at the bachelor's level with a focus on case management, interpersonal skills, understanding human behavior, multicultural awareness, awareness of mental health issues and licensure as a substance abuse counselor. The Counseling and Community Psychology undergraduate major prepares students for graduate school in order to become practitioners in the field of psychology with an additional focus on research and graduate psychology practice opportunities.

Graduate Program Information

The major thrust of the Counseling and Educational Psychology (CEP) Department is the preparation of personnel for work in counseling, educational diagnostics, school psychology, counseling psychology and related areas. Three graduate degrees are available:

1. Masters of Arts
2. Specialist in Education
3. Doctor of Philosophy

Departmental Admission Requirements

Admission requirements and procedures are specific to each degree program in the Department of Counseling and Educational Psychology. Applicants must meet the basic admission requirements of the Graduate School before they are considered for admission to CEP graduate programs. To be considered for admission to CEP Graduate Programs, application requirements include, but are not limited to the following:

1. Graduate Record Examination (GRE) scores from within the last 5 years
2. Completion and submission of NMSU on-line graduate application form and fee
3. Receipt of official undergraduate and graduate transcripts of all colleges and universities previously attended by the NMSU Admissions Office
4. Letters of recommendation from three persons familiar with the applicant's academic and/or professional record
5. Curriculum vitae or resume which includes a list of completed upper-division and/or graduate coursework related to counseling, school psychology, counseling psychology or related professions.
6. Letter of intent and/or statement of purpose
7. Interviews are required as a part of the selection process

For more information about the CEP Department, program admission procedures and requirements of degree programs, contact the department office or visit the departmental website.

Degrees for the Department

Counseling and Community Psychology - Bachelor of Science (p. 461)

Clinical Mental Health Counseling - Master of Arts (p. 460)

School Psychology - Specialist in Education (p. 462)

Counseling Psychology - Doctor of Philosophy (p. 462)

Minors for the Department

Counseling and Educational Psychology - Undergraduate Minor (p. 461)

Spanish Counseling - Graduate Minor (p. 463)

Integrated Behavioral Health Care - Graduate Minor (p. 462)

Indigenous Ways of Knowing - Graduate Minor (p. 462)

Associate Professor, Gladys DeNecochea, Interim Department Head

Professors: Adams, Pope-Davis, E. Vázquez, L. Vázquez, Waldo; Associate Professors: Arroyos, Chun, Grayshield; Assistant Professors: Choi, Lopez, Torres-Fernandez, Hitter, Pérez-Rojas; College Professors: Blazina;

G. DeNecochea, Ph.D., Interim-Department Head, (University of California-Santa Barbara)-leadership training, career development, mentoring, multicultural counseling; E. Adams, Ph.D. (Ohio State University)-multiculturalism & diversity, mindfulness, supervision; E. Arroyos, Ph.D. (University of Iowa)-school psychology, traumatic brain injury, mentoring, multicultural competence; C. Blazina, Ph.D. (University of North Texas)-psychology of men and masculinity, human-animal interaction, psychodynamic theory and therapy; N. Choi, Ph.D. (University of Maryland)-racial and cultural factors affecting mental health, Asian and Asian American health and mental health, multicultural issues in supervision and training; H. Chun, Ph.D. (University of Missouri-Columbia)-school psychology, prevention of adolescent mental health and behavior problems, risk and protective factors; D. Pope-Davis, Ph.D. (Stanford University)—multicultural counseling, education and psychology; I. Torres-Fernandez, Ph.D. (University of Iowa)—school psychology, prevention, classroom guidance; L. L. Grayshield, Ph.D. (University of Nevada-Reno)—indigenous culture based methods in counseling & educational psychology; T. Hitter, Ph.D., (New Mexico State University)—counseling psychology, identity and self-concept, sexuality and sexual satisfaction; A. L. Lopez, Ph.D. (University of Texas-San Antonio)—multicultural counseling, social justice, immigration, bilingual counseling/supervision, eating disorders and body image; A. Pérez-Rojas, Ph.D. (University of Maryland)—psychotherapy process and outcome with emphasis on the therapeutic relationship, college student mental health, bilingualism, acculturation, Latino/a mental health, and role of culture in psychotherapy; E. Vázquez, Ph.D. (University of Iowa)—school psychology, assessment, psychoeducational interventions, acculturation, ethnic and linguistic diversity; L. Vázquez, Ph.D. (University of Iowa)—counseling psychology, multicultural curriculum development and counseling, bilingual therapy, acculturation, identity development, and phenotype research.

C EP 110G. Human Growth and Behavior
3 Credits
Introduction to the principles of human growth and development throughout the life span.

C EP 199. Academic Excellence
1 Credit
Academic curriculum of excellence that includes the development of collaborative learning and student success environment, learning diverse learning styles and multiple intelligences, and developing multi-contextual academic communication styles. Students must enroll in course for both Fall and Spring semesters. Course does not count toward CEP minor. May be repeated up to 2 credits.

C EP 210. Educational Psychology
3 Credits
Psychological foundations as they apply to the learner in the classroom setting.
C EP 215. The Preschool Child
3 Credits
Survey of psychological development from conception to age five.

C EP 240. Adolescence in School Settings
3 Credits
Survey of psychological development during the adolescent years.

C EP 298. Exploration of Counseling & Community Psychology
3 Credits
An exploration of careers, activities, & techniques in counseling, school, and community psychology. Course does not count towards CEP minor. May be repeated up to 6 credits.

C EP 299. Academic Excellence Classes
1-6 Credits (1-6)
Academic curriculum of excellence that includes an in-depth understanding of the elements that promote student academic success. Students will develop leadership and presentation skills needed to forge effective student mentor relationships and conduct outreach to campus and local community leaders to cultivate a collaborative learning environment. May be repeated up to 6 credits.

C EP 300V. Human Relations Training
3 Credits
Gain skills, knowledge, and sensitivity for living and working with others.

C EP 320. Sex Roles in Education
3 Credits
Physiological, psychological, and political aspects of sex role socialization and the effects of these factors on personal development.

C EP 400. Introduction of Mindfulness Practice
3 Credits
Students will learn about contemplative practices through learning and participation in various mindfulness practices. Engages students in a practice or experience that leads to reflection and, thus, acquired knowledge about themselves, others, and group functioning.

C EP 451V. Introduction to Counseling
3 Credits
Principles of counseling for nonmajors.

C EP 455. Addictions Prevention and Recovery
3 Credits
Understanding addictions process, prevention, and recovery, including biological, interpersonal and sociological influences, and intervention strategies. Taught with C EP 555.

C EP 461. Family Guidance
3 Credits

Prerequisite(s): C EP 110G.

C EP 495. Psychology, Multiculturalism and Counseling
3 Credits
Understanding social identities such as race, ethnicity, sexual orientation, age, social class and spirituality as it relates to psychosocial development, academic achievement and counseling.

C EP 498. Internship in Counseling & Community Psychology
1-6 Credits (1-6)
Students will explore in more depth the fields of counseling, community, and school psychology professions by completing an internship. Through the completion of the internship students will gain hands on work experience, enhance sensitivity for respect with working with diverse populations, and hone their interpersonal skills needed to succeed in the counseling, community, and school psychology professions. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CCP majors.

C EP 499. Independent Study
1-6 Credits
Individual study directed by consenting faculty.

C EP 503. Introduction to Counseling
3 Credits
Overview of counseling theory, techniques, ethics, and professional issues. Same as C EP 451V. This course is open to all majors.

C EP 505. Appraisal of Psychoeducational Achievement in a Diverse Society
3 Credits
Advanced theory and use of norm and criterion referenced instruments in the classroom: planning of prescriptive and educational programs. Consent of Instructor required.

C EP 511. Introduction to Inferential Statistics
3 Credits
An introduction to the theories and techniques of inferential statistics as applied to education and psychology. Includes sampling distributions, confidence intervals, t-test, correlation, and chi-square. Intended primarily for post-baccalaureate students. Both hand calculation and computer packages will be employed. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: NURS; FCS; and all education majors.

C EP 512. Human Development
3 Credits
Theory and research regarding cognitive, social, and emotional development across the lifespan with emphasis on enhancing human development. This course is open to all majors.

C EP 515. Learning Theory
3 Credits
Survey and comparison of theory and research regarding human learning as they apply to development, education, and counseling. Crosslisted with: C EP 615
Prerequisite(s): C EP 512 or consent of instructor.

C EP 517. Multicultural Counseling
3 Credits
Understanding age, gender, ethnicity, socioeconomic status and culture in relation to human development, education, and counseling. Consent of instructor.

Prerequisite(s)/Corequisite(s): C EP 512 or concurrent enrollment or consent of instructor.

C EP 519. Psychology of Social Identities
3 Credits
Theory, research and practice from feminist and multicultural perspectives will examine the integration of social identities such as gender, sexual orientation, race, ethnicity, age, social class, spirituality, and ability in relation to counseling psychology. Same as C EP 619.

Prerequisite: C EP 512 or concurrent enrollment or consent of instructor.
C EP 520. The Art & Science of Mindfulness
1-3 Credits (1-3)
In this course students will learn about contemplative practices by learning about and participating in various mindfulness practices for self-care and to increase well-being. Students will learn about psychological theories and research that support the use of mindfulness in helping others increase their well-being. Students will learn how to teach mindfulness to others. Taught with C EP 490.

C EP 522. Organization and Administration of School Counseling Services
3 Credits
Procedures for establishing and maintaining counseling programs in the schools. Professional and ethical issues in school counseling and group laboratory experience to enhance self-awareness and interpersonal skills for effective professional relationships. Restricted to majors.
Prerequisite: consent of instructor.

C EP 524. Professional Issues in Mental Health Counseling
3 Credits
History, roles, organizational structures, settings, ethics, standards, laws, and credentialing related to mental health counseling. Group laboratory experience to enhance self-awareness and interpersonal skills for effective professional relationships. Restricted to majors.
Prerequisite: consent of instructor.

C EP 529. Indigenous Counseling Theory and Practice
3 Credits
Students will explore current uses of indigenous modes and methods of counseling and therapy that are theoretically consonant with Indigenous/Native traditions. They will examine the integration of such modes to ensure a progressive reconstruction of the counseling endeavor to include an indigenous epistemology in their work with clients. Taught with C EP 429. This course is open to all majors. Consent of Instructor required.

C EP 532. Research Methods
3 Credits
Develop research and program evaluation including critical literature review, generating questions, quantitative and qualitative methodology, analysis, and writing proposals.

C EP 542. Appraisal Theory and Technique
3 Credits
Selection, administration, and interpretation of tests and other assessment methods. Topics include reliability, validity, norms, cultural factors, and ethics related to appraisal. May be repeated up to 3 credits. Restricted to: C G,CEP,C EP,CMHC majors.
Prerequisite(s): C EP 512 and C EP 517, or consent of instructor.

C EP 547. Appraisal of Cognitive Functioning
3 Credits
Selection, administration, scoring, interpretation, and report writing using individual tests of intelligence. Moderator variables, such as acculturation, ethnic identity development, and world view are also incorporated. Restricted to majors. Taught with C EP 647. Consent of instructor required.
Prerequisite(s): C EP 542 and consent of instructor.

C EP 549. Indigenous Research Methods
3 Credits
Students will gain an understanding of ethical and respectful research practices from an Indigenous/culturally appropriate vantage. They will thoroughly examine the works of Native/Tribal and Indigenous scholarship. Additionally, safeguards for ethical research practices with native populations will be thoroughly examined with regard to intent, practice, and integration of outcome. This course is open to all majors.

3 Credits
Major theories of counseling with an emphasis on development of the ability to offer theory-based counseling and consultation. May be repeated up to 3 credits. Restricted to: SPSY,CEP,C EP,C G,CMHC majors.
Prerequisite(s): C EP 512, or concurrent enrollment.

C EP 551. Diagnosis and Treatment Planning
3 Credits
Appraisal and conceptualization of mental disorders and other problems through diagnostic interviewing using the DSM. Treatment planning for counseling with children, adolescents, and adults. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: SPSY,CEP,C EP,C G,CMHC majors.
Prerequisite(s): C EP 512 or concurrent enrollment, or consent of instructor.

C EP 552. Career/Life Planning and Vocational Assessment
3 Credits
Vocational choice theories, relationship between career choice and life style, sources of occupational and educational information, and approaches to decision making and values clarification. Laboratory involves supervised interpretation of vocational assessment. This course is open to all majors. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

3 Credits
Major theories of counseling with an emphasis on development of the ability to offer theory-based counseling and consultation. May be repeated up to 3 credits. Restricted to: CEP,SPSY,C EP,CMHC majors.
Prerequisite(s): C EP 524, or concurrent enrollment.

C EP 556. Addictions Counseling
3 Credits
Emphasis on alcohol and other psychoactive substance abuse. Also includes eating disorders, gambling, and other addictive behaviors. Covers review of psychopharmacology, assessment, and diagnosis with the major focus on treatment and professional issues. May be repeated up to 3 credits. Restricted to: CEP,C EP,C G,SPSY,CMHC majors.
Prerequisite(s): C EP 550.

C EP 558. Child and Adolescent Counseling Theory and Technique
3 Credits
Counseling theory and technique applied to children and adolescents from a developmental perspective in school and mental health settings. May be repeated up to 3 credits. Restricted to: C G,CEP,C EP,CMHC majors.
Prerequisite(s): C EP 550 or consent of instructor.
C EP 559. Healing Trauma, Including Historical and Intergenerational  
3 Credits  
Students will learn about Trauma to gain a deeper understanding of the socio-political implications of colonization on Native people groups. They will learn about incidents of physical and mental health disparities. Students will thoroughly examine the impact of the current mental health field on Native/Indigenous populations and engage the literature from Native Scholars to problem solve and create new ways to address the challenges that Native people and their communities face as members of mainstream Western society. This course is open to all majors.

C EP 562. Family Therapy Theory and Technique  
3 Credits  
Major theories of family therapy and associated assessment, intervention and evaluation techniques. Restricted to majors. Taught with C EP 662 except for advanced-level materials and experiential activities. Consent of instructor required.  
Prerequisite(s): C EP 550.

C EP 563. Primary Care Psychology  
3 Credits  
Didactic and experiential learning in primary care psychology issues. Through this course students will learn about the cultural necessity of the integration of mental and physical health issues and multidisciplinary collaboration. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: SPSY,CEP,C EP,C G, CMHC majors.

C EP 566. Group Work Theory and Technique  
3 Credits  
Didactic and experiential learning in group theory and practice. Laboratory involves experiences in group participation and leadership. May be repeated up to 3 credits. Restricted to: C G,CEP,C EP,CMHC majors.  
Prerequisite(s): C EP 550, C EP 562 or consent of instructor.

C EP 569. Indigenous Counseling Internship  
1-6 Credits (1-6)  
The primary purpose for this course is to provide students with the opportunity to study and practice under a well-known and recognized indigenous healing practitioner with the primary goal of affirming and activating the holistic paradigm of Indigenous knowledge into their work as practitioners in the helping professions to reveal the wealth and richness of Indigenous languages, worldviews, teachings and experiences. Consent of Instructor required.

C EP 572. Counseling Practicum  
1-6 Credits  
Supervised experience of counseling and consultation. Weekly individual and group supervision involves review of audio, video, and/or live sessions and case presentations. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: C EP 662. Restricted to: C G,CEP,C EP,CMHC majors.  
Prerequisite(s): C EP 550 and consent of instructor.

C EP 578. Advanced Counseling Practicum  
3-6 Credits  
Supervised experience of appraisal and individual, family, and/or group counseling and consultation serving child, adolescent, and/or adult clients. Weekly individual and group supervision involves review of counseling sessions and case presentations. This course will carry a subtitle to reflect the practicum setting. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: C G,CEP,C EP,CMHC majors.  
Prerequisite(s): C EP 572, C EP 566, and consent of instructor.

C EP 579. Clinical Psychopharmacology  
3 Credits  
Basic biological aspects of psychopharmacology with applications to clinical populations and treatment implications. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: C G,SPSY,CEP,C EP,CMHC majors.  
Prerequisite(s): Consent of instructor.

C EP 580. Counseling Internship  
3-12 Credits  
Supervised experience in a professional counselor role in a school or agency. Students perform all counselor functions including appraisal, individual/family/group counseling, consultation, administration, program development, research, and/or evaluation.  
Prerequisite(s): C EP 578.

C EP 598. Special Research Programs  
1-6 Credits  
Individual investigations either analytical or experimental. Maximum of 6 credits per semester and total of 9 credits overall. May be repeated up to 9 credits. Restricted to: CEP,SPSY,C EP,CMHC majors.

C EP 599. Master’s Thesis  
15 Credits  

C EP 607. Curriculum-Based Assessment and Intervention  
3 Credits  
The study and practice of curriculum-based assessment and intervention for academic skills and problems among children and adolescents. Restricted to: SPSY majors.

C EP 608. Diagnostic Class  
3 Credits  
Emphasis on developing the knowledge, skills, and necessary application abilities related to diagnosis and associated interventions related to mental health and psychopathology issues that impact a student’s ability to navigate the education setting.

C EP 612. Human Development  
3 Credits  
Same as C EP 512 with differentiated assignments for Ed.S and Ph.D. students. This course is open to all doctoral majors. Consent of Instructor required.

C EP 616. Spanish for Mental Health Professionals  
3 Credits  
This course emphasizes the vocabulary for Mental Health Professionals to include academic, psychological and medical terminology. Students will incorporate Spanish terms in assessment and treatment plans through role plays. Further, the course will include an overview of the use of interpreters and translators in working with culturally and linguistically diverse clientele.  
Prerequisite(s): Enrolled in Bilingual School Psychology Training Grant with instructor consent.

C EP 619. Psychology of Social Identities  
3 Credits  
Same as C EP 519 with differentiated assignments for Ph.D. students.
C EP 622. Ethical/Professional Issues in Counseling Psychology
3 Credits
History of counseling psychology, scientist-practitioner model, American Psychological Association’s Ethical Principles of Psychologists and Code of Conduct. Focus on current ethical, professional, and scientific issues. Restricted to majors.
Prerequisite: consent of instructor.

3 Credits
History, philosophy, and orientation of school psychology. Roles, technology, credentialing, community resources, school system issues, educational and psychology delivery service models, and current professional issues.

C EP 625. Legal and Ethical Issues in School Psychology
3 Credits
Overview of legal/ethical, and professional standards in school psychology. NASP and APA codes of ethics, NM Mental Health and Children’s codes, and child abuse/neglect laws.
Prerequisite(s): C EP 624.

C EP 630. School Psychology Research and Program Evaluation
3 Credits
Survey and analysis of research and program evaluation procedures in school psychology. Critical review of literature, formulating questions, quantitative and qualitative methodology, and data analysis as foundations for reading research literature and generating research, program evaluation, and/or grant proposals. Consent of Instructor required.

C EP 632. Counseling Psychology Research
3 Credits
Survey and analysis of research and program evaluation procedures in counseling psychology. Critical review of literature, formulating questions, quantitative and qualitative methodology, and data analysis are covered as a foundation for reading research literature and generating research, program evaluation, and/or grant proposals.
Prerequisite: C EP major or consent of instructor.

C EP 634. Introduction to Qualitative Research
3 Credits
This course is intended to be an introduction to qualitative research methods for persons wishing to understand, apply, and conduct qualitative studies with human subjects in the fields of counseling and psychology. This course is open to all doctoral majors. Consent of Instructor required.

3 Credits
An intermediate course focusing on more advanced theories and techniques of inferential statistics as applied to education and psychology. Includes ANOVA, planned contrasts, ANCOVA, simple regression, and non-parametrics. Both hand calculation and computer packages will be employed.
Prerequisite(s): C EP 511 or equivalent course work.

C EP 637. Multivariate Statistics
3 Credits
Theories and techniques of multivariate statistics as applied to education and psychology. Includes multiple regression, logistic regression, MANOVA, factor analysis, and structural equation modeling. Computer packages will be the primary tool for data analysis.
Prerequisite(s): C EP 636 or equivalent course work.

C EP 647. Appraisal of Cognitive Functioning
3 Credits
Taught with C EP 547 with differentiated assignments for doctoral students.

C EP 648. Appraisal of Personality
3 Credits
Selection, administration, scoring, interpretation, and report writing using major objective and projective tests of personality.

C EP 649. Behavioral Assessment & Intervention
3 Credits
The course introduces basic concepts, methods, and applications of behavioral assessment and intervention. Students will learn how to conduct functional assessments of behavior and how to write behavior intervention plans. Methods appropriate for assessment and intervention of school-age children will be emphasized. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: SPYSY majors.

C EP 651. Diagnosis and Treatment Planning
3 Credits
Restricted to majors. Same as C EP 551 with differentiated assignments for Ph.D. students.
Prerequisite: C EP 612 or consent of instructor.

C EP 652. Career/Life Planning and Vocational Assessment
3 Credits
Same as C EP 552 with differentiated assignments for Ed.S and Ph.D. students. This course is open to all doctoral majors.

3 Credits
Same as C EP 558 with differentiated assignments for Ph.D. students. Consent of Instructor required.
Prerequisite(s): C EP 550 or consent of instructor.

C EP 662. Family Therapy Theory and Technique
3 Credits
Prerequisite(s): C EP 550.

C EP 670. Behavioral Health Practicum
1-6 Credits
An intensive supervised experience in providing behavioral health services at an on or off campus interdisciplinary health setting. Supervision provided by doctoral level psychologist faculty in collaboration with other team disciplines’ supervising faculty involves audio, video, and/or live observation of counseling sessions and team interventions and case presentations. Graded: S/U.

C EP 671. Consultation
3 Credits
Didactic and experimental trainings in theory-based consultation. Supervision provided by faculty involves audio, video, and/or live observation consultation activities and case presentations. Restricted to majors.
Prerequisites: C EP 672, C EP 675, or C EP 678; and consent of instructor.

C EP 672. Practicum in School Psychology: Psychoeducational
1-6 Credits
Supervised practicum in psychological and educational evaluation. Skill development in ecological assessment, including interviewing, observations micro-counseling, acculturation, world view, and ethnic identity formation. Graded: S/U.
Prerequisite(s): C EP 647, C EP 505 and consent of instructor.
C EP 673. Counseling Psychology Theory/Practicum
1-6 Credits
Theories of counseling and psychotherapy and their application during supervised counseling with clients. Supervision provided by doctoral psychologist faculty involves audio, video, and/or live observation of counseling sessions and case presentations. Restricted to majors.
Prerequisite: consent of instructor.

C EP 675. Practicum in School Psychology: Psychological
1-6 Credits
School-based supervised experience for the advanced student. Provides experiences in various roles and models of service delivery (group, multifaceted, integrative, family assessments) expected of school psychologists. Restricted to majors. S/U grading option only.
Prerequisites: C EP 672 and consent of instructor.

C EP 676. Field Experience in Educational Diagnostics
1-6 Credits (1-6)
C EP 676 is designed to provide students with supervised school-based experiences and practices. The goal of the course is for students to master the competencies required for the delivery of academic services in the educational diagnostician role. The specific emphases in this course are placed on a data-based decision-making skills, psychoeducational assessment activities, and academic interventions. Under faculty and school-system staff supervisions, students will assume service delivery responsibilities and with increasing independence will respond to the diagnostic and intervention needs of students. Restricted to C EP Masters, C EP Ph D majors. S/U Grading (S/ U, Audit).

C EP 677. Group Work Theory/Practicum
1-6 Credits
Application of theory in group work with clients and in supervising group leaders in training. Supervision provided by doctoral psychologist faculty involves audio, video, and/or live observation of counseling sessions and case presentations. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CEP, C EP majors.
Prerequisite(s): C EP 673.

C EP 678. Advanced Counseling Psychology Practicum
1-6 Credits
Supervised counseling psychology experience including appraisal, diagnosis, case conceptualization, treatment planning, theory-based counseling and evaluation. Supervision provided by doctoral psychologist faculty involves audio, video, and/or live observation of counseling sessions and case presentations. Graded: S/U.
Prerequisite(s): C EP 677.

C EP 679. Supervision Theory and Practicum
1-6 Credits
Didactic and experimental training in theory-based supervision. Supervision provided by doctoral psychologist faculty involves audio, video, and/or live observation of supervision sessions and case presentations. May be repeated for a maximum of 6 credits. Restricted to majors.
Prerequisites: C EP 675 or C EP 678; and consent of instructor.

C EP 680. Internship in Counseling Psychology I
1-18 Credits
Full-time equivalent of one-half calendar year of internship preferably in an APA-approved or APA-equivalent site. Available to Ph.D. students who have successfully completed their comprehensive exams. May be repeated for a maximum of 18 credits.
Prerequisite: consent of instructor.

C EP 684. Internship in School Psychology
1-12 Credits (1-12)
Supervised experience in school psychology. May be repeated for a maximum of 12 credits. Consent of instructor required. Graded: S/U. Restricted to School Psychology (SPSY) majors.
Prerequisite(s): C EP 672, C EP 675.

3 Credits
Same as EMD, EDUC, SPED 693.

C EP 698. Selected Topics
1-6 Credits
Offered under various subtitles which indicate the subject matter covered. A maximum of 6 credits in any one semester and a total of 18 credits overall. Restricted to C EP majors.

1-15 Credits
Study and research at the Specialist in Education level. Each problem to be designated by a qualifying subtitle. Restricted to majors.

C EP 700. Doctoral Dissertation
15 Credits
Dissertation. Restricted to majors.

Name: Brenda Moore, Administrative Assistant
Office Location: O'Donnell Hall, Suite 222
Phone: (575) 646-2121
Website: http://cep.nmsu.edu

Clinical Mental Health Counseling-Master of Arts

The CEP department offers a Clinical Mental Health Counseling program which leads to a Masters of Arts degree (M.A.). The program is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). It prepares professional counselors to perform mental health counseling in agencies, hospitals, private practice and schools. Successful completion of the Clinical Mental Health Counseling program qualifies students to pursue licensure as clinical mental health counselors with the New Mexico Counseling and Therapy Practice Board and licensure as school counselors with the New Mexico Department of Education. The 60-credit counseling curriculum requires two years full-time study or three years part time study on campus, and covers the following areas: human development, appraisal; diagnosis; treatment planning; individual, family and group counseling; consultation; career/life planning; addictions; research; and professional issues. Specialized training and supervised experience is offered in mental health agencies, hospitals, and in schools.

Annual application deadline: February 1
# Counseling and Community Psychology - Bachelor of Science

**Minimum Upper Division Required (300+)=48 credits**

## Degree Requirements

### General Education Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>39</td>
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</table>

### Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C EP 110G</td>
<td>Human Growth and Behavior</td>
<td>3</td>
</tr>
<tr>
<td>PSY 201G</td>
<td>Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 120G</td>
<td>Introduction to Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 125G</td>
<td>Introduction to World Cultures</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 201G</td>
<td>Introduction to Archaeology and Physical Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 202G</td>
<td>Introduction to Language and Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ECON 201G</td>
<td>Introduction to Economics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 112G</td>
<td>World Regional Geography</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 120G</td>
<td>Culture and Environment</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 100G</td>
<td>American National Government</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 110G</td>
<td>Introduction to Political Science</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 150G</td>
<td>American Political Issues</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 160G</td>
<td>International Political Issues</td>
<td>3</td>
</tr>
<tr>
<td>SOC 101G</td>
<td>Introductory Sociology</td>
<td>3</td>
</tr>
<tr>
<td>SOC 201G</td>
<td>Contemporary Social Problems</td>
<td>3</td>
</tr>
<tr>
<td>W S 201G</td>
<td>Introduction to Women’s Studies</td>
<td>3</td>
</tr>
<tr>
<td>W S 202G</td>
<td>Representing Women Across Cultures</td>
<td>3</td>
</tr>
</tbody>
</table>

### Viewing a Wider World

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCS 449V</td>
<td>Family Ethnicities and Subcultures</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>39</td>
<td></td>
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</tbody>
</table>

### General Electives

Select sufficient electives to meet 120 minimum credit hours for the Bachelor degree (minimum of 24 credits required).

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCSC 400</td>
<td>Research Methods in Family and Consumer Sciences or PSY 310</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 120

1. C EP 300V Human Relations Training and C EP 451V Introduction to Counseling may not be used as a VWW.

2. General electives are selected from required electives options.

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# Counseling and Educational Psychology - Undergraduate Minor

A minor in Counseling and Educational Psychology (CEP) is available to the student receiving a bachelor’s degree from another department in the university. The minor in CEP is designed to be useful to the undergraduate who is preparing to enter one of the helping professions such as psychology, education, social work, criminal justice or nursing. A total of 18 credits is required to obtain the CEP minor, of which, at least 9 credits must be at 300 level or above. Contact the CEP office for more information on the minor application process.

The Department of Counseling and Educational Psychology offers three graduate programs leading to the degrees of Master of Arts, Specialist in Education, and Doctor of Philosophy. Students must be admitted by the department into a graduate program to earn a degree in:

- Clinical Mental Health Counseling (M.A.)
- School Psychology (Ed.S.)
- Counseling Psychology (Ph.D.)

Students interested in earning graduate degrees should consult the Graduate School Catalog for requirements and contact the CEP department for information on admissions and application requirements.

### Requirements

Select 18 credits of C EP electives from the following, with at least 9 credits of upper division (300 and above):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C EP 110G</td>
<td>Human Growth and Behavior</td>
<td>3</td>
</tr>
<tr>
<td>C EP 210</td>
<td>Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>C EP 215</td>
<td>The Preschool Child</td>
<td>3</td>
</tr>
<tr>
<td>C EP 240</td>
<td>Adolescence in School Settings</td>
<td>3</td>
</tr>
<tr>
<td>C EP 298</td>
<td>Exploration of Counseling &amp; Community Psychology</td>
<td>3</td>
</tr>
<tr>
<td>C EP 300V</td>
<td>Human Relations Training</td>
<td>3</td>
</tr>
<tr>
<td>C EP 320</td>
<td>Sex Roles in Education</td>
<td>3</td>
</tr>
<tr>
<td>C EP 420</td>
<td>Introduction of Mindfulness Practice</td>
<td>3</td>
</tr>
<tr>
<td>C EP 455</td>
<td>Addictions Prevention and Recovery</td>
<td>3</td>
</tr>
<tr>
<td>C EP 461</td>
<td>Family Guidance</td>
<td>3</td>
</tr>
<tr>
<td>C EP 495</td>
<td>Psychology, Multiculturalism and Counseling</td>
<td>3</td>
</tr>
<tr>
<td>C EP 498</td>
<td>Internship in Counseling &amp; Community Psychology</td>
<td>6</td>
</tr>
<tr>
<td>C J 416</td>
<td>Global Perspectives on Youth and Drug Use</td>
<td>3</td>
</tr>
<tr>
<td>FCS 383</td>
<td>Parenting and Child Guidance</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 223G</td>
<td>Ethics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 18
Counseling Psychology - Doctor of Philosophy

The CEP Department offers a doctoral Counseling Psychology program that leads to a Ph.D. in Counseling Psychology. The program is accredited by the American Psychological Association. For more information on this accreditation contact

The Office of Program Consultation and Accreditation
American Psychological Association
750 1st Street, NE
Washington, DC 20002
Phone: (202) 336-5979.

The program is based on the scientist-practitioner model through which both research and service delivery skills are acquired. Graduates of the program are prepared to conduct research, provide service, teach and supervise. The program prepares students for licensure as psychologists. The three goals of the program are to

1. Produce well-trained generalists in applied psychology capable of competently utilizing a wide variety of assessments, modalities and types of interventions and in disseminating psychological information.
2. Nurture active learners and critical/scientific thinkers capable of integrative thinking, application of theory, hypothesis generation and self-reflection.
3. To develop in students a contextual understanding of psychology and the environments in which they work and live so as to produce culturally-responsive, developmentally-aware and strengths-based psychology professionals.

Annual application deadline: December 15

Program Requirements

CEP faculty conduct periodic reviews of students’ progress in the programs, including their academic performance, counseling and psychoeducational skills, professionalism and ethics. Deficits identified through faculty reviews may result in recommendations that students engage in remedial work or that they pursue alternative career goals. For more information about the CEP Department and programs visit our website: http://cep.nmsu.edu.

Indigenous Ways of Knowing - Graduate Minor

The minor in Indigenous Ways of Knowing (IWOK), offered through the Counseling and Educational Psychology (CEP) department, is open to graduate students enrolled in CEP programs Clinical Mental Health Counseling, School Psychology, Counseling Psychology and to graduate students who are enrolled in Social Work, Public Health, Nursing and Marriage and Family Therapy programs.

It was established in the interest of meeting the needs of graduate students in the health professions who are receiving, or seeking training in, interdisciplinatory or interprofessional collaborations with other healthcare disciplines. The provision of integrated behavioral health services fits within the university’s broader goal of meeting the needs of the citizens of New Mexico and the department’s commitment to graduating competent service providers who can be effective members of a healthcare team.

Students will successfully complete 9 credits of coursework specific to this program of study in order to obtain a minor in Indigenous Ways of Knowing. For application and coursework details, please contact the CEP department office or visit the departmental website at https://cep.nmsu.edu.

Integrated Behavioral Health Care - Graduate Minor

The Minor in Integrated Behavioral Health Care, offered through the Counseling and Educational Psychology (CEP) department, is open to graduate students enrolled in CEP programs Clinical Mental Health Counseling, School Psychology, Counseling Psychology and to graduate students who are enrolled in Social Work, Public Health, Nursing and Marriage and Family Therapy programs.

Through the courses in this minor students develop knowledge and skills in the following areas:

1. Apply the biopsychosocial model of health and illness with primary care patients,
2. Apply knowledge regarding the mind-body connection to address such issues as stress management, emotion regulation and sleep medicine,
3. Apply culturally responsive behavioral assessment/interventions,
4. Demonstrate behavioral health consultation skills with other health care providers, and
5. Develop interprofessional collaboration skills that include understanding the roles of all healthcare professionals and learning how to communicate effectively in order to engage in service delivery as a team.

School Psychology - Specialist in Education

The CEP Department offers a School Psychology program that leads to a Specialist in Education (Ed. S.) degree. The program is accredited through the National Association of School Psychologists. The program provides additional education beyond the M.A. to prepare professionals for licensure as school psychologists in New Mexico and throughout the United States. The School Psychology program prepares its candidates to work with preschoolers, children, adolescents and families. The various settings where School Psychologists are employed include public schools and other organizations that require advanced assessment, counseling, consultation and other interventions. The program trains its candidates to serve students with diverse educational, psychological and emotional needs from various backgrounds. Such training also includes working with all school personnel to help make education a positive and rewarding experience for their students. Students admitted
to the School Psychology program also have the opportunity to achieve a Masters degree in Counseling and Guidance with a concentration in Educational Diagnostics on the way to obtaining the specialist degree. Students would need to complete additional curricular, field experiences and degree requirements.

Annual application deadline: January 15

Spanish Counseling - Graduate Minor

The Minor in Spanish Counseling, offered through the Counseling and Educational Psychology department is open to graduate students who are enrolled in CEP graduate programs including Clinical Mental Health Counseling, School Psychology, Counseling Psychology and also to graduate students who are enrolled in Social Work and Marriage and Family Therapy programs. It was established in the interest of meeting the needs of bilingual counseling students who seek training in the provision of Spanish language mental health services.

Students will successfully complete 9 credits of coursework specific to this program of study in order to obtain a Minor in Spanish Counseling. Courses will be taught by culturally competent faculty, adjunct professors, or community mental health professionals in the aforementioned disciplines. Students will choose one course from each of the following components:

1. Counseling language development
2. Clinical experiences

Students must currently be enrolled in a Mental Health program as described above. They must demonstrate intermediate level Spanish language skills as evidenced by the Spanish Placement Exam and an oral interview with the program coordinator. Advanced level in Spanish counseling skills is required for the completion of the Minor. If a student feels that he/she needs to improve his/her level of academic Spanish prior to completing the required coursework, or if the program coordinator determines that it is necessary, the student has the option of taking additional Spanish courses through the Languages and Linguistics department (e.g. SPAN 312 Grammar for Heritage/Native Speakers of Spanish, SPAN 313 Spanish Grammar, SPAN 314 Spanish Composition, and SPAN 315 Composition for Heritage/Native Speakers of Spanish). Students will be required to take Spanish language courses until they have satisfied this requirement. Please note that online courses will not fulfill this requirement. For application and coursework details, please contact the CEP department office or visit the departmental website at https://cep.nmsu.edu.

Curriculum and Instruction

Undergraduate Program Information

Professional Education Courses

All students will take a course in developmental psychology. Field experiences will be interwoven throughout most courses. All students, during their program will complete at least three Extended Field Experiences.

Required of All Students Seeking Elementary, Secondary Licensure or Early Childhood

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>C EP 210</td>
<td>Educational Psychology ¹</td>
<td>3</td>
</tr>
<tr>
<td>EDLT 368</td>
<td>Integrating Technology with Teaching</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 103</td>
<td>Internship in Bilingual Education/ESL ¹</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 315</td>
<td>Multicultural Education</td>
<td>3</td>
</tr>
<tr>
<td>SPED 350</td>
<td>Introduction to Special Education in a Diverse Society</td>
<td>3</td>
</tr>
</tbody>
</table>

¹ Early Childhood majors do not take the identified courses.

Students seeking teacher licensure must meet all Teacher Education Program requirements. Those requirements include a GPA of 2.5 for undergraduates and 3.0 for graduate students seeking a MA plus licensure, passing scores on basic and general portions of the NES Teacher Exam, and satisfying the requirements for the academic teaching field. Each student must possess the academic ability, character and attitude suitable for teaching. Students who, in the professional judgment of the faculty and staff, do not possess these qualifications may be examined by a Selective Review Committee. The committee may recommend a variety of actions, ranging from remedial procedures to withdrawal from the Teacher Education Program.

Competitive Admission Process for Teacher Licensure

Applicants who successfully meet the minimum requirements for admission will be reviewed by the Teacher Education Program admission committee. The admission committee will base admission decisions on applicants' academic qualifications, basic skills test scores, written communication, faculty recommendations for the student, dispositions and the student's portfolio.

Applicants should be aware that admission to the Teacher Education Program is competitive and is based upon available faculty resources. Posted GPA and basic skills test scores are the minimum necessary to be considered for admission to the Teacher Education Program and do not ensure admittance into programs. Applicants are encouraged to develop a strong student portfolio, achieve the highest GPA possible and present a professional portfolio.

Graduate Program Information

The Department of Curriculum and Instruction is devoted to the preparation of master educators for public, private and governmental institutions. Graduates are prepared to serve as directors of instruction and curriculum, subject matter specialists, supervisors of student teaching and college professors of curriculum and instruction.

Five degree programs are available:

1. Master of Arts (in education),
2. Master of Arts in Teaching,
3. Specialist in Education,
4. Doctor of Education in curriculum and instruction, and
5. Doctor of Philosophy in curriculum and instruction.

The Master of Arts requires a concentration in curriculum and instruction. Six areas of concentration are offered:

1. curriculum and instruction,
2. bilingual education,
3. early childhood education,
4. educational learning technologies,
5. language, literary & culture, reading, and
6. TESOL.

Coursework may be taken in elementary education, secondary education, TESOL, curriculum development, instructional techniques, instructional technology, advanced methodology, multicultural education and teaching fields or endorsement areas.

At the master's degree level, non-thesis option, the department requires a final examination. This written examination is administered once each semester (fall, spring, and summer II). Detailed information about the written exam is available in the Master's Handbook (http://https://ci.nmsu.edu/programs/graduate-programs/candi-handbooks/) and on the departmental webpage (http://ci.nmsu.edu).

The Ph.D. and Ed. D have a theoretical-research orientation. Every doctoral student (Ph.D. and Ed.D.) is required to take a 12-credit research block that includes EDUC 613 Evaluation of Quantitative Research in Education and EDUC 576 Qualitative Research. Furthermore, students enrolled in the Ph.D. program must complete 6 credits in either computer tools courses or the foreign language sequence.

A master's degree, a cumulative GPA of 3.0 or better in graduate work, and three years of teaching experience or the equivalent are required for admission to doctoral programs in curriculum and instruction. Applicants should be aware that admission to the doctoral program is competitive and based on available departmental resources and available faculty resources and interest.

Doctoral-level qualifying exams are held during the spring semester.

Particulars with regard to procedural requirements relating to the degree are available by visiting the departmental website: https://ci.nmsu.edu/programs/graduate-programs/candi-handbooks/.

**General Admission to Graduate Programs**

The Department of Curriculum and Instruction requires graduate students who have completed 9 credits under the "undeclared" category in the Graduate School and/or nondegree status in the College of Health and Social Services to be admitted into a graduate degree program either in Curriculum and Instruction or any other graduate department in the College of Education. The department will dis-enroll any student who has not been admitted into a graduate degree program (after completing 9 credits) and additionally, will not allow them to enroll or attend in other Curriculum and Instruction coursework.

**Degrees for the Department**

**Early Childhood - Bachelor of Science in Education (p. 474)**

**Elementary Education - Bachelor of Science in Education (p. 476)**

**Secondary Education - Bachelor of Science in Education (p. 477)**

**Education - Master of Arts (p. 475)**

**Education - Master of Arts in Teaching (p. 476)**

**Curriculum and Instruction - Doctor of Education (p. 472)**

**Curriculum and Instruction - Doctor of Philosophy (p. 473)**

**Minors for the Department**

**Early Childhood Education - Undergraduate Minor (p. 475)**

**Associate Professors, Elizabeth Cahill and David Rutledge, interim Co-Department Heads**

**Directors:** B. Araujo, Elementary Education; Secondary Education; B. Cahill, Interim Co-Department Head/Early Childhood; D. Rutledge Interim Co-Department Head/Graduate Studies

**Professors** Baptiste, Haynes Writer, A. Hernandez, Torres, Wiburg; **Associate Professors** Araujo, Cahill, Charles-Huerta, Orelus, Reyes, Rutledge, Salazar Perez; **Assistant Professors** Engledowl, Fahrenbruck, Flores Carmona, Cibilis, C. Hernandez, Koeun Kim, Lucero, Marlett, Pando, Parra, Woodley; **College Instructors** Bagwell


**ECED 115. Child Growth, Development, and Learning**

**3 Credits**

This basic course in the growth, development, and learning of young children, prenatal through age eight, provides students with the theoretical foundation for becoming competent early childhood professionals.

**ECED 125. Health, Safety, and Nutrition**

**2 Credits**

This course provides information related to standards and practices that promote children's physical and mental well being sound nutritional practices, and maintenance of safe learning environments.

**ECED 135. Family and Community Collaboration**

**3 Credits**

This beginning course examines the involvement of families and communities from diverse cultural and linguistic backgrounds in early childhood programs. Ways to establishes collaborative relationships with families in early childhood settings is discussed. **Prerequisite(s):** ECED 115 and ENGL 111G.
ECED 215. Curriculum Development Through Play
3 Credits
The beginning curriculum course places play at the center of curriculum in developmentally appropriate early childhood programs. It addresses content that is relevant for children birth through age four and developmentally and culturally sensitive ways of integrating content into teaching and learning experiences. Information on adapting content areas to meet the needs of children with diverse abilities and the development of IFSP’s and IEP’s is included. Consent of instructor required.
Prerequisite(s): ECED 115 and ENGL 111G.
Corequisite(s): ECED 220.

ECED 220. Early Childhood Education Practicum I
2 Credits
The beginning practicum course will provide experiences that address curriculum content that is relevant for children birth through age four in developmentally and culturally sensitive ways. Consent of instructor required.
Prerequisite(s): ECED 115 and ENGL 111G.
Corequisite(s): ECED 215.

ECED 225. Curriculum Development and Implementation II
3 Credits
The second curriculum course focuses on developmentally appropriate curriculum content in early childhood programs, age 3 through third grade. Development and implementation of curriculum in all content areas, including literacy, numeracy, the arts, health and emotional wellness, science, motor and social skills, is emphasized. Information on adapting content areas to meet the needs of children with diverse abilities and the development of IEP’s is included. Consent of instructor required.
Prerequisite(s): ECED 115, ENGL 111G.
Corequisite(s): ECED 235.

ECED 230. Early Childhood Education Practicum II
2 Credits
The second field-based curriculum course focuses on practicing developmentally appropriate curriculum content in early childhood programs, age 3 through third grade. Consent of instructor required.
Prerequisite(s): ECED 225.
Corequisite(s): ECED 235.

ECED 235. Introduction to Language, Literacy and Reading
3 Credits
This course is designed to prepare early childhood professionals for promoting children’s emergent literacy and reading development. Through a developmental approach, the course addresses ways in which early childhood professionals can foster young children’s oral language development, phonemic awareness, and literacy problem solving skills, fluency, vocabulary, and comprehension.
Prerequisite(s): ECED 115 and ENGL 111G.

ECED 245. Professionalism
2 Credits
This course provides a broad-based orientation to the field of early care and education. Early childhood history, philosophy, ethics and advocacy are introduced. Basic principles of early childhood systems are explored. Multiple perspectives on early care and education are introduced. Professional responsibilities such as cultural responsiveness and reflective practice are examined.

ECED 245. Professionalism
2 Credits
This course provides a broad-based orientation to the field of early care and education. Early childhood history, philosophy, ethics and advocacy are introduced. Basic principles of early childhood systems are explored. Multiple perspectives on early care and education are introduced. Professional responsibilities such as cultural responsiveness and reflective practice are examined.

ECED 255. Assessment of Children and Evaluation of Programs
3 Credits
This basic course familiarizes students with a variety of culturally appropriate assessment methods and instruments, including systematic observation of typically and non-typically developing children. Crosslisted with: SPED 255
Prerequisite(s): ECED 115 and ENGL 111G.

ECED 265. Guiding Young Children
3 Credits
This course explores various theories of child guidance and the practical applications of each. It provides developmentally appropriate methods for guiding children and effective strategies and suggestions for facilitating positive social interactions. Strategies for preventing challenging behaviors through the use of environment, routines and schedule will be presented.

ECED 270. Program Management
3 Credits
Technical knowledge necessary to develop and maintain a quality early care and education program. The course will focus on sound financial management and vision, laws and legal issues that affect programs and state and national standards including accreditation requirements.
Prerequisite: consent of instructor.

ECED 275. Curriculum for Diverse Learners and Their Families
3 Credits
Implementation of family-centered programming that includes developmentally appropriate and culturally responsive curriculum. The course will also cover the establishment and maintenance of healthy and safe learning environments. Consent of instructor required.

ECED 276. Effective Program Development for Diverse Learners and Their Families
2 Credits
Practical experience in observing and carrying out the role of the director/administrator in the implementation of family-centered programming that includes individually appropriate and culturally responsive curriculum in a healthy and safe learning environment. Consent of instructor required. Restricted to ECED majors.
Corequisite(s): ECED 275.

ECED 280. Professional Relationships
3 Credits
Development of staff relationships that will foster strong professional relationships with and among families, communities and advisory boards. Issues of staff recruitment, retention, support and supervision will lay a foundation for positive personnel management. Working effectively with board, advisory groups and community members and agencies will be addressed. Consent of instructor required.
Corequisite(s): ECED 280.

ECED 281. Professional Relationships Practicum
2 Credits
Practical experience in the development of staff relationship that will foster professional relationships with families, communities and boards. Issues of staff recruitment, retention, support and supervision will lay a foundation for positive personnel management. Consent of instructor required. Restricted to ECED majors.
Corequisite(s): ECED 280.
ECED 315. Research in Child, Growth, Development and Learning
3 Credits
This advanced course in child growth, development, and learning builds upon the foundational material covered in the basic course in child growth, development, and learning. An integration of major theories of child development is provided by focusing on contemporary research in all aspects of development, including bio-ecological, social-affective, cognitive, language, and the methodological aspects of research in early childhood development and education.
Prerequisite(s): ECED 115.

ECED 329. Early Primary Field Placement
2 Credits
The field practicum is a co-requisite course with Teaching and Learning Reading and Writing; Teaching and Learning Math and Science; Teaching and Learning Social Studies, Fine Arts and Movement. The field based component will provide experiences that address curriculum content and practice teaching that is relevant for early primary children in developmentally and culturally sensitive ways. Graded: S/U.
Corequisite(s): ECED 440, ECED 445, RDG 350.

ECED 335. Family, Language and Cultural
3 Credits
This course analyzes the interrelationships between family, language, and culture as connected to children's development and learning. In this course, language is understood as a human activity and higher mental process which build on the children's families, community and cultural background.
Prerequisite(s): ECED 135.

ECED 351. Emergent Literacy
3 Credits (2+2P)
This advanced course is designed to prepare early childhood professionals to study literacy development, specifically oral language, writing and reading. This course focuses on children from birth through age 4, including children with special needs. Through a developmental approach, the course addresses: 1) recent theory and research that translates into practical strategies, assessment materials and preparation of rich literacy environments; 2) the socio-cultural contexts in which children develop literacy; 3) culturally, linguistically and developmentally appropriate literacy curricula; 4) processes used to determine the appropriateness of various literacy strategies; 5) assessment, evaluation, and accountability and 5) literacy leadership. Crosslisted with: RDG 351.
Prerequisite(s): ECED 235.

ECED 395. Special Topics
1-3 Credits
Each course will be identified by a qualifying subtitle. A maximum of 3 credits in any one semester and a grand total of 6 credits.

ECED 420. Integrated Early Childhood Curriculum
4 Credits
This advanced course focuses on developmentally appropriate content, learning environments, and curriculum implementation for children birth through age 4. It emphasizes integration of content areas (the arts, literacy, math, health/emotional wellness, science, social studies, motor, and adaptive living skills) and the development of rich learning environments for infants, toddlers, and preschool children.
Prerequisite(s): ECED 125, ECED 215, ECED 220, ECED 225, ECED 230, ECED 245, and ECED 265.
Corequisite(s): ECED 425.

ECED 425. Integrated Curriculum Practicum
2 Credits
The advanced practicum course is a field based course that will provide opportunities for the integration of content areas (the arts, literacy, math, health/emotional wellness, science, social studies, motor, and adaptive living skills) and the development of rich learning environments for infants, toddlers, and preschool children.
Prerequisite(s): ECED 125, ECED 215, ECED 220, ECED 225, ECED 230, ECED 245, ECED 265.
Corequisite(s): ECED 420.

ECED 440. Teaching and Learning Math and Science
4 Credits (2+4P)
Standards, principles, and practices in teaching mathematics and science to young children in preschool through grade 3. An emphasis is placed on developing a content-rich integrated math and science curriculum that focuses on children's development and interests, includes appropriate content, processes, environment, and materials with an emphasis on problem-solving as the major means of constructing basic concepts. Field experience required.

ECED 443. Assessment of Children and Evaluation of Programs
3 Credits
Advanced course builds on understanding the connections among learning, teaching, and assessment and strategies for evaluating programs. Assessment, identification, and monitoring of typical and atypical development in the cognitive, motor, affective and social domains. Multiple and diverse assessment approaches, including responsiveness to cultural and linguistic differences will be emphasized. Builds upon indicators of competence established at the lower division (AA) level. For each course objective (core competency) students will demonstrate the indicators established for the bachelor's level.

ECED 452. Teaching Language Minority Children in Early Childhood Settings
3 Credits
Framework and strategies for the educational development of young language-minority children.

ECED 455. Teaching and Learning Social Studies, Fine Arts and Movement
3 Credits (2+2P)
The course focuses on the aims, scope, and integration of methods of teaching social studies, the fine arts and movement across the curriculum. This course emphasizes an integrated approach to teaching the what and why of social studies; assessing student learning; planning units, lessons, and activities; effective instructional strategies; and knowledge of social studies content. Concepts of expressive art include the visual arts, music, movement and drama.
Corequisite(s): ECED 440, ECED 329, RDG 350.

ECED 458. Field Experience (Infants Pre-K)
1 Credit
Supervised field experiences in early childhood settings: infants, toddlers, and pre-K programs. Graded S/U.

ECED 459. Field Experience (K-3)
1 Credit
ECED 465. Advanced Caregiving for Infants and Toddlers
3 Credits
The advanced field-based course is intended to assist students to define and implement advanced elements of quality programming for all infants, toddlers in safe, healthy, responsive caring environments. The experiences in the approved setting will support strong nurturing relationships, cultural competence, diverse learning needs and styles of every child, appropriate guidance techniques and partnership with the families, cultures, and community represented. Students are assisted through the course in advancing their ability to observe, discuss, and implement elements of quality programming for infants and toddlers in home, small-group or whole-group care situations. Crosslisted with: SPED 465

ECED 470. Student Teaching/Seminar
6 Credits
Provides student teaching experience in a variety of settings with young children ages birth 8.

ECED 479. Curriculum in Early Childhood Education
3 Credits
Development and implementation of curriculum and materials for teaching young children.

ECED 489. Topics
3 Credits
Offered under various subtitles which indicate the subject matter to be covered. May be repeated three times for a maximum of 9 credits.

ECED 510. Issues in Early Childhood Education
3 Credits
Examines current trends and problems through readings of theoretical, empirical, and applied literature.

ECED 515. Working with Parents of Young Children
3 Credits
Techniques for setting up home and classroom visitations, communicating with parents, and establishing special programs.

ECED 520. Seminar on Cognitive and Social Development
3 Credits
In-depth study of developmental theories: Piaget, Kohlberg, Bruner, and Erikson. Implications for development of preschool programs and teaching techniques.

ECED 530. Leadership and Advocacy in Early Childhood
3 Credits
The course explores a multidisciplinary approach to early childhood educational leadership, advocacy and change. The course focuses on leadership in its many forms: in teaching, administration, policy, research, and ethics. In addition, we will examine the theory and practice of change to gain an understanding of what contributes to advocating for policy and community change. Students will gain a deeper understanding of themselves as leaders, and ways to improve early education to promote social justice in programs and systems serving families and young children.

ECED 570. Play in the Early Childhood Curriculum
3 Credits
Advanced exploration of the development of curriculum based on children's play. A means of exploring and learning the patterns of human living, communications, and experiences congruous with developing interests and capacities. Restricted to majors. Same as ECED 451 with differentiated assignments for graduate students.

ECED 612. History and Philosophy of Early Childhood Education
3 Credits
Critical analysis of the historical development and philosophical underpinnings of the field of early childhood education as it relates to current practice. Restricted to doctoral-level students of any major.

ECED 614. Early Childhood, Communities, and Social Policy
3 Credits
Early childhood politics and policy taken from a global, national, state, and community context. Restricted to doctoral-level students of any major.

ECED 633. Praxis and Reflexivity
3 Credits
Same as BIL 633, EDUC 633, RDG 633, EDLT 633.

ECED 698. Selected Topics in Early Childhood Education
1-6 Credits
Offered under various subtitles. May be repeated for a maximum of 6 credits. Restricted to doctoral-level students of any major.

EDUC 101. FRESHMAN ORIENTATION
1 Credit
Introduction to the university and to the College of Education. Discussion of planning for individualized education program and field experience. Restricted to Las Cruces campus only.

EDUC 102. Internship I
3 Credits
Supervised experience in elementary education settings.

EDUC 103. Internship in Bilingual Education/ESL
1-4 Credits
Supervised experience in bilingual education/ESL elementary or secondary classroom settings for prospective bilingual education/ESL teachers.

EDUC 150. Math for Paraprofessionals
3 Credits
Applied math skills for paraprofessionals working with children.
Prerequisite: CCDM 103.

EDUC 151. Math for Paraprofessionals II
3 Credits
Applied math skills for paraprofessionals working under the direction of a teacher.
Prerequisite: EDUC 150.

EDUC 181. Field Experience I
1 Credit
Introduction to public school teaching, school visits, classroom observations and discussion seminar.

EDUC 195. Individual Topics in Education
1-3 Credits
Supervised study in a specific area of interest. Each course shall be designated by a qualifying subtitle. May be repeated for a maximum of 9 credits.

EDUC 202. Internship II
3 Credits
Supervised experience in junior high settings.
Prerequisite: must be a co-op student.

EDUC 204. Foundations of Bilingual/ESL Education
3 Credits
Explore and review the historical, legal, philosophical, theoretical and pedagogical paradigms of bilingual/ESL education.
EDUC 219. Pre-Teacher Preparation
3 Credits
Assists students in developing the necessary competencies needed for acceptance to the Teacher Education Program. Course content includes basic skill development, test taking skills, and completion of teacher preparation packet. Maybe repeated for a maximum of 6 credits. Graded S/U. Community Colleges only.

EDUC 250. Introduction to Education
2 Credits
An overview of the American education system with emphasis on organization, governance, law, demographics, and professional practice. Restricted to Las Cruces campus only.

EDUC 281. Introduction to Secondary Education and Youth
3 Credits
Introductory course for students considering a career in secondary education. Includes historical, philosophical, and sociological foundations, program organization, critical dispositions, and understanding the context of schools and youth. Practicum required. Restricted to: Secondary Ed majors. Traditional Grading with RR.

EDUC 302. Internship III
3 Credits
Student teaching in public school classroom according to major area of interest.

EDUC 303. Secondary Bilingual/ESL Field Experience
3 Credits (2+2P)
Develop professional skills, dispositions, and understanding of secondary bilingual youth, content, and pedagogy through discussion seminar and interactions with public education mentor teachers. Focused observations, study of classroom language and culture, introduction to lesson planning and student assessment. Requires 32 hours of practicum field experience. Same as EDUC 381. Crosslisted with: EDUC 381.

EDUC 315. Multicultural Education
3 Credits (2+2P)
The conceptual manifestations of culture, race and ethnicity, class, gender, sexual orientation, exceptionalities, language, bilingualism, and global citizenship within the schooling process. May be repeated up to 3 credits. Crosslisted with: EDUC 317V.

EDUC 317V. Multicultural Issues in Society
3 Credits
Conceptual manifestations of culture, race, ethnicity, class, gender, exceptionalities, language, and bilingualism within and across society. Crosslisted with: EDUC 315.

EDUC 342. Sheltered English Instruction for the ESL Classroom
3 Credits
Addresses the acquisition of English proficiency by speakers of other languages.

EDUC 343. Language, Literacy, and Culture in the ESL Classrooms
3 Credits
Framework and strategies for developing the written abilities of second language learners.

EDUC 344. Issues in Schooling for Bilingual Learners
3 Credits
Current thought and direction regarding bilingual education in the United States and New Mexico.

EDUC 381. Secondary Field Experience
3 Credits (2+2P)
Develop professional skills, dispositions, and understanding of secondary bilingual youth, content, and pedagogy through discussion seminar and interactions with public education mentor teachers. Focused observations, study of classroom language and culture, introduction to lesson planning and student assessment. Requires 32 hours of practicum field experience. Same as EDUC 303. Crosslisted with: EDUC 303.

EDUC 395. Special Topics in Education
1-3 Credits
Offered under various subtitles in the Schedule of Classes. May be taken for a maximum of 3 cr. per semester and a total of 6 credits overall.

EDUC 402. Internship IV
6 Credits
Supervised co-teaching in educational setting according to major area of interest.
Prerequisite: must be a co-op student.

EDUC 450. Methods of Teaching Early Childhood Education
3 Credits
Characteristics of the young child, play, guidance, communication, methods, materials, models, issues.

EDUC 451. Methods of Teaching Elementary School Science
3 Credits (2+2P)
Methods and materials for teaching elementary school science. Includes components of lessons and the use of multimedia. Same as EDUC 551 with differentiated assignments for graduate students.
Prerequisites: 9 hours of science from biology, chemistry, physics, and earth sciences, with no more than 3 hours from any one department.
Corequisites: ECED 450, EDUC 452, and RDG 360 (Block A courses).

EDUC 452. Methods of Teaching Elementary School Mathematics
3 Credits (2+2P)
Content, theories of cognition, and instructional approaches for the teaching of mathematics in the elementary grades. Same as EDUC 552 with differentiated assignments for graduate students.
Prerequisite: MATH 111.
Corequisites: ECED 450, EDUC 451, and RDG 360 (Block A courses).

EDUC 453. Methods of Teaching Elementary School Language Arts
3 Credits (2+2P)
Implications of language acquisition and development for instructional practices. Focus on student-centered response to literature, writing process, whole language learning, based on socio-psycholinguistic theory and research. Same as EDUC 553 with differentiated assignments for graduate students.
Corequisites: RDG 361, EDUC 454, and EDUC 455 (Block B courses).

EDUC 454. Methods of Teaching Elementary School Social Studies
3 Credits (2+2P)
Focus on social studies curriculum and instruction including student-centered approaches, active learning, educational technology, nontextual curriculum, integration, multicultural education, authentic assessment, and practical applications. Same as EDUC 554 with differentiated assignments for graduate students.
Corequisites: RDG 361, EDUC 453, and EDUC 455 (Block B courses).
EDUC 460. Teaching Language Arts at the Middle and High School Level
3 Credits (2+2P)
Implications of cognition and language development for appropriate secondary instructional practices. Focus on construction of meaning, student-centered response to literature, writing process, print and oral language development, based on socio-psycholinguistic research and theory. Practicum required. Same as EDUC 560.

EDUC 461. Teaching Social Studies at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in social studies. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of social studies. Practicum required. Same as EDUC 561.

EDUC 462. Teaching Mathematics at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in mathematics. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of mathematics. Practicum required. Same as EDUC 562.

EDUC 463. Teaching Science at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in science. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of science for students in grades 6-12. Practicum required. Same as EDUC 563.

EDUC 464. Teaching Foreign Language at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in foreign language. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of foreign language for students in grades 6-12. Practicum required. Same as EDUC 564.

EDUC 467. Teaching Business Education at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in business education. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of business education for students in grades 6-12. Practicum required. Same as EDUC 567.

EDUC 470. Elementary Student Teaching
9 Credits (9)
Synthesis of knowledge and skills appropriate to teaching in elementary schools. Graded S/U.

EDUC 471. Secondary Student Teaching
9 Credits (9)
Synthesis of knowledge and skills appropriate to teaching in secondary schools. Graded S/U.

EDUC 475. Contemporary Issues in Education
3 Credits (2+2P)
Discussion of contemporary issues including: classroom management, motivation, conferences, professional organizations, professional ethics, community influences, cultural pluralism, reform movements, instructional influences, and educational technology. Requires field experience component in a school or community setting. Same as EDUC 575.

EDUC 480. International Student Teaching Seminar
1 Credit
Preparation for students planning to teach in an international setting. 
Prerequisite: Must be scheduled one semester before graduation.

EDUC 481. Elementary Student Teaching Seminar
3 Credits (3)
Discussion of elementary school issues related to student teaching. 
Taken concurrently with EDUC 470. Graded S/U.

EDUC 482. Middle and High School Student Teaching Seminar
3 Credits (3)
Discussion of secondary school issues related to student teaching. 
Taken concurrently with EDUC 471.

EDUC 483. Second Language Acquisition
3 Credits
Exploring affective, cultural, linguistic, cognitive factors that influence the second-language-acquisition process with application to classroom practice. Same as EDUC 583.

EDUC 487. Methods of TESOL
3 Credits
Effective second language teaching approaches that provide for interactive learning situations, meaningful input language models, varied language use materials, adaptive teacher response strategies, and assessments of student processing needs.

EDUC 489. Topics
1-3 Credits
Offered under various subtitles which indicate the subject matter to be covered. A maximum of 3 credits in any one semester and a grand total of 3 credits.

EDUC 495. Directed Study Courses in Education
1-3 Credits
Each course shall be identified by a qualifying subtitle. Maximum of 3 credits in any one semester and a grand total of 6 credits.

EDUC 501. Special Topics
1-3 Credits
Course subtitled in the Schedule of Classes. A maximum of 3 credits per semester and a total of 6 credits overall.

EDUC 504. Adult and Family Literacy in TESOL
3 Credits
An exploration of the theoretical, programmatic, and curricular frameworks for English language learners and their families. Focus on the development of culturally responsive and pedagogically sound literacy programs. Same as RDG 504.

EDUC 505. Classroom Management
3 Credits
Strategies for managing classroom settings and determining appropriate modification of instructional approaches to meet changing classroom situations.

EDUC 509. Teaching Methods Laboratory
3 Credits
Practical application of previously learned content. 
Prerequisite(s): Bachelors degree and admission to the Graduate School and departmental special program.
EDUC 510. Internship/Student Teaching  
6 Credits  
Integrated with EDUC 509. Student is assigned to an elementary or secondary classroom for 14-16 weeks. Elementary or secondary. Graded S/U.  
Prerequisite: EDUC 509.

EDUC 512. Equity Education for Mathematics Teachers  
3 Credits  
This course is designed to increase teacher awareness and ability to address diverse students learning needs leading to success in mathematics. Same as EDUC 615.  
Prerequisites: Have access to teach in a mathematics classroom with a diverse student population.

EDUC 515. Multicultural Education  
3 Credits  
Conceptual manifestations of culture, race, and ethnicity, class, gender, exceptionalities, language and bilingualism within the schooling process. Same as EDUC 315 with differentiated assignments for graduate students.

EDUC 516. Curriculum and Pedagogy I  
3 Credits  
Introduction, reconstruction, and other connections among historical, philosophical, sociocultural, psychological, and theoretical foundations of curriculum and pedagogy and their application to culturally and linguistically diverse teaching and learning settings.

EDUC 518. Technology and Pedagogy  
3 Credits  
Critical analysis, design, and evaluation of computer-based technologies in teaching and learning for diverse communities.

EDUC 519. Research in Curriculum and Pedagogy  
3 Credits  
An introduction to qualitative and quantitative designs for research in curriculum and instruction, with emphasis on action research.

EDUC 520. Action Research Projects  
3 Credits  
Deeper explorations and connections among foundations of curriculum and pedagogy and their application to culturally and linguistically diverse teaching and learning settings through action research projects, approaches to assessment, and agency.  
Prerequisite(s): EDUC 515, 516, 518 & 519.

EDUC 530. Exploration in Education  
3 Credits (2+2P)  
Overview of elementary and secondary schooling. Includes opportunities to gain teaching experience in diverse settings.

EDUC 537. Independent Readings  
1-3 Credits  
Each project will be designated by a qualifying subtitle.

EDUC 550. Methods of Teaching Early Childhood Education  
3 Credits  
Characteristics of the young child, play, guidance, communication, methods, materials, models, issues. Same as EDUC 450 with differentiated assignments for graduate students.

EDUC 551. Methods of Teaching Elementary School Science  
3 Credits (2+2P)  
Methods and materials for teaching elementary school science. Includes components of lessons, planning and teaching lessons in schools, and multimedia. Same as EDUC 451 with differentiated assignments for graduate students.  
Prerequisites: 9 hours of science from biology, chemistry, physics, and earth science with no more than 3 hours from any one department.  
Corequisites: EDUC 555, EDUC 558, and RDG 560 (block A course).

EDUC 552. Methods of Teaching Elementary School Mathematics  
3 Credits (2+2P)  
Content, theories of cognition, and instructional approaches for the teaching of mathematics in the elementary grades. Same as EDUC 452 with differentiated assignments for graduate students.  
Prerequisite: MATH 111.  
Corequisites: MATH 111.

EDUC 553. Methods of Teaching Elementary School Language Arts  
3 Credits (2+2P)  
Implications of language acquisition and development for instructional practices. Focus on student-centered response to literature, writing process, whole language learning, based on socio-psycholinguistic theory and research. Same as EDUC 453 with differentiated assignments for graduate students.  
Corequisites: EDUC 554, EDUC 555, and RDG 561 (block B course).

EDUC 554. Methods of Teaching Elementary School Social Studies  
3 Credits (2+2P)  
Focus on social studies curriculum and instruction including student-centered approaches, active learning, educational technology, nontextual curriculum, integration, multicultural education, authentic assessment, and practical applications. Same as EDUC 454 with differentiated assignments for graduate students.  
Corequisites: EDUC 553, EDUC 555, and RDG 561 (block B course).

EDUC 557. Science and Math Methods: Internship  
3 Credits  
Elementary alternative licensure process course designed to introduce intern licensed teachers to methods of instruction for mathematics and science. University supervision provided simultaneously with EDUC 557. Restricted to CI and HSS non-degree students.

EDUC 558. Social Studies/Language Arts Methods Internship  
3 Credits  
Elementary alternative licensure process course designed to introduce intern licensed teachers to methods of instruction of social studies and language arts. University supervision provided simultaneously with EDUC 558. Restricted to CI and HSS non-degree students.

EDUC 560. Teaching Language Arts at the Middle and High School Level  
3 Credits (2+2P)  
Implications of cognition and language development for appropriate secondary instructional practices. Focus on construction of meaning, student-centered response to literature, writing process, print and oral language development, based on socio-psycholinguistic research and theory. Practicum required. Same as EDUC 460 with differentiated assignments for graduate students. Prerequisite(s): TEP required EDUC 515 & EDUC 530.
EDUC 561. Teaching Social Studies at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in social studies. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of social studies for student in grades 6-12. Practicum required. Same as EDUC 461 with differentiated assignments for graduate students. Prerequisite(s): TEP required EDUC 515 & EDUC 530.

EDUC 562. Teaching Mathematics at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in mathematics. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of students in 6-12 setting settings for mathematics. Same as 462 with differentiated assignments for graduate students. Prerequisite(s): TEP required EDUC 515 & EDUC 530.

EDUC 563. Teaching Science at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in science. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of science for student in grades 6-12. Practicum required. Same as EDUC 463 with differentiated assignments for graduate students. Prerequisite(s): TEP required EDUC 515 & EDUC 530.

EDUC 567. Teaching Business Education at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in business education. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of business education for student in grades 6-12. Practicum required. Same as EDUC 467 with differentiated assignments for graduate students. Prerequisite(s): TEP required EDUC 515 & EDUC 530.

EDUC 575. Contemporary Issues in Education
3 Credits (2+2P)
Discussion of contemporary issues including: classroom management, motivation, conferences, professional organizations, professional ethics, community influences, cultural pluralism, reform movements, instructional influences, and educational technology. The class will require a field experience component in a school or community setting. Taught with EDUC 475 with differentiated assignments for graduate students.

EDUC 576. Qualitative Research
3 Credits
Introduction to qualitative research methodologies from problem formulation to interpretation of results.

EDUC 583. Second Language Acquisition
3 Credits
Exploring affective, cultural, linguistic, cognitive factors that influence the second-language-acquisition process with application to classroom practice. Appropriate for public school and adult educators. Same as EDUC 483.

EDUC 587. Pedagogy of TESOL
3 Credits
Overview of approaches that provide for interactive, culturally responsive pedagogy for students acquiring English. Emphasis on development of ESL literacy. Appropriate for public school and adult educators. Same as RDG 587.

EDUC 590. TESOL Practicum
3 Credits
Classroom applications of ESL literacy development through supervised teaching experiences accompanied by a seminar. Same as RDG 590.

EDUC 595. Directed Study Courses in Education
1-3 Credits
Each course will be identified by a qualifying subtitle. Maximum of 3 credits in any one semester and a total of 6 credits overall.

EDUC 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. Maximum of 3 credits per semester and a total of 6 credits overall.

EDUC 599. Master's Thesis
15 Credits
Thesis.

EDUC 600. Doctoral Research
1-15 Credits
Research.

EDUC 601. Contemporary Curriculum/Instruction Practices
1-3 Credits
Course subtitled in the Schedule of Classes. A maximum of 3 credits per semester and a total of 6 credits overall.

EDUC 602. Internship in Curriculum and Instruction
3-6 Credits
For those pursuing an advanced graduate degree to meet the requirement for field work. Each course to bear an appropriate subtitle.

EDUC 603. Curriculum for a Diverse Society
3 Credits
Builds upon knowledge of the foundations of curriculum and professional experience in an educational setting. Focus on the role of the curriculum leader in understanding curriculum theory, designing curriculum, and implementing curriculum in various settings.

EDUC 604. Pedagogy of Learning in a Diverse Society
3 Credits
Builds upon knowledge of the foundations of instruction and professional experience in teaching and learning. Focus on diverse theories of instruction with relevant practices in pluralistic settings and multicultural interactions of teaching and learning.

EDUC 605. Independent Study Topics
1-3 Credits
A problem and seminar course for those pursuing an advanced graduate degree. Course subtitled in the Schedule of Classes. Prerequisite: EDUC 535.

EDUC 606. In-depth Interviewing: A Qualitative Research Method
3 Credits
Use of pilot research project to introduce students to in-depth interviewing techniques.

EDUC 607. Current Research in Educational Practice
3 Credits
A seminar for doctoral and education specialist students emphasizing current research and educational practices. Same as BIL 607, ECED 607, RDG 607, and SPED 607.

EDUC 608. Issues in Multicultural Curriculum and Instruction and Teacher Education
3 Credits
Builds upon multicultural theories and practices of teacher education. Restricted to doctoral-level students of any major.
EDUC 613. Evaluation of Quantitative Research in Education
3 Credits
A doctoral-level exploration of a broad range of quantitative research designs and methodologies for collection and analysis of data as applied to critical review of the literature.
Prerequisite(s): EDUC 519 or the equivalent.

EDUC 623. Curricular Mediation for Democratic Communities
3 Credits
Problematization of the various relationships, roles, and leadership considerations which emerge within educational institutions, their structures, and their culturally democratic practices in the classroom, community, and society. Restricted to doctoral-level students of any major. Same as BIL 623, ECED 623.

EDUC 630. Critical Race Theory & Storytelling in Educational Spaces
3 Credits
An upper-level doctoral course focusing on the philosophical, theoretical, and methodological origins and practices of CRT and the sister frameworks that emerged from CRT, i.e., AsianCrit, BlackCrit, FemCrit, LatCrit, QueerCrit, TribalCrit, and WhiteCrit within educational spaces.

EDUC 633. Praxis and Reflexivity
3 Credits
Same as BIL 633, ECED 633, EDLT 633, RDG 633.

EDUC 634. Research as Praxis
3 Credits
Alternative community-or-school-based research aimed at investigating and transforming educational realities, with the participants for their own benefit. Students will experience the dynamic between research theory and practice in education. Crosslisted with: BIL 634, EDLT 634 and RDG 634. Restricted to: EDUC,C I,C ID majors.
Prerequisite(s): EDUC 576 and 613.

EDUC 635. Critical Theory and Pedagogy
3 Credits
Covers the various schools of thought on pedagogy, the historical and philosophical foundations embedded in these schools, and their impact on educational settings. Restricted to doctoral-level students of any major. Same as BIL 635.

EDUC 637. Social Justice Issues in Education
3 Credits
Covers the systems of oppression located within the constructs of power and hegemony and their impact on schooling. Restricted to doctoral-level students of any major. Same as BIL 637.

EDUC 685. Practicum
2-6 Credits
Provision for field inquiries and experiences designed to prepare the doctoral student for assuming responsibilities in the areas of curriculum and instruction.
Prerequisite: post-master's standing.

EDUC 694. Dissertation Seminar: Qualitative Research Designs
1-6 Credits
Dissertation seminar course for doctoral students utilizing a qualitative research design. Restricted to College of Education students.
Prerequisite: consent of instructor.

EDUC 698. Selected Topics
1-6 Credits
Offered under various subtitles which indicate the subject matter to be covered. A maximum of 6 credits per semester and a total of 6 credits overall.

EDUC 699. Ed.S. Thesis
1-15 Credits
Offered primarily for those pursuing the research requirements for the Ed.S. degree. Course may be repeated up to a maximum allowed for this degree. Each research project will be designated by a qualifying subtitle.

EDUC 700. Doctoral Dissertation
15 Credits
Dissertation.

Name: Crystal Chavez Sambrano
Office Location: O'Donnell Hall 122
Phone: (575) 646-1652
Website: http://education.nmsu.edu/ci/

Curriculum and Instruction - Doctor of Education

The Curriculum and Instruction Department offers two kinds of doctorates: The Doctorate of Education (Ed. D.) and the Doctorate of Philosophy (Ph. D.).

The Doctorate of Education (EdD) and the Doctorate of Philosophy (PhD) are rigorous degrees requiring an intellectual and personal commitment beyond compare. Both degrees ask for a lifelong commitment to teaching, learning and pedagogy, to research and to service in the areas of the recipient’s interests and desires. The academic course of study for both degrees is the same. The EdD doctoral program of study requires a minimum of 66 credit hours (48 hours coursework and 18 hours of dissertation) to complete. The PhD doctoral program requires students to demonstrate competency in the computer tools or second language sequence. (See below in program descriptions). For both programs (EdD and PhD) 66 credit hours is only the minimum and students may be asked to complete additional hours as per their advisor and committee recommendations.

Both degrees require a dissertation based on original research, inextricably grounded with an array of primary and secondary sources. Both degrees have required courses of study, but are additionally individualized based on those scholarly and academic expectations set by the doctoral student in collaboration with their Dissertation Committee.

Focus Areas
Currently there are five Focus Areas for the Doctoral Program.

1. Bilingual/TESOL
2. Critical Pedagogies
3. Early Childhood Education
4. Educational Learning Technologies
5. Language, Literacy & Culture

Research Sequence
The Department provides doctoral students with a firm grounding in both quantitative and qualitative research methodologies, while allowing them to then additionally develop an even deeper level of understanding specifically in either methodology, or in mixed methods.
Internships/Practica

The internships and/or practica are applied experiences constructed through focused theoretical understandings. These understandings will be developed and practiced as a process through a series of interactions with the selected professor of record, research and/or leadership sites, and the intern’s area(s) of continued academic engagement. The academic “habits of mind” to be honed during the internship or practicum must be inclusive of academic interests and the deepening of intellectual propinquity to those curiosities that will enable a rich doctoral experience. The extensive development of an epistemic bibliography during an internship or practicum should continue so as to enrich the doctoral student’s long-term intellectual engagement while synchronically meshing with his or her doctoral plan.

Decisions about the internships/practica are to be made by the Program Chair and Program Committee, and will vary between Focus Areas.

To Apply

- Apply to the NMSU Graduate School (http://gradadmissions.nmsu.edu)
- Apply to C&I by sending in your Application Portfolio by December 15th
  - NMSU Doc Portfolio Example – C&I (http://ci.education.nmsu.edu/files/2013/12/NMSU-Doc-Portfolio-Example-CI.pdf) (If the Sample portfolio does not open automatically, try a different browser or try saving the portfolio to your desktop before opening it.)

NOTE: Potential students who have written successful portfolios will be invited to interview with the Doctoral Qualifying Committee (a committee of C&I faculty)

Once Applicants Are Accepted

- Attend the applicable Doctoral Orientation Meeting your first semester of classes
- Meet with your Interim Adviser during your first semester of classes
- Get to know our faculty (http://dept-wp.nmsu.edu/coeci/faculty)
- Read the Doctoral Handbook (http://dept-wp.nmsu.edu/coeci/candi-handbooks) and the sections of the NMSU Graduate Catalog that apply to you (this is your responsibility)
- Follow the Doctoral Program Checklist from the C&I Doctoral Handbook (http://dept-wp.nmsu.edu/coeci/candi-handbooks)

Curriculum and Instruction - Doctor of Philosophy

The Curriculum and Instruction Department offers two kinds of doctorates: The Doctorate of Education and the Doctorate of Philosophy. The Doctorate of Education (EdD) and the Doctorate of Philosophy (PhD) are rigorous degrees requiring an intellectual and personal commitment beyond compare. Both degrees ask for a lifelong commitment to teaching, learning and pedagogy, to research and to service in the areas of the recipient’s interests and desires. The academic course of study for both degrees is the same. The EdD program of study requires a minimum of 66 credit hours (48 hours coursework and 18 hours of dissertation) to complete. The PhD program requires students to demonstrate competency in the computer tools or second language sequence. (See below in program descriptions). For both programs (EdD and PhD) 66 credit hours is only the minimum and students may be asked to complete additional hours as per their advisor and committee recommendations.

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### Early Childhood - Bachelor of Science in Education

#### General Education Courses

**Area I: English and Communications:**

- ENGL 111G Rhetoric and Composition
- ENGL 211G Writing in the Humanities and Social Sciences
  
  or ENGL 311G Advanced Composition
- COMM 253G Public Speaking
  
  or COMM 265G Principles of Human Communication

**Area III: Laboratory Sciences:**

Two different subjects with labs, must be G courses:

- ASTR 105G The Planets
  
  or ASTR 110G Introduction to Astronomy
- BIOL 101G/101GL Human Biology
- BIOL 111G/111GL Natural History of Life
- BIOL 211G/211GL Cellular and Organismal Biology
- ENS 110G Introductory Environmental Science
- GEOL 111G Introductory to Geology
- GEOL 212G The Dynamic Earth
- GEOG 111G Geography of the Natural Environment
- PHYS 110G The Great Ideas of Physics
- PHYS 120G Introduction to Acoustics
- PHYS 211G/211GL General Physics I
- PHYS 212G/212GL General Physics II

**Area IV: Social/Behavioral Sciences (9 credits):**

- CEP 110G Human Growth and Behavior

Choose two courses from two different departments:

- ANTH 201G Introduction to Anthropology
- ECON 201G Introduction to Economics
- ECON 251G Principles of Macroeconomics
- ECON 252G Principles of Microeconomics
- GEOG 112G Global History to 1500
  
  or HIST 112G Global History Since 1500
- HIST 201G Introduction to Early American History
  
  or HIST 202G Introduction to Recent American History

Choose one from the following:

- ART 101G Orientation in Art
- DANC 101G Dance Appreciation
- MUS 101G An Introduction to Music
- MUS 201G History of Jazz in Popular Music: A Blending of Cultures
- THTR 101G The World of Theatre

**Viewing a Wider World Courses**

**Professional Education Courses**

- ECED 115 Child Growth, Development, and Learning 3
- ECED 125 Health, Safety, and Nutrition 2
- ECED 135 Family and Community Collaboration 3
- ECED 215 Curriculum Development Through Play 3
- ECED 220 Early Childhood Education Practicum I 2
- ECED 225 Curriculum Development and Implementation II 3
- ECED 230 Early Childhood Education Practicum II 2
- ECED 235 Introduction to Language, Literacy and Reading 3
- ECED 245 Professionalism 2
- ECED 255 Assessment of Children and Evaluation of Programs 3
- ECED 265 Guiding Young Children 3
- ECED 315 Research in Child, Growth, Development and Learning 3
- ECED 335 Family, Language and Cultural 3
- ECED 440 Teaching and Learning Math and Science 4
- ECED 455 Teaching and Learning Social Studies, Fine Arts and Movement 3
- RDG 350 Teaching and Learning Reading and Writing 3
- SPED 450 Working with Young Children with Special Needs, Ages 3-8 3
- SPED 451 Assessment of Young Children, Birth-Eight 3
- ECED 329 Early Primary Field Placement 2

**Electives: to bring total to 122 (48 credits must be upperdivision for university requirements)**

Total Credits: 122
Early Childhood Education - Undergraduate Minor

The primary function of the undergraduate programs in the Department of Curriculum and Instruction is the preparation of licensed teachers for early-childhood settings and elementary and secondary schools. This process includes a broad general education, professional education and teaching specializations.

Education - Master of Arts

The Department of Curriculum & Instruction in the College of Education is devoted to the preparation of teachers and teacher leaders for the public schools; directors of curriculum and instruction; subject matter specialists; teacher educators and professional development specialists; and, college professors and professors of curriculum and instruction. The College of Education is NCATE (http://www.ncate.org), now CAEP (caepnet.org (http://www.caepnet.org)) and accredited by New Mexico Public Education Department http://www.ped.state.nm.us/ped/index.html.

Master of Arts in Education (for licensed PK-12 teachers)

Minimum credits differ between program concentrations. Please consult the program handbook or the department for specifics.

Degree Concentration Areas

- Curriculum & Instruction
- Bilingual Education
- Educational Learning Technologies
- Language, Literacy & Culture (Reading)
- Teaching English to Speakers of Other Languages (TESOL)
- Early Childhood Education (on-line only)

Optional Endorsements for existing teaching licenses:

- Bilingual
- Technology Coordinator
- Reading
- Teaching English to Speakers of Other Languages (TESOL)

Master of Arts in Education Plus Licensure Concurrently – Students can earn a teaching license in the areas of elementary education and secondary education while earning a Master of Arts in Education degree

Remember: You cannot teach in the public schools without seeking licensure and you cannot seek an endorsement without first obtaining a teaching licensure.

Master of Arts in Education (Non-Licensure)

Students can select a Master of Arts in Education (non-licensure) in one of the following concentration areas:

- Curriculum & Instruction
- Bilingual Education
- Educational Learning Technologies
- Early Childhood Education;
- Language, Literacy & Culture (Reading); or,
- Teaching English to Speakers of Other Languages (TESOL).

Students completing the following programs will not be licensed to teach PreK-12 in the State of New Mexico, nor will completion of these degree programs automatically result in a teaching field endorsement.

The Master’s Degree Core – 15 (credit hours)

The faculty in the Department of Curriculum & Instruction has worked over the years to revise and update the core courses in the department to provide a strong foundation in curriculum and instruction (pedagogy) for all students studying in our master’s programs. The core courses are as follows

Curriculum and Instruction Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 515</td>
<td>Multicultural Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 516</td>
<td>Curriculum and Pedagogy I</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 518</td>
<td>Technology and Pedagogy</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 519</td>
<td>Research in Curriculum and Pedagogy</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 520</td>
<td>Action Research Projects</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 15

1 This course is the final core course that students are required to take. EDUC 515, 516, 518 and 519 are prerequisites to taking EDUC 520.

(Please see the Graduate Catalog for complete course descriptions: http://catalog.nmsu.edu/)

Checklist for the Master of Arts Program

1. ___ Apply through NMSU Graduate Student Services for admission to the department (http://prospective.nmsu.edu/graduate/apply/index.html); “Department of Curriculum & Instruction” and the degree program/concentration/program desired;
2. ___ After you receive an acceptance letter from the Department of Curriculum & Instruction, contact your faculty advisor within the first semester of enrollment (a listing of the C&I faculty and their contact information can be located on the C&I Website: http://education.nmsu.edu/ci/faculty.html);
3. ___ Join the C&I MA Student List-serv. at the following website, and follow the directions: https://mailman.nmsu.edu/mailman/listinfo/candi. It is important to regularly check your NMSU e-mail; the university sends important communications to you through that account. Also check the Department of Curriculum & Instruction Masters Website for important announcements and activities;
4. ___ Contact your advisor to complete the Preliminary Program Plan (available at the in end of this handbook) and submit the plan to the Associate Department Head for Graduate Programs for review and approval within the first semester of enrollment;
5. ___ Complete the Program of Study and a STAR audit (After you have completed 12 credit hours) and make an appointment with your advisor to approve and sign the form. It must be filed with the Department of Curriculum & Instruction. Find the form at: http://prospective.nmsu.edu/graduate/forms/index.html
6. ___ File the Application for Degree form during the registration period of your final semester (http://www.nmsu.edu/~registra/degree-app/);
7. ___ Apply to take the written Master’s Comprehensive Examination early in the last semester of your coursework. The MA exam usually occurs on the second Friday of October and the second Friday of March. Announcements regarding registration, the preparation session, and the exam will be on the C&I MA Website, the MA list-serv, and in the College of Education;
8. **Complete** the Final Examination paperwork; and,
9. **Study** for the Final Written Examination to be successful on your exam.

Complete Department of Curriculum and Instruction Information is located at: [http://ci.nmsu.edu](http://ci.nmsu.edu)

Complete NMSU Graduate School Information is available on-line at [http://gradschool.nmsu.edu](http://gradschool.nmsu.edu)

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**Education - Master of Arts in Teaching**

**Master of Arts in Teaching (MAT)**

- **This is a non-licensure degree** that is intended for working teachers who already have a license but want to continue their studies, specialize in a specific teaching field and earn an master’s degree. The program requires a minimum of 33 credit hours, with 15 credits in the Department of Curriculum & Instruction core courses and 18 credit hours from an area of teaching content specialization (i.e., generally in the College of Arts & Sciences) numbered 450 or above. The professional coursework must be taken in the Department of Curriculum & Instruction and culminates with a written examination over the program of study. A candidate may choose to write a thesis in place of the written exam. Please check with your faculty advisor or the Director for Graduate Programs for additional information.

C&I Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 515</td>
<td>Multicultural Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 516</td>
<td>Curriculum and Pedagogy I</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 518</td>
<td>Technology and Pedagogy</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 519</td>
<td>Research in Curriculum and Pedagogy</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 520</td>
<td>Action Research Projects (^1)</td>
<td>3</td>
</tr>
</tbody>
</table>

\(^1\) This course is the final core course that students are required to take. EDUC 515, 516, 518 and 519 are prerequisites to taking EDUC 520.

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**Current MAT Programs**

The Department of Curriculum & Instruction currently offers the following customized MAT Programs in collaboration with colleagues from other departments.

- Master of Arts in Teaching, with a concentration in Dance (33 credits)

- Master of Arts in Teaching, with a concentration in Spanish (33 credits)
  - For more information, go to [http://ci.nmsu.edu](http://ci.nmsu.edu)

For additional information about the MAT, please contact the Director for Graduate Programs.

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**Elementary Education - Bachelor of Science in Education**

General education and professional education are similar for all degree programs in the College of Education. Students should meet with an advisor to plan appropriate general education courses for an elementary education major.

**General Education Courses**

<table>
<thead>
<tr>
<th>Area I: English and Communication Arts</th>
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</thead>
<tbody>
<tr>
<td>ENGL 111G</td>
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<tr>
<td>ENGL 211G</td>
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<tr>
<td>or ENGL 311G</td>
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<tr>
<td>ENGL 363</td>
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<tr>
<td>COMM 253G</td>
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<tr>
<td>or COMM 265G</td>
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<table>
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<tr>
<th>Area II: Mathematics</th>
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</thead>
<tbody>
<tr>
<td>MATH 111</td>
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<tr>
<td>MATH 112G</td>
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</tbody>
</table>

<table>
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<tr>
<th>Area III: Laboratory Science</th>
</tr>
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<tbody>
<tr>
<td>Eight credits from the following (must be from two different subjects and G courses):</td>
</tr>
<tr>
<td>ASTR 105G</td>
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<tr>
<td>or ASTR 110G</td>
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<tr>
<td>BIOL 101G/101GL</td>
</tr>
<tr>
<td>BIOL 111G/111GL</td>
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<tr>
<td>BIOL 211G/211GL</td>
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<tr>
<td>CHEM 110G</td>
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<tr>
<td>CHEM 111G</td>
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<tr>
<td>CHEM 112G</td>
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<td>E S 110G</td>
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<tr>
<td>GEOL 111G</td>
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<tr>
<td>GEOL 212G</td>
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<tr>
<td>GEOG 111G</td>
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<tr>
<td>PHYS 110G</td>
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<tr>
<td>PHYS 120G</td>
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<tr>
<td>PHYS 211G/211GL</td>
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<td>PHYS 212G/212GL</td>
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<table>
<thead>
<tr>
<th>Area IV: Social Behavioral Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>C EP 110G</td>
</tr>
<tr>
<td>LING 200G</td>
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</tbody>
</table>

One from the following:

<table>
<thead>
<tr>
<th>Area V: Humanities and Fine Arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 111G</td>
</tr>
<tr>
<td>or HIST 112G</td>
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<tr>
<td>HIST 201G</td>
</tr>
</tbody>
</table>
New Mexico State University

or HIST 202G  Introduction to Recent American History

One from the following:

ART 101G  Orientation in Art
DANC 101G  Dance Appreciation
MUS 101G  An Introduction to Music
MUS 201G  History of Jazz in Popular Music: A Blending of Cultures
THTR 101G  The World of Theatre

Viewing a Wider World Courses  6

Professional Education Courses

EDUC 343  Language, Literacy, and Culture in the ESL Classrooms  3
EDUC 451  Methods of Teaching Elementary School Science  3
EDUC 452  Methods of Teaching Elementary School Mathematics  3
EDUC 454  Methods of Teaching Elementary School Social Studies  3
EDUC 483  Second Language Acquisition  3
RDG 360  Elementary School Literacy I  3
RDG 361  Elementary School Literacy II  3
RDG 371  Instruction for Special Reading Needs  3
SPED 360  Elementary Curriculum, Methods, and Materials for Special Education in a Diverse Society  3

Concentrations: (select one from below)  24

Electives: to bring total to 120 credits  25

Total Credits  120

Concentration: Science K-8

SCIENCE from the general education requirements on degree plan  8
ASTR elective  3
BIOL elective  3
CHEM elective  3
GEOL or Physical GEOG elective  3
SCIENCE elective  3

Total Credits  24

Concentration: Social Studies K-8

ANTH elective  3
ECON elective  3
GEOG or GOVT elective  3
HIST 111G  Global History to 1500  3
HIST 112G  Global History Since 1500  3
HIST 201G  Introduction to Early American History  3
or HIST 202G  Introduction to Recent American History  3
HIST 368  Teaching History  3
HIST elective  3

Total Credits  24

Concentration: Language Arts K-8

COMM 253G  Public Speaking  3
or COMM 265G  Principles of Human Communication  3
ENGL 211G  Writing in the Humanities and Social Sciences  3
or ENGL 311G  Advanced Composition  3
ENGL 363  Literature for Children and Young Adults  3
LING 200G  Introduction to Language  3
LING 302V  Language and Society  3
RDG 360  Elementary School Literacy I  3
RDG 361  Elementary School Literacy II  3
RDG 371  Instruction for Special Reading Needs  3

Total Credits  24

Concentration: Math K-8

Students with consent of an advisor and the mathematics department may take higher level math classes.

Core Courses

MATH 111  Fundamentals of Elementary Mathematics I  3
MATH 112G  Fundamentals of Elementary Math II  3

MATH 215  Fundamentals of Elementary Mathematics III  3
MATH 120  Intermediate Algebra  3
MATH 121G  College Algebra  3
MATH 142G  Calculus for the Biological and Management Sciences  3
STAT 251G  Statistics for Business and the Behavioral Sciences  3
EDUC 452  Methods of Teaching Elementary School Mathematics  3

Total Credits  24

Bilingual/TESOL Endorsement

Early Childhood, Secondary and Special Education students interested in a bilingual or TESOL endorsement should contact the advisement office. These endorsements can now be included in an undergraduate degree program without significant additional hours required.

Secondary Education - Bachelor of Science in Education

General education and professional education requirements are similar for all degree programs in the College of Education. Students should meet with an advisor to plan appropriate general education courses for a secondary education major.
Teaching Field: Language Arts

General Education

Area I: English and Communication
ENGL 111G Rhetoric and Composition

Area II: Mathematics
MATH 121G College Algebra
or MATH 190G Trigonometry and Precalculus
MATH 210G Mathematics Appreciation
or MATH 142G Calculus for the Biological and Management Sciences

Area III: Laboratory Sciences (8 credits, with two different subject codes)
ASTR 105G The Planets
or ASTR 110G Introduction to Astronomy
BIOL 101G/101GL Human Biology
BIOL 111G/111GL Natural History of Life
BIOL 211G/211GL Cellular and Organismal Biology
CHEM 110G Principles and Applications of Chemistry
CHEM 111G General Chemistry I
CHEM 112G General Chemistry II
GEOL 111G Introductory to Geology
GEOL 212G The Dynamic Earth
GEOG 111G Geography of the Natural Environment

Area IV: Social and Behavioral Sciences
C EP 110G Human Growth and Behavior
JOUR 105G Media and Society
Choose one from the following:
ANTH 120G Human Ancestors
ANTH 125G Introduction to World Cultures
ANTH 201G Introduction to Anthropology
ANTH 202G Introduction to Archaeology and Physical Anthropology
ANTH 203G Introduction to Language and Cultural Anthropology
GEOG 112G World Regional Geography
GEOG 120G Culture and Environment
GOVT 100G American National Government
GOVT 110G Introduction to Political Science
GOVT 150G American Political Issues
GOVT 160G International Political Issues
SOC 101G Introductory Sociology
SOC 201G Contemporary Social Problems

Area V: Humanities and Fine Arts
HIST 101G Roots of Modern Europe
or HIST 102G Modern Europe
HIST 201G Introduction to Early American History
or HIST 202G Introduction to Recent American History
THTR 101G The World of Theatre

Viewing a Wider World
LIB 311V Information Literacy

Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 253G</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>or COMM 265G</td>
<td>Principles of Human Communication</td>
<td></td>
</tr>
<tr>
<td>ENGL 311G</td>
<td>Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
<td></td>
</tr>
<tr>
<td>ENGL 251</td>
<td>Survey of American Literature I</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 252</td>
<td>Survey of American Literature II</td>
<td></td>
</tr>
<tr>
<td>ENGL 271</td>
<td>Survey of English Literature I</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 272</td>
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</tr>
<tr>
<td>ENGL 310</td>
<td>Critical Writing</td>
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Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ENGL 39V</td>
<td>Chicana/o Literature</td>
</tr>
<tr>
<td>ENGL 341V</td>
<td>American Indian Literature</td>
</tr>
<tr>
<td>ENGL 380V</td>
<td>Women Writers</td>
</tr>
<tr>
<td>ENGL 394V</td>
<td>Southwestern Literature</td>
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Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ENGL 429</td>
<td>British Romanticism</td>
</tr>
<tr>
<td>ENGL 438</td>
<td>Literature of the American Renaissance</td>
</tr>
<tr>
<td>ENGL 442</td>
<td>Modern and Contemporary American Poetry</td>
</tr>
<tr>
<td>ENGL 444</td>
<td>Modern British Fiction</td>
</tr>
<tr>
<td>ENGL 456</td>
<td>Ethnic Studies in US Literature and Culture</td>
</tr>
<tr>
<td>ENGL 458</td>
<td>Latino/a Literature and Culture</td>
</tr>
<tr>
<td>ENGL 463</td>
<td>Advanced Study in English Literature</td>
</tr>
<tr>
<td>ENGL 481</td>
<td>Women's Literature</td>
</tr>
<tr>
<td>ENGL 493</td>
<td>Middle English Textual Cultures</td>
</tr>
<tr>
<td>ENGL 408</td>
<td>Shakespeare I</td>
</tr>
<tr>
<td>or ENGL 409</td>
<td>Shakespeare II</td>
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Select one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ENGL 412</td>
<td>Writing in the Workplace</td>
</tr>
<tr>
<td>ENGL 431</td>
<td>Technical Editing</td>
</tr>
<tr>
<td>ENGL 479</td>
<td>Computers and Writing</td>
</tr>
<tr>
<td>ENGL 416</td>
<td>Approaches to Literature</td>
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<tr>
<td>ENGL 470</td>
<td>Approaches to Composition</td>
</tr>
<tr>
<td>ENGL Elective 400+</td>
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</tbody>
</table>

Total Credits: 39

1 Other requirements are met by finishing the Language Arts Teaching Field.

Concentration: Secondary Education-Math

General Education

Area I: English and Communication
ENGL 111G Rhetoric and Composition

Choose one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 211G</td>
<td>Writing in the Humanities and Social Sciences</td>
</tr>
<tr>
<td>ENGL 311G</td>
<td>Advanced Composition</td>
</tr>
<tr>
<td>ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
</tr>
</tbody>
</table>

1 Other requirements are met by finishing the Language Arts Teaching Field.
Choose one from the following:

- **COMM 253G** Public Speaking
- **COMM 265G** Principles of Human Communication
- **AXED 201G** Effective Leadership and Communication in Agricultural Organizations

**Area II: Mathematics (completed with the Math Concentration)**

**Area III: Laboratory Sciences**

Choose one from the following:

- **PHYS 211G/211GL** General Physics I
- **PHYS 215G/215GL** Engineering Physics I

Choose one from the following:

- **PHYS 212G/212GL** General Physics II
- **PHYS 216G/216GL** Engineering Physics II

**Area IV: Social and Behavioral Sciences**

- **C EP 110G** Human Growth and Behavior

One Economics course:

- **ECON 201G** Introduction to Economics
- **ECON 251G** Principles of Macroeconomics
- **ECON 252G** Principles of Microeconomics

One from the following:

- **ANTH 120G** Human Ancestors
- **ANTH 125G** Introduction to World Cultures
- **ANTH 201G** Introduction to Anthropology
- **ANTH 202G** Introduction to Archaeology and Physical Anthropology
- **ANTH 203G** Introduction to Language and Cultural Anthropology

Choose one from the following:

- **GEOG 112G** World Regional Geography
- **GEOG 120G** Culture and Environment
- **GOVT 100G** American National Government
- **GOVT 110G** Introduction to Political Science
- **GOVT 150G** American Political Issues
- **GOVT 160G** International Political Issues
- **SOC 101G** Introductory Sociology
- **SOC 201G** Contemporary Social Problems

**Area V: Humanities and Fine Arts**

Choose one from the following:

- **ART 101G** Orientation in Art
- **DANC 101G** Dance Appreciation
- **MUS 101G** An Introduction to Music
- **MUS 201G** History of Jazz in Popular Music: A Blending of Cultures
- **THTR 101G** The World of Theatre
- **LIB 311V** Information Literacy

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**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 291G</td>
<td>Calculus and Analytic Geometry III</td>
<td>3</td>
</tr>
<tr>
<td>C S 111</td>
<td>Computer Science Principles</td>
<td>4</td>
</tr>
<tr>
<td>E T 182</td>
<td>Digital Logic</td>
<td>3</td>
</tr>
<tr>
<td>MATH 279</td>
<td>Introduction to Higher Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 280</td>
<td>Introduction to Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 392</td>
<td>Introduction to Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>STAT 371</td>
<td>Statistics for Engineers and Scientists I</td>
<td>3</td>
</tr>
<tr>
<td>or A ST 311</td>
<td>Statistical Applications</td>
<td></td>
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<tr>
<td>Math elective 300+ or A ST 311</td>
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<td>3</td>
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<tr>
<td>Math elective 300+</td>
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<tr>
<td>Total Credits</td>
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**Concentration: General Science**

**General Education**

**Area I: English and Communication**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
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Choose one from the following:

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<td>Advanced Composition</td>
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<td>Advanced Technical and Professional Communication</td>
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<tr>
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<td>Effective Leadership and Communication in Agricultural Organizations</td>
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**Area II: Mathematics**

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<th>Course Code</th>
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<tbody>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
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<tr>
<td>or MATH 190G</td>
<td>Trigonometry and Precalculus</td>
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</tr>
<tr>
<td>MATH 142G</td>
<td>Calculus for the Biological and Management Sciences</td>
<td></td>
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<tr>
<td>or MATH 191G</td>
<td>Calculus and Analytic Geometry II</td>
<td></td>
</tr>
</tbody>
</table>

**Area III: Laboratory Sciences (completed with the Science Concentration)**

**Area IV: Social and Behavioral Sciences**

Choose one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C EP 110G</td>
<td>Human Growth and Behavior</td>
<td></td>
</tr>
<tr>
<td>GEOG 112G</td>
<td>World Regional Geography</td>
<td></td>
</tr>
<tr>
<td>GEOG 120G</td>
<td>Culture and Environment</td>
<td></td>
</tr>
<tr>
<td>GOVT 100G</td>
<td>American National Government</td>
<td></td>
</tr>
<tr>
<td>GOVT 110G</td>
<td>Introduction to Political Science</td>
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<tr>
<td>GOVT 150G</td>
<td>American Political Issues</td>
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<td>GOVT 160G</td>
<td>International Political Issues</td>
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<td>Introductory Sociology</td>
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<td>Contemporary Social Problems</td>
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<td>THTR 101G</td>
<td>The World of Theatre</td>
<td></td>
</tr>
<tr>
<td>LIB 311V</td>
<td>Information Literacy</td>
<td></td>
</tr>
</tbody>
</table>

Viewing a Wider World 6
## Area V: Humanities and Fine Arts
Choose three courses from three different departments (within this area) with the "G" designation

### Viewing a Wider World
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIB 311V</td>
<td>Information Literacy</td>
<td></td>
</tr>
</tbody>
</table>

### Core Courses

#### BIOL 111G
Natural History of Life 3

#### BIOL 111GL
Natural History of Life Laboratory 1

#### BIOL 211G
Cellular and Organismal Biology 3

#### BIOL 211GL
Cellular and Organismal Biology Laboratory 1

#### CHEM 111G
General Chemistry I 4

#### CHEM 112G
General Chemistry II 4

Select one from the following: 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td></td>
</tr>
<tr>
<td>&amp; 211GL</td>
<td>and General Physics I Laboratory</td>
<td></td>
</tr>
<tr>
<td>PHYS 213</td>
<td>Mechanics</td>
<td></td>
</tr>
<tr>
<td>&amp; 213 L</td>
<td>and Experimental Mechanics</td>
<td></td>
</tr>
<tr>
<td>PHYS 215G</td>
<td>Engineering Physics I</td>
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</tr>
<tr>
<td>&amp; 215GL</td>
<td>and Engineering Physics I Laboratory</td>
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</tr>
<tr>
<td>PHYS 221G</td>
<td>General Physics for Life Sciences I</td>
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<tr>
<td>&amp; 221GL</td>
<td>and Laboratory to General Physics for Life Science I</td>
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Select one from the following: 4

<table>
<thead>
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<tbody>
<tr>
<td>PHYS 212G</td>
<td>General Physics II</td>
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<tr>
<td>&amp; 212GL</td>
<td>and General Physics II Laboratory 1</td>
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<tr>
<td>PHYS 214</td>
<td>Electricity and Magnetism</td>
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<tr>
<td>&amp; 214 L</td>
<td>and Electricity and Magnetism</td>
<td></td>
</tr>
<tr>
<td>PHYS 216G</td>
<td>Engineering Physics II</td>
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<tr>
<td>&amp; 216GL</td>
<td>and Engineering Physics II Laboratory</td>
<td></td>
</tr>
<tr>
<td>PHYS 222G</td>
<td>General Physics for Life Sciences II</td>
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</tr>
<tr>
<td>&amp; 222GL</td>
<td>and Laboratory to General Physics for Life Sciences II</td>
<td></td>
</tr>
</tbody>
</table>

#### BIOL 301
Principles of Ecology 3

#### BIOL 305
Principles of Genetics 3

#### BIOL 467
Evolution 3

#### BIOL 300+ Plant Science Elective

**Total Credits**: 42

### Concentration: Secondary Ed- Social Studies

#### General Education

**Area I: English and Communication**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
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<tr>
<td>ENGL 311G</td>
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Choose one from the following:

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<th>Credits</th>
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<tbody>
<tr>
<td>ECON 251G</td>
<td>Principles of Macroeconomics</td>
<td></td>
</tr>
<tr>
<td>ECON 252G</td>
<td>Principles of Microeconomics</td>
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</tr>
<tr>
<td>GEOG 281</td>
<td>Map Use: Reading, Analysis and Interpretation</td>
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</tr>
<tr>
<td>HIST 101G</td>
<td>Roots of Modern Europe</td>
<td></td>
</tr>
<tr>
<td>or HIST 102G</td>
<td>Modern Europe</td>
<td></td>
</tr>
<tr>
<td>HIST 201G</td>
<td>Introduction to Early American History</td>
<td></td>
</tr>
<tr>
<td>HIST 202G</td>
<td>Introduction to Recent American History</td>
<td></td>
</tr>
<tr>
<td>HIST 368</td>
<td>Teaching History</td>
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</tr>
<tr>
<td>HIST 386</td>
<td>New Mexico History</td>
<td></td>
</tr>
<tr>
<td>GOVT, ECON, GEOG, or HIST Elective 300+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Zero-to-Four (Early Childhood) - Bachelor of Applied Studies

There is an identified need for prepared educators to serve young children ages zero to four years old in settings outside of the public school in childcare centers, Head Start, and other agencies. The Curriculum and Instruction Department offers a non-licensure concentration, with the Bachelor of Applied Studies degree for the Zero to Four years old early childhood track. This non-licensure concentration serves private and public childcare, early intervention programs, and Head Start.

General Education Requirements

**Area I: English and Communication**

- ENGL 111G Rhetoric and Composition 4
- ENGL 211G Writing in the Humanities and Social Sciences 3
  or ENGL 311G Advanced Composition
- COMM 253G Public Speaking 3
  or COMM 265G Principles of Human Communication

**Area II: Mathematics**

- MATH 111 Fundamentals of Elementary Mathematics I ((MATH 120 is prerequisite)) 3
- MATH 112G Fundamentals of Elementary Math II 3

**Area III: Laboratory Sciences**

**Area IV: Social/Behavioral Sciences**

- C EP 110G Human Growth and Behavior 3
- Two other courses from Area IV of General Education 1

**Area V: Humanities and Fine Arts**

- CAST 301V Introduction to Child Advocacy 3

Choose one from the following:

- ANTH 305V Contemporary Native Americans
- C EP 300V Human Relations Training
- C EP 451V Introduction to Counseling
- ENGL 341V American Indian Literature
- ENGL 394V Southwestern Literature
- PSY 417V Intercultural Relations
- SOC 374V Comparative Family Systems

Viewing a Wider World Courses

- CAST 301V Introduction to Child Advocacy 3

**College of Education Requirements:**

- ECED 115 Child Growth, Development, and Learning 3
- ECED 125 Health, Safety, and Nutrition 2
- ECED 135 Family and Community Collaboration 2
- ECED 235 Introduction to Language, Literacy and Reading 2
- ECED 255 Assessment of Children and Evaluation of Programs 2
- ECED 265 Guiding Young Children 3
- ECED 315 Research in Child, Growth, Development and Learning 3
- SPED 350 Introduction to Special Education in a Diverse Society 3

**ECED Courses for Major:**

- ECED 215 Curriculum Development Through Play 3
- ECED 220 Early Childhood Education Practicum I 2
- ECED 225 Curriculum Development and Implementation II 3
- ECED 230 Early Childhood Education Practicum II 2
- ECED 245 Professionalism 2
- ECED 335 Family, Language and Cultural 3
- ECED 351 Emergent Literacy 3
- ECED 420 Integrated Early Childhood Curriculum 4
- ECED 425 Integrated Curriculum Practicum 2
- SPED 450 Working with Young Children with Special Needs, Ages 3-8 3
- SPED 451 Assessment of Young Children, Birth-Eight 3
- ECED 465 Advanced Caregiving for Infants and Toddlers 3

**Departmental Electives:**

- 8-12 electives credits, 6 of which must be upper-division 8-12

Total Credits 118-122

**Educational Leadership and Administration**

Undergraduate Program Information

The mission of the Department of Educational Leadership and Administration at New Mexico State University is to prepare and graduate capable, skillful and dynamic educational leaders for a diverse society. Through use of theory and practice we aim to develop change agents and role models for socially-just educational systems.

Educational Leadership and Administration

At the undergraduate level, ELA offers the following courses:

- ELA 215 Multicultural Leadership in Education 3
- ELA 255 Leadership and Change in Education 3
- ELA 342 Current Issues In Educational Leadership 3
- ELA 350V Introduction to Educational Leadership in a Global Society 3
- ELA 398 Special Topics in Education 1-3
- ELA 411 Foundation for School Library Specialists 3
- ELA 412 Administration of the School Library 3
- ELA 413 Curriculum Role of the School Library Specialist 3
- ELA 414 Collection Management and Development in School Libraries 3
- ELA 440 Management of Student Services 3
- ELA 450 Principles of Education Law and Policy 3
- ELA 455 Principles of Education Budgeting and Finance 3
- ELA 485 Elements of Research 3
- ELA 499 Internship 3
Graduate Program Information

The mission of the Department of Educational Leadership and Administration at New Mexico State University is to prepare and graduate capable, skillful and dynamic educational leaders for a diverse society. Through the use of theory and practice we aim to develop change agents and role models for socially-just educational systems.

Students studying in these programs are generally interested in the following categories:

- Those seeking preparation for careers as educational leaders and administrators in Pk-12 school sectors. Positions most commonly sought are principals, superintendents, supervisors, program directors, central office staff and state education agency leaders.
- Those seeking preparation for administrative and leadership careers in higher education at the community college and university level, as well as in technical-vocational education. This particular focus can include preparation for the professoriate.
- Those seeking preparation for careers in educational research, agency and program evaluation, and educational management technology. Positions cover placement in a broad range of employment situations within school districts, community colleges, universities, government and industry.

Admission

The department requires full admission to any ELA program before starting coursework. The department will dis-enroll any student who has not been admitted to a graduate degree program and, additionally, will not allow them to enroll in other ELA coursework.

Detailed information on programs may be obtained on the website at http://ela.nmsu.edu/ or by writing the department. For additional information on degree requirements, consult the Graduate School and College of Education policies listed in "General Information on degree requirements, consult the Graduate School and at http://ela.nmsu.edu/ or by writing the department. For additional information on programs may be obtained on the website allowing them to enroll in other ELA coursework.

Minimum Grade Requirement

Students must earn a minimum of a "B-" grade in all required coursework. Students who receive a grade of "C+" or below will be required to retake the course.

Graduate Assistantships

Some graduate assistantships are available in the department. Interested persons should inquire at an early date. Graduate Assistantship applications are available at http://ela.nmsu.edu/index/student-resources/.

Degrees for the Department

Educational Administration - Master of Arts (p. 487)
ELA 215. Multicultural Leadership in Education
3 Credits
Introduction to the social and cultural constructions of gender, class, and race. Students will critically apply theoretical constructs to everyday life and discuss the intersection of gender and race with class inequality in national and global contexts. Using a social justice framework, readings, and assignments integrate a variety of racial/ethnic groups while considering the effects of historically uneven resource distribution, unearned privilege, forms of domination and subordination, immigration status, and cultural representation and ideologies. Participants will learn how to apply the change theories and concepts introduced in the course to practice through course readings, online discussions with the instructor and colleagues, group work, active examination of daily practice in schools, and personal reflection.

ELA 255. Leadership and Change in Education
3 Credits
This course will introduce students to the challenges and key strategies in initiating, implementing, and sustaining educational change and reform. In the first part of the course, participants will learn about the challenges of educational change in the United States and the role that they as school leaders play in facilitating change and reform. The course continues with an examination of how culture, micro-politics, and power structures support or impede national and global change initiatives. The last part of the course offers suggestions for change agents including community organizing, culture building, and embracing sustainable leadership practices. Participants will learn how to apply the change theories and concepts introduced in the course to practice through course readings, online discussions with the instructor and colleagues, group work, active examination of daily practice in schools, and personal reflection.

ELA 298. Special Topics in Education
1-3 Credits (1-3)
Special topics course in education for undergraduate students. Course will be identified by a subtitle. May be repeated up to 12 credits. Restricted to Las Cruces campus only.

ELA 342. Current Issues in Educational Leadership
3 Credits
This course addresses issues such as the rise in international education, education’s costs, social media’s role and influence, changes in state and national funding trends, student and faculty/staff diversity, among others. The focus of this course is centered on the actions and responses of administrators to the current issues they are facing.

ELA 350V. Introduction to Educational Leadership in a Global Society
3 Credits
Multinational educational systems covered through knowledge of the U.S. system of education promoting critical leadership roles every citizen plays in the success of educational systems.

ELA 398. Special Topics in Education
1-3 Credits (1-3)
Special topics course in education for undergraduate students. Course will be identified by a subtitle. May be repeated for a maximum of 12 credits.

ELA 411. Foundation for School Library Specialists
3 Credits
Elements of librarianship. Introduction to the history, purpose, and role of the school library. Overview of current issues and legislation affecting school libraries. Same as ELA 511. May be repeated up to 3 credits.

ELA 412. Administration of the School Library
3 Credits
Principles and practices related to the function, structure, and management of school libraries. Same as ELA 512. May be repeated up to 3 credits.

ELA 413. Curriculum Role of the School Library Specialist
3 Credits
Introduction to the integration of curriculum in school library programs. Current trends in collaborative planning and teaching between the school librarians and teachers. Taught with ELA 513. May be repeated up to 3 credits.

3 Credits
Principles of identifying, selecting, acquiring, managing, and evaluating information for school libraries. Same as ELA 514. May be repeated up to 3 credits.

ELA 440. Management of Student Services
3 Credits
History and overview of student services (e.g., admissions, counseling, registration, financial aid, housing, food services, student organizations) for early entry level positions. This course will provide students with an examination of foundations and principals of student services. Important theories and essential competencies needed in order to be successful will be explored through a social justice perspective of leadership.

ELA 450. Principles of Education Law and Policy
3 Credits
Overview of the use of law and policy in schools and higher education. May be repeated up to 3 credits. Restricted to: EAD majors.

ELA 455. Principles of Education Budgeting and Finance
3 Credits
Analysis of budget and finance practices in education. Restricted to: EMD majors.

ELA 485. Elements of Research
3 Credits
This course provides students with a foundation for understanding educational research. The course will also provide grounding in proper writing format for use in the education profession. Students will be introduced to various research paradigms and the symbiosis of theory and practice. Besides introducing students to the symbiosis of theory and practice, students will complete assignments and activities that demonstrate the use of that symbiosis. Ultimately, students will be able to use the knowledge they gain through the course to be able to critique educational research.

ELA 499. Internship
3 Credits
The undergraduate Educational Leadership major requires that students complete two internships. Internships provide students with either experience working in an area of administration that is different from the student’s regular job or experience conducting research for a program or project. Each internship placement site and scope of work is determined through consultation with the course instructor. Students must complete 120 hours of work with the selected internship site. May be repeated up to 6 credits. Restricted to: EL majors.

Prerequisite(s): Student must be an EL major and be within (at least) one year of graduation.
ELA 502. Special Problems.
1-3 Credits
Offered under various subtitles which indicate the subject matter covered. May be taken for a maximum of 3 credits per semester and a total of 6 credits overall. May be repeated up to 6 credits. Consent of Instructor required.

ELA 511. Foundation for School Library Specialists
3 Credits
Elements of librarianship. Introduction to the history, purpose, and role of the school library. Overview of current issues and legislation affecting school libraries. Same as ELA 411. May be repeated up to 3 credits.

ELA 512. Administration of the School Library
3 Credits
Principles and practices related to the function, structure, and management of school libraries. Same as ELA 412. May be repeated up to 3 credits.

ELA 513. Curriculum Role of the School Library Specialist
3 Credits
Introduction to the integration of curriculum in school library programs. Current trends in collaborative planning and teaching between school librarians and teachers. Same as ELA 413. May be repeated up to 3 credits.

ELA 514. Collection Management and Development in School Libraries
3 Credits
Principles of identifying, selecting, acquiring, managing, and evaluating information for school libraries. Same as ELA 414. May be repeated up to 3 credits.

ELA 530. Management of Educational Change
3 Credits
Leadership in implementing innovations in education. Consent of Instructor required.

ELA 531. Special Education Administration
3 Credits
Competencies for the administration of special education programs with an emphasis upon New Mexico public school standards. Consent of Instructor required.

ELA 540. Management of Student Services in Higher Education
3 Credits
History and overview of student services (e.g., admissions, counseling, registration, financial aid, housing, food services, student organizations) and a review of management components used in student services. Consent of Instructor required.

ELA 550. Higher Education Law
3 Credits
This course is designed to review the impact of the legal process and the judiciary on higher education. Consent of Instructor required.

ELA 555. Higher Education Finance and Funding
3 Credits
This course examines the impact and process of financing and funding higher education. Consent of Instructor required.

ELA 563. Higher Education Administration
3 Credits
This course provides an overview of higher education in the United States including history, mission, and governance, in the context of organizational theory. Consent of Instructor required.

ELA 564. Internship Public Schools Part I
3 Credits
First half of a practical internship inPk-12 schools under supervision of school administrator. Consent of Instructor required. Restricted to: E AD majors.
Prerequisite(s): 18 cr. of ELA coursework, 3 years of Pk-12 teaching experience and consent of instructor.

ELA 565. Internship: Public Schools Part II
3 Credits
Second half of a practical internship in Pk-12 administrative setting under supervision of experienced higher education administrator. Consent of Instructor required. Restricted to: E AD majors.
Prerequisite(s): ELA 564.

ELA 566. Internship: Higher Education Part I
3 Credits
First half of practical internship in administrative setting under supervision of experienced higher education administrator. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: E AD majors.
Prerequisite(s): 15 credits of ELA coursework and consent of instructor.

ELA 567. Internship: Higher Education Part II
3 Credits
Second half of a practical internship in an administrative setting under supervision of an experienced higher education administrator. Consent of Instructor required. Restricted to: E AD majors.
Prerequisite(s): ELA 566.

ELA 568. Topics in School Administration
1-3 Credits
Designated by subtitle.

ELA 569. Basing Decision on Data: Higher Education.
3 Credits
Analysis of accountability data and other evidence to support educational decision making. Disaggregating and interpreting assessment data to guide improvement of instruction. Moving from evidence to plans for action. Consent of Instructor required.

ELA 570. Educational Leadership, Supervision, and Evaluation
3 Credits
Leadership, supervision, and evaluation in Pk-12 and post secondary education. Consent of Instructor required.

ELA 572. History and Philosophy of Education
3 Credits
An overview of the historical development of the American school system and the relation of various philosophies to American education.

ELA 575. The Principalship
3 Credits
Key issues surrounding the role of school-site leaders. Consent of Instructor required.

ELA 576. Educational Financial Management
3 Credits
Educational finance and business applications. Consent of Instructor required.

ELA 578. Leadership and Administration of Bilingual Education
3 Credits
Concepts and practical approaches to improving the education of English language learners through higher education. Consent of Instructor required.
ELA 579. Public School Law
3 Credits
Legal processes of education, major court decisions, and the legislative process will be studied. Consent of Instructor required.

ELA 580. Administration of Adult and Continuing Education
3 Credits
Administration of programs in public schools, higher education, community and nontraditional educational settings. Consent of Instructor required.

ELA 582. Community College Administration
3 Credits
An overview of the history, role, objectives and patterns governing the effectiveness of the community college. Consent of Instructor required.

ELA 585. Elements of Research
3 Credits
Survey and analysis of research methods and designs focusing on sound educational research and its presentation. Consent of Instructor required.

ELA 586. Multicultural Leadership in Education
3 Credits
Examine cultural diversity and how appropriate understanding, leadership and instructional strategies can be used to reach all learners. Enhances understanding of what it means to be an educator in culturally diverse contexts. Consent of Instructor required.

ELA 589. Evaluation Design in Education
3 Credits
This course focuses on evaluation and accountability models; application to educational programs. Consent of Instructor required.

ELA 590. Basing Decision on Data: Pk-12
3 Credits
Analysis of accountability data and other evidence to support educational decision making. Disaggregating and interpreting assessment data to guide improvement of instruction. Moving from evidence to plans for action. May be repeated up to 3 credits. Consent of Instructor required.

ELA 595. Current Topics
1-6 Credits
Offered under various subtitles which indicate the subject matter covered. May be taken for a maximum of 6 credits.

ELA 598. Independent Studies
1-3 Credits
Individual investigation in special topic areas. Requires prior approval of project advisor.

ELA 600. Doctoral Research
1-15 Credits

ELA 620. Doctoral Seminar
1-3 Credits
A study of current issues in educational administration at the national, state, and local levels. May be repeated up to 6 credits. Consent of Instructor required.

ELA 622. Quantitative Research I
3 Credits
Explores quantitative research methods, the rationale and assumptions that guide statistical decisions, beginning level statistical analyses, and how all of these are applied in the field of educational leadership. May be repeated up to 3 credits. Consent of Instructor required. 
Prerequisite(s): Consent of instructor.

ELA 623. Qualitative Research I
3 Credits
Explores qualitative research methods and models and their application in the field of educational leadership. May be repeated up to 3 credits. Consent of Instructor required.

ELA 630. Concepts of Leadership in Education
3 Credits
Survey of concepts of leadership in general and educational leadership in particular. Consideration of implications for practice. May be repeated up to 3 credits. Consent of Instructor required.

ELA 645. The Professoriate
3 Credits
The purpose of this course is to explore the body of scholarly knowledge and research appropriate for the study of American higher education, the context in which teaching and learning occurs, and faculty’s roles in the process. We will discuss the number, variety, and purpose of the various types of institutions; the different roles that faculty members play within these institutions; how faculty work is assessed and valued within the outside of the university; administrative regulations related to faculty work; current issues related to the general state of the professoriate; as well as how does one prepare to enter the professoriate.

ELA 650. Higher Education Law
3 Credits
This advanced course is designed to review the impact of the judiciary on higher education. The legal standing of institutions of higher education on issues of staff rights, student rights, and tort liability will be addressed. In addition, the impact of local ordinances, state and federal laws and regulations will be examined. Consent of Instructor required.

ELA 655. Higher Education Finance and Funding
3 Credits
This advanced course examines the impact and process of financing higher education. The course is an examination of higher education finance as it relates to operational budgets, capital budgets, and policy issues which impact the financing of higher education. Consent of Instructor required.

ELA 670. Advanced Internship
1-6 Credits
For those pursuing an advanced degree to meet the field work requirement. To bear an appropriate subtitle. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: E AD majors. S/U Grading (S/U, Audit).

ELA 671. Foundations of Educational Administration
3 Credits
Advanced course about the political, economic, and social forces on policy making and governance of Pk-12 and postsecondary education. May be repeated up to 3 credits. Consent of Instructor required.

ELA 676. Educational Financial Management
3 Credits
This advanced course offers an overview of economic and financial concerns relating to the public school system of the United States. Consent of Instructor required.

ELA 679. Public School Law
3 Credits
Advanced course in which the legal processes of education, major court decisions, and the legislative process will be studied. Consent of Instructor required.
ELA 682. Quantitative Research II
3 Credits
Intermediate quantitative methods of research, statistical analyses, and their application in the field of educational leadership. May be repeated up to 3 credits. Consent of Instructor required. Restricted to Doctoral students only.
Prerequisite(s): ELA 622.

ELA 683. Qualitative Research II
3 Credits
Advanced qualitative methods of research and implementation in the field of educational leadership. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): ELA 623.

ELA 685. Elements of Research
3 Credits
Advanced survey and analysis of research methods and designs focusing on sound educational research and its presentation. Consent of Instructor required.

ELA 689. Evaluation Design in Education
3 Credits
Advanced course that focuses on evaluation and accountability models; application to educational programs. Consent of Instructor required.

ELA 693. Dissertation Seminar
3 Credits
Same as BIL, C EP, ECED, EDUC, RDG, SPED 693. Consent of Instructor required.

ELA 698. Selected Topics
1-6 Credits
Offered under various subtitles which indicate the subject matter covered. May be taken for a maximum of 6 credits per semester and overall total: May be repeated up to 9 credits.

ELA 700. Doctoral Dissertation
9 Credits
Dissertation. Minimum of 3 credits per regular semester. May be taken for a maximum of 36 credits. Consent of instructor required.

Contact Person: Denise Rodriguez-Strawn
Office Location: O'Donnell Hall Rm 205
Mailing Address: New Mexico State University, P.O. Box 30001-MSC 3N, Las Cruces, NM 88003
Physical Address: New Mexico State University, 1220 Stewart Street, O'Donnell Hall Rm. 205, Las Cruces, NM 88003
Phone: (575) 646-3825
Email: edmandev@nmsu.edu
Website: http://ela.nmsu.edu/

Educational Administration - Doctor of Education

Educational Leadership Doctoral Program (ELDP)
The Department of Educational Leadership and Administration (ELA) offers both the Doctor of Education (Ed.D.) and the Doctor of Philosophy (Ph.D.)

The Doctor of Education is geared toward those students wishing to pursue a degree which will help them in their profession. Coursework, internships, and research are constructed to develop individuals for administrative position in Pk-12 schools in post secondary institutions.

The Doctor of Philosophy is a research-oriented degree. Coursework and internships are directed toward developing research proficiencies in educational leadership. The Ph.D. also requires additional hours of coursework in an approved cognate area.

Admission
The department requires applicants to complete a Doctoral Admissions Portfolio. Specific details and criteria are available from the Department of Educational Leadership and Administration or on the website at https://ela.nmsu.edu/index/academics/docpage/.

For More Information
Please do not hesitate to contact the ELA Department if you have any questions related to ELDP. Feel free to send an e-mail message to edmandev@nmsu.edu or call (575) 646-3825.

Educational Administration - Doctor of Philosophy

Educational Leadership Doctoral Program (ELDP)
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For More Information
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Educational Administration - Graduate Minor

Doctoral students who wish to earn a minor in Pk-12 school administration will need to take the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELA 630</td>
<td>Concepts of Leadership in Education</td>
<td>3</td>
</tr>
<tr>
<td>ELA 671</td>
<td>Foundations of Educational Administration</td>
<td>3</td>
</tr>
<tr>
<td>ELA 676</td>
<td>Educational Financial Management</td>
<td>3</td>
</tr>
</tbody>
</table>
Those who wish to earn a minor in higher education administration are required to complete the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELA 620</td>
<td>Doctoral Seminar</td>
<td>3</td>
</tr>
<tr>
<td>ELA 650</td>
<td>Higher Education Law</td>
<td>3</td>
</tr>
<tr>
<td>ELA 655</td>
<td>Higher Education Finance and Funding</td>
<td>3</td>
</tr>
<tr>
<td>ELA 671</td>
<td>Foundations of Educational Administration</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 12

Educational Administration - Graduate Minor

Master’s students may earn a minor in educational administration, with a focus in Higher Education Administration, by passing three of the listed classes below.

Minimum Grade Requirement
Students must earn a minimum “B+” grade in all required coursework. Students who receive a grade of “C+” or below will be required to retake the course.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELA 563</td>
<td>Higher Education Administration</td>
<td>3</td>
</tr>
<tr>
<td>or ELA 582</td>
<td>Community College Administration</td>
<td></td>
</tr>
<tr>
<td>ELA 550</td>
<td>Higher Education Law</td>
<td>3</td>
</tr>
<tr>
<td>ELA 555</td>
<td>Higher Education Finance and Funding</td>
<td>3</td>
</tr>
<tr>
<td>ELA 540</td>
<td>Management of Student Services in Higher Education</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 12

Educational Administration - Graduate Minor

Master’s level students wishing to earn a minor in educational administration, with a focus in Pk-12 Educational Administration, must pass three of the listed classes below.

Minimum Grade Requirement
Students must earn a minimum “B+” grade in all required coursework. Students who receive a grade of “C+” or below will be required to retake the course.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELA 570</td>
<td>Educational Leadership, Supervision, and Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>ELA 575</td>
<td>The Principalship</td>
<td>3</td>
</tr>
<tr>
<td>ELA 576</td>
<td>Educational Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>ELA 579</td>
<td>Public School Law</td>
<td>3</td>
</tr>
</tbody>
</table>

Educational Leadership and Administration - Master of Arts

Educational Administration - Master of Arts

The Master of Arts (M.A.) in educational administration focuses on two areas: Pk-12 school administration and higher education. The program of study for Pk-12 school administration includes all coursework and internships required by the New Mexico Public Education Department for Administrative Licensure.

The department does not offer the thesis option.

Admission Application: Pk-12 School Administration
Grade point average requirements for the master’s program are consistent with those of the Graduate School. However, in addition to these requirements, all master’s degree applicants must provide, to the department, a one-page letter of application indicating career interests and reasons for wanting to pursue a master’s degree in the department; a professional résumé; a two-page professional or academic writing sample; official document showing three years of Pk-12 teaching experience; copy of current U.S. teaching license; and three letters of recommendation. The letters of support must be mailed directly to the department from the writer. The ELA admissions committee bases admissions decisions on this portfolio and will not consider incomplete applications.

Prerequisite: Higher Education Administration
Students interested in higher education administration must have a bachelor’s degree.

Application Deadline: Higher Education Administration
This program begins in the spring semester only. All materials for this program must be received by the deadline of November 15. Admission requirements are available from the Department of Educational Leadership and Administration, or on the website at https://ela.nmsu.edu/index/academics/mainhied/.

Educational Leadership and Administration - Undergraduate Minor

A minor in educational leadership and administration is available to a student receiving a bachelor’s degree from another department in the university. The minor in educational leadership and administration is designed to be useful to the undergraduate who is preparing to work as
a teacher or staff member in educational organizations such as primary schools, community colleges and universities.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELA 215</td>
<td>Multicultural Leadership in Education</td>
<td>3</td>
</tr>
<tr>
<td>ELA 255</td>
<td>Leadership and Change in Education</td>
<td>3</td>
</tr>
<tr>
<td>ELA 342</td>
<td>Current Issues In Educational Leadership</td>
<td>3</td>
</tr>
<tr>
<td>ELA 398</td>
<td>Special Topics in Education</td>
<td>3</td>
</tr>
<tr>
<td>ELA 450</td>
<td>Principles of Education Law and Policy</td>
<td>3</td>
</tr>
<tr>
<td>ELA 455</td>
<td>Principles of Education Budgeting and Finance</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 18

**How To Apply**

If you wish to complete a minor in Educational Leadership and Administration (ELA), you should complete the ELA minor application/verification form and return it to the Educational Leadership and Administration Department during the semester in which you will be completing your ELA minor coursework. This form notifies the registrar of your intention. It insures that if you complete the requirements for the minor, it will be officially recorded in your transcript.

## Kinesiology and Dance

### Undergraduate Program Information

The Department of Kinesiology and Dance provides students with the education necessary to pursue careers in allied health sciences (medicine, physician's assistant, physical therapy, occupational therapy, etc.), athletic training, physical education, dance and dance education and for a variety of careers in the fitness and wellness industry. Details of the degree programs and their respective concentrations are provided below.

The department also offers minors in dance and exercise science.

### Graduate Program Information

The PhD in Kinesiology encompasses opportunities for focused study in physiological, biomechanical, psychological, and pedagogical domains of human movement. Program emphasis is placed on the acquisition of skills needed for high quality research and innovative teaching. Students are expected to become proficient in research methods within their respective areas of interests. The program prepares students for postdoctoral or faculty positions in higher education, or positions in applied sport and clinical settings. Students are expected to work with specific faculty members to explore interests in Biomechanics, Exercise Physiology, Strength & Condition, Aging, Physical Education, Dance and Sport Psychology & Motor Behavior.

**Admission**

The Department of Kinesiology & Dance offers a Doctorate of Philosophy (PhD) in Kinesiology. To maximize consideration for admittance (for a recommended August start date), candidates should submit applications by January 15 of that same year.

Students will be admitted to graduate study on the basis of their potential for achievement in research, scholarship and teaching. The most promising applicants will be accepted. Because the number of students that the department can successfully accommodate is limited, it will not always be possible to admit all qualified applicants. The admissions committee will consider any material that a candidate for admission wishes to present. Application forms and instructions are available here: [http://prospective.nmsu.edu/graduate/apply/index.html](http://prospective.nmsu.edu/graduate/apply/index.html).

1. A completed Graduate School admission application.
2. Complete transcripts of all college work, reflecting a bachelor's and a master's degree (or 30 hours of graduate work) in a related field of study, and a minimum cumulative GPA of 3.0 in prior degree programs.
3. Scores on the Graduate Record Examination (there is no minimum requirement; however, the scores will be considered in the admission decision).
4. Three letters of recommendation from professors, employers or others qualified to evaluate your potential for graduate work.
5. A curriculum vitae or resume.
6. A personal statement explaining how graduate work at NMSU fits your educational and career goals, and,
7. An indication of the faculty members whose work is of particular interest to you, and a letter of support from at least one faculty member indicating an interest in guiding you through your program of studies.

### Degrees for the Department

**Dance - Bachelor of Arts in Dance (p. 503)**

**Athletic Training - Bachelor of Science in Athletic Training (p. 502)**

**Kinesiology - Bachelor of Science in Kinesiology (p. 505)**

**Kinesiology - Doctor of Philosophy (p. 507)**

### Minors for the Department

**Dance - Undergraduate Minor (p. 504)**

**Exercise Science - Undergraduate Minor (p. 505)**

**Professor, Robert Wood, Academic Department Head**

**Professors** Berning, Knapp, Oliver; **Associate Professor** Gear, Keeley, Gilpin, Post; **Assistant Professors** Aiken, An, Aranda, Lee, Meyer, O’Connell; **Instructor** Gavit

**Graduate Faculty:** Robert H. Wood, Department Head, PhD (Louisiana State University), Phillip G. Post, Graduate Program Coordinator, PhD (Associate Professor, University of Tennessee), Christopher A. Aiken (Assistant Professor, Louisiana State University), Yong Woo An (Assistant Professor, University of Delaware), Joseph M. Berning, PhD (Professor, University of Nebraska), William S. Gear, PhD (Associate Professor, University of Pittsburgh), Frank G. “Paco” Gilpin, MS (College Associate Professor, New Mexico State University), David W. Keeley, PhD (Associate Professor, University of Arkansas), Debra W. Knapp, EdD (Professor, New Mexico State University), Sang-Rok Lee (Assistant Professor, Florida State University), Kimberly L. Oliver, PhD (Professor, Virginia Polytechnical Institute).

**Instructional Faculty:** Raquel S. Aranda, MS (College Assistant Professor, New Mexico State University), Ann N. Gavit, MS (College Instructor, New Mexico State University), Shon Meyer, MS (College Assistant Professor Instructor, University of Idaho), Kimberly O’Connell, MS (College Assistant Professor, California University of Pennsylvania).
DANC 101G. Dance Appreciation
3 Credits
An investigation of movement, dance and choreographic work as a vehicle for understanding culture. Includes concepts in dance appreciation, themes and purposes of dance analysis of dance works, exposure to different styles of dance and understanding the roles and effects of major historical periods. Restricted to: Main campus only.

DANC 102. Introduction to Hip-Hop Dance
1 Credit
This course is an introduction to Hip-Hop dance. The movement material will cover West coast and Southern styles with the inclusion of the history and evolution of Hip-Hop dance. No previous dance experience required. May be repeated up to 4 credits. Restricted to Las Cruces campus only.

DANC 109. Argentine Tango I
1 Credit
Introduction to skills and techniques of Argentine Tango.

DANC 118. West Coast Swing I
1 Credit
Students will learn to dance the smooth style of Swing. The West Coast Swing may be danced to ANY style of music that has a beat (Country, R&B, Hip Hop, Disco, House). Also featured is the Hustle (fast paced and exhilarating). May be repeated up to 4 credits. Restricted to Las Cruces campus only.

DANC 120. Ballet Folklorico I
1 Credit
Introductory course in folklorico dances of New Mexico and Mexico. May be repeated for a maximum of 2 credits.

DANC 121. Beginning Country Western Dance
1 Credit
Beginning Country Western dance, including Country Western two-step, nightclub two-step, polka, and Country Western line dance. May be repeated up to 2 credits. Restricted to Las Cruces campus only.

DANC 122. Introduction to Latin Social Dance
1 Credit
Introduction to Latin social dance for non dance majors. Students will learn basic Latin dance technique and partnering work. May be repeated up to 2 credits. Restricted to Las Cruces campus only.

DANC 123. Ballet Technique I
1 Credit
Introduction to basic ballet technique, vocabulary, and history. Includes practical application of anatomical placement, posture and control through participation and academic study. May be repeated for a maximum of 2 credits.

DANC 124. Jazz Technique I
1 Credit
Introduction to basic jazz technique, styles, and history through participation and academic study. May be repeated for a maximum of 2 credits.

DANC 125. Introduction to Ballroom Dance
1 Credit
Introduction to ballroom dance for non dance majors. Students will learn basic ballroom technique and partnering work. May be repeated up to 2 credits. Restricted to Las Cruces campus only.

DANC 126. Modern Dance Technique I
1 Credit
Introduction to and development of basic modern dance technique, history, and aesthetics through participation and academic study. May be repeated for a maximum of 2 credits.

DANC 127. Tap Dance I
1 Credit
Introduction to skills and techniques of tap dance. May be repeated for a maximum of 2 credits.

DANC 128. Latin Club Dance
1 Credit
Introduction to the most popular Latin Club Dances to include the Salsa, Merengue, and Bachata. May be repeated up to 2 credits. Restricted to Las Cruces campus only.

DANC 129. Flamenco I
1 Credit
Introduction to skills and techniques of flamenco dance. May be repeated for a maximum of 2 credits.

DANC 151. Master Works
1 Credit
This course investigates the work of master choreographers in contemporary, Spanish, and social dance styles. Students will engage in exploring concepts in dance appreciation, themes and purposes of dance by analyzing dance works using principles, elements, and process of compositional design. This course will require students to communicate their opinions through verbal discussions, group projects, and written assignments. Restricted to Las Cruces campus only.

DANC 200. Dance Pedagogy: Educational Theory
1 Credit
This course will examine how people learn cognitively, physically, and emotionally so that students can become better at self-teaching and self-assessment. Students will study several educational theories and how they relate to dance. Restricted to Las Cruces campus only.

DANC 202. Dance Ensemble
1 Credit
This course will include learning the elements of dance composition. The students in this course will be the dancers for the students in Dance Choreography II. This course is a requirement for freshman dance majors whose emphasis is in contemporary dance. May be repeated up to 2 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 203. Dance Production I
1 Credit
Students will learn the production process of dance events which may include performances, festivals, workshops, conferences. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 204. Dance Sport I
1 Credit
Performance-based, team formation dance in a variety of Latin and ballroom dances. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

Prerequisite(s): Consent of instructor and one of DANC 121, DANC 122, DANC 125, or DANC 128.
DANC 205. Contemporary Dance Ensemble I  
1 Credit  
Performance-based instruction for students pursuing a career in contemporary dance. Instruction includes contemporary dance repertory and choreography for stage, outdoor arenas, and site-specific areas. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 206. Spanish Dance Ensembles I  
1 Credit  
Performance-based instruction for students pursuing a career in dance with an emphasis in Spanish Dance. Instruction includes dance repertory and choreography for stage, outdoor arenas, and site-specific areas. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 209. Argentine Tango II  
1 Credit  
Intermediate study in Argentine tango. Learn advanced patterns, techniques and partnering skills. May be repeated up to 2 credits. Consent of Instructor required. Restricted to Las Cruces campus only.  
Prerequisite(s): Consent of instructor.

DANC 210. Classical Spanish II  
2 Credits (1+3P)  
The study of theory, techniques, and practice of Classical Spanish at the intermediate level. Includes historical and cultural contexts of this art form. May be repeated up to 8 credits. Consent of Instructor required. Restricted to Las Cruces campus only.  
Prerequisite(s): DANC 129.

DANC 212. Intermediate Hip-Hop Dance  
2 Credits  
This course is for students who have experience in Hip-Hop dance. The movement material will cover West coast and Southern styles with the inclusion of the history and evolution of Hip-Hop dance. May be repeated up to 8 credits. Restricted to Las Cruces campus only.

DANC 218. West Coast Swing II  
2 Credits  
Students will take their West Coast Swing & Hustle to the next level. Learn Intermediate and Advanced figures and techniques in both dances. Students will also enjoy advanced study on musicality and blending to create new amalgamations as well as practice in advanced leading & following techniques. May be repeated up to 8 credits. Consent of Instructor required. Restricted to Las Cruces campus only.  
Prerequisite(s): DANC 118.

DANC 221. Country Western Dance  
2 Credits  
Intermediate skills in country/western two-step, nightclub two-step, polka, and Western line dances. May be repeated up to 4 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): DANC 121 or consent of instructor.

DANC 222. Bronze American Rhythm  
2 Credits (1+2P)  
Bronze level American Rhythm patterns, techniques, and partnering with emphasis on elements of dance. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 223. Ballet Technique II  
2 Credits  
Continued study of classical ballet technique, vocabulary, and history through participation and academic study. May be repeated up to 8 credits. Restricted to Las Cruces campus only.

DANC 224. Jazz Technique II  
2 Credits  
Continued study of jazz technique and history through participation and academic study. May be repeated up to 8 credits. Restricted to Las Cruces campus only.

DANC 225. Bronze American Smooth  
2 Credits (1+2P)  
Bronze level American Smooth patterns, technique, and partnering with an emphasis on the elements of dance. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.  
Prerequisite(s): DANC 125 or consent of instructor.

DANC 226. Modern Dance Technique II  
2 Credits  
Continued study of postmodern dance technique and history through participation and academic study. May be repeated up to 8 credits. Restricted to Las Cruces campus only.

DANC 227. Tap Dance II  
1 Credit  
Continued study of skills and techniques of tap dance at the advanced level. May be repeated for a maximum of 2 credits.  
Prerequisite: DANC 127 or consent of instructor.

DANC 229. Flamenco II  
2 Credits  
The study of theory, techniques and practice of Flamenco at the intermediate level. Includes historical and cultural contexts of this art form. May be repeated up to 8 credits. Restricted to Las Cruces campus only.  
Prerequisite(s): Dance 129.

DANC 232. Bronze International Latin  
2 Credits  
This is the style of Latin dance that is danced around the globe and is featured in the World DanceSport Championships. Students will learn the Bronze Level figures and techniques in four (4) International Style dances: Rumba, Cha Cha, Samba & Jive and the techniques. May be repeated up to 8 credits. Consent of Instructor required. Restricted to Las Cruces campus only.  
Prerequisite(s): DANC 222.

DANC 235. Bronze International Standard  
2 Credits  
This is the style of Ballroom dance that is performed around the globe and is featured in the World DanceSport Championships. Learn the Bronze Level figures and techniques in five (5) International Style dances: Waltz, Tango, Viennese Waltz, Foxtrot & Quickstep. Students will focus on understanding technical Elements of Dance, memorizing and performing routines. May be repeated up to 8 credits. Consent of Instructor required. Restricted to Las Cruces campus only.  
Prerequisite(s): DANC 225.

DANC 239. DanceSport Choreography I  
2 Credits  
An introduction to the process and theory behind creating original choreography for both performance and competition level dance. With focus on the individual couple, gain necessary skills, knowledge and practice in choreographing Ballroom, Latin, Swing &/or Nightclub dance routines in various practical settings. Consent of Instructor required. Restricted to Las Cruces campus only.
DANC 275. Dance Studio Management
3 Credits
The study and practice of studio management. Includes study of financial procedures, marketing, entrepreneurship, leadership, management, fundraising and other related topics. Restricted to majors and minors.

DANC 279. Flamenco Choreography I
2 Credits
Students develop and perform solo dance studies with an emphasis placed on the development of personal movement vocabulary, phrase building, and the exploration of choreographic tools for Flamenco on stage. Discussion, critiquing, and descriptive writing about their choreographic processes will supplement direct physical work. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 280. Improvisation I
1 Credit
Introduction and development of basic movement improvisation skills.

DANC 289. Principles of Choreography I
2 Credits
Solo dance choreography technique. Course must be passed with a grade of C or higher. Consent of instructor required. Restricted to: Main campus only. Restricted to Dance Majors Dance Minors majors.

DANC 300. Dance Pedagogy: Creative Movement
3 Credits
Teaching methods and class planning for creative movement dance curriculum at preschool and elementary school levels. Restricted to Las Cruces campus only.

DANC 301. Flamenco Pedagogy I
3 Credits
The methods and theory of teaching Flamenco dance forms particularly in the studio environment. Consent of Instructor required.
Prerequisite(s): DANC 229 AND DANC 206.

DANC 303. Dance Production II
1 Credit
Students will learn the production process of dance events which may include performances, festivals, workshops, conferences.
Prerequisite(s): DANC 203.

DANC 304. Dance Sport II
1 Credit
Advanced performance-based, team formation dance in a variety of Latin and social dances. May be repeated up to 4 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor and one of DANC 121, DANC 122, DANC 125, or DANC 128.

DANC 305. Contemporary Dance Ensemble II
1 Credit
Advanced performance-based instruction for students pursuing a career in contemporary dance. Instruction includes contemporary dance repertory and choreography for stage, outdoor arenas, and site-specific areas. May be repeated up to 6 credits. Consent of Instructor required.

DANC 306. Spanish Dance Ensemble II
1 Credit
Performance-based instruction for students pursuing a career in dance with an emphasis in Spanish Dance. Instruction includes dance repertory and choreography for stage, outdoor arenas, and site-specific areas. May be repeated up to 4 credits. Consent of Instructor required.

DANC 310. Classical Spanish Dance III
3 Credits
Advanced study of Classical Spanish Dance with castanets, cultural history, and pedagogy methods. A expanded focus on integration of different classical genres with focus on solo work. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 210.

DANC 322. Silver American Rhythm
3 Credits (2+2P)
Silver level American Rhythm patterns and technique with emphasis on performance. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 222.

DANC 323. Ballet Technique III
3 Credits
Advanced performance-based, team formation dance in a variety of Latin and social dances. May be repeated for a maximum of 12 credits.
Prerequisite: DANC 223 or consent of instructor.

DANC 324. Jazz Technique III
3 Credits
Advanced study of jazz dance, including vocabulary and history. May be repeated for a maximum of 12 credits.
Prerequisite: DANC 222 or consent of Instructor.

DANC 325. Silver American Smooth
3 Credits (2+2P)
Silver level American Smooth patterns and technique with emphasis on performance. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 225.

DANC 326. Modern Dance III
3 Credits
Intermediate/advanced-level modern dance technique and study of current dance aesthetics. May be repeated for a maximum of 12 credits.
Prerequisite: DANC 226 or consent of instructor.

DANC 329. Flamenco III
3 Credits
Advanced study in flamenco dance technique, its cultural history and pedagogy methods. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

DANC 332. Silver International Latin
3 Credits
Students will learn Silver Level syllabus figures in four (4) International Style dances: Rumba, Cha Cha, Samba & Jive and Bronze Level figures in Paso Doble. Continued training and practice in International Style Latin dance technique. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 232.

DANC 335. Silver International Standard
3 Credits
Learn Silver Level syllabus figures in the five (5) International Style Standard dances: Waltz, Tango, Viennese Waltz, Foxtrot & Quickstep. Students will focus on increased technical understanding to increase their ability in partnering and musicality. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 235.
**DANC 339. Flamenco Structure and Improvisation**

3 Credits
A Study of various elements necessary in an improvisational setting in Flamenco. Using a cross section of Flamenco forms as a format. Students study the compass of each palo, then move to several traditional letras appropriate to these forms. May be repeated up to 9 credits. Consent of Instructor required.

**Prerequisite(s):** DANC 229.

**DANC 342. DanceSport Pedagogy: Rhythm**

3 Credits
In this teacher education course, students will begin to develop skills necessary in becoming a successful, professional Ballroom Dance Instructor. Students will gain technical mastery of Bronze level figures in four (4) Rhythm Dances to include the Rumba, Cha Cha, East Coast Swing and Mambo. Students will gain practical teacher education in the area of Private Lesson Instruction with required in class practicums. May be repeated up to 6 credits. Consent of Instructor required.

**Prerequisite(s):** DANC 222.

**DANC 345. DanceSport Pedagogy: Smooth**

3 Credits
In this teacher education course, students will begin to develop skills necessary in becoming a successful, professional Ballroom Dance Instructor. Students will gain technical mastery of Bronze level figures in the four (4) American Style Smooth Ballroom Dances to include the Waltz, Foxtrot, Tango and Viennese Waltz. Students will gain practical teacher education in the area of Group Class Instruction with required in class practicums. May be repeated up to 9 credits. Consent of Instructor required.

**Prerequisite(s):** DANC 225.

**DANC 349. Flamenco Structure and Improvisation**

3 Credits
Students study the compass of each palo, then move to several traditional letras appropriate to these forms. May be repeated up to 9 credits. Consent of Instructor required.

**Prerequisite(s):** DANC 229.

**DANC 389. Principles of Choreography II**

2 Credits
Continued investigation of the choreographic process with an emphasis on group choreography. Course must be passed with a grade of C or higher. Consent of instructor required. Restricted to: Main campus only. Restricted to Dance majors Dance minors majors.

**Prerequisite(s):** DANC 289.

**DANC 400. Dance Pedagogy II**

3 Credits
Teaching methods and class planning for dance curriculum at middle school and high school levels.

**Prerequisite:** DANC 300 or consent of instructor.

**DANC 401. Flamenco Pedagogy II**

3 Credits
Advanced methods and theory of teaching Flamenco dance forms particularly in the studio environment. Includes a practicum of eight onsite teaching units in a location to be determined by the designated study. Consent of Instructor required.

**Prerequisite(s):** DANC 229 AND DANC 206.

**DANC 411. Flamenco Practicum**

1 Credit
Directed learning experiences for careers in dance. Provides the student with actual classroom teaching experience for all ages and all levels of dance students. May be repeated up to 4 credits. Consent of Instructor required.

**Prerequisite(s):** DANC 301.

**DANC 412. DanceSport Practicum**

1 Credit
Directed learning experiences for careers in dance. Provides the student with actual classroom teaching experience for all ages and all levels of dance students. May be repeated up to 4 credits. Consent of Instructor required.

**Prerequisite(s):** DANC 342 or DANC 345.

**DANC 413. Dance Practicum II**

1 Credit
This course provides the student with actual classroom teaching experience for all ages and all levels of dance students. With the supervision of the instructor, students will design a practicum experience, choose a site, and implement dance lessons. Course must be passed with a grade of C or higher. May be repeated up to 2 credits. Consent of Instructor required.

**Prerequisite(s):** DANC 413.

**DANC 422. Gold American Rhythm**

3 Credits (2+2P)
Advanced level American Rhythm dance technique and partnering work with choreography and performance emphasized. Includes cultural history and pedagogy methods. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: DANC majors.

**Prerequisite(s):** DANC 322.

**DANC 423. Ballet Technique IV**

3 Credits
Advanced study of ballet technique including vocabulary and history. May be repeated for a maximum of 12 credits.

**Prerequisite:** DANC 323 or consent of instructor.
DANC 424. Jazz Dance Technique IV
3 Credits
Advanced study of jazz dance techniques, including history and aesthetics. May be repeated for a maximum of 6 credits.
Prerequisite(s): DANC 324 or consent of instructor.

DANC 425. Gold American Smooth
3 Credits (2+2P)
Gold level American Smooth technique and choreography with an emphasis on performance and competition dancing. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: DANC majors.
Prerequisite(s): DANC 325.

DANC 426. Modern Dance Technique IV
3 Credits
Advanced study of modern technique, including history and aesthetics. May be repeated for a maximum of 12 credits.
Prerequisite: DANC 326 or consent of instructor.

DANC 432. Gold International Latin
3 Credits
Students will complete all syllabus figures through the Gold level in the Rumba, Cha Cha, Samba, Jive and Paso Doble. Advanced training and practice in International Style Latin dance technique. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 332.

DANC 435. Gold International Standard
3 Credits
Students will learn Gold Level syllabus figures in the five (5) International Style Standard dances: Waltz, Tango, Viennese Waltz, Foxtrot & Quickstep. Students will focus on physical and cognitive mastery of standard dance technique and elements as well as high-level performance ability, musicality and choreography. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 335.

DANC 442. DanceSport Pedagogy: Latin
3 Credits
This teacher education course is designed to prepare future dance professionals in the teaching of the International Style Latin dances: Cha Cha, Samba, Rumba, Paso Doble & Jive. Gain a deep understanding of all elements and be well prepared to take the DVIDA or ISTD professional certification exams. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): DANC 323 & 342.

DANC 445. DanceSport Pedagogy: Standard
3 Credits
This teacher education course is designed to prepare future dance professionals in the teaching of the International Style Standard dances: Waltz, Tango, Foxtrot & Viennese Waltz. Students will gain a deep understanding of all elements and be well prepared to take the DVIDA or ISTD professional certification exam. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): DANC 235 & DANC 345.

DANC 447. DanceSport Certification Preparation
3 Credits
The Professional Certification process offers extraordinary benefits to dance teachers, deeply enriching their dancing and teaching, and greatly expanding their career opportunities. This intensive course is designed to fully prepare students in taking the DVIDA and/or ISTD exams in the Smooth, Rhythm, Standard or Latin dances depending on course offered. See subtitle for specific style being taught in schedule of classes. May be repeated up to 12 credits. Consent of Instructor required.

DANC 450. Special Topics
1-3 Credits (1-3)
Specific subjects to be announced in the Schedule of Classes. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

DANC 451V. World Dance
3 Credits
Examination of dance forms from a cross-cultural perspective, focusing on the role of dance in different cultures around the globe. Same as HON 347V.

DANC 460. Dance History
3 Credits
History and development of dance forms from ancient cultures to today.

DANC 462. Flamenco Dance History
3 Credits
An in depth study of the cross section of Flamenco and Spanish Dance traditions and genres from Spain with the influence of her colonies and the modern world from the early 1400s to Present.

DANC 465. Senior Culminating Experience
1-6 Credits (1-6)
Exit course for graduating seniors. Students will apply comprehensive knowledge of performance and production and/or pedagogy experience, to culminate in a dance production and/or teaching project. Restricted to majors and minors. A minimum of 2 credit hours required for graduation.

DANC 466. Dance Pedagogy: Dance Technique
3 Credits
Students will learn to develop a curriculum design, apply teaching methods, and structure lesson plans for teaching specific dance styles. Course must be passed with a grade of C or higher. Consent of Instructor required.
Prerequisite(s): DANC 300 or consent of instructor.

DANC 489. Advanced Choreographic Project
2 Credits
Individual directed studies in choreography with a culminating performance. Consent of Instructor required.

DANC 499. Problems
1-6 Credits (1-6)
Problems in dance education, dance pedagogy, dance performance and/or pedagogy experience. Consent of Instructor required.

DANC 501. Directed Studies
1-4 Credits (1-4)
Supervised projects and/or research in theoretical studies, inclusive of community service projects. May be repeated up to 4 credits. Consent of Instructor required.

DANC 505. Dance Ensemble III
1 Credit
Rehearsal and performance of dance repertory with emphasis on advanced understanding of musicality, dynamic phrasing, artistic expression, and athletic versatility within a broad range of styles. May be repeated up to 4 credits. Consent of Instructor required.

DANC 510. Advanced Theory of Classical Spanish Technique
1 Credit
Advanced study of dance pedagogy and theory with practice in Classical Spanish technique. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 310.
DANC 522. Advanced Theory of American Rhythm Technique  
1 Credit  
Advanced study of dance pedagogy and theory with practice in American Rhythm technique. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 322.

DANC 523. Advanced Theory of Ballet Technique  
1 Credit  
Advanced study of dance pedagogy and theory with practice in ballet technique. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 423.

DANC 525. Advanced Theory of American Smooth Technique  
1 Credit  
Advanced study of dance pedagogy and theory with practice in American Smooth technique. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 325.

DANC 529. ADV THRY FLAM  
1 Credit  
Advanced study of dance pedagogy and theory with practice in Flamenco technique. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 329.

DANC 550. Special Topics  
1-6 Credits (1-6)  
Specific subjects offered in addition to standard academic curriculum. Course title to be announced in the Schedule of Classes. May be repeated up to 6 credits. Consent of Instructor required.

DANC 551. Movement as Social Text  
3 Credits  
Investigation of the meaning of movement and dance in different cultural, social, and historical contexts in both Western and non-Western dance forms. Emphasis will be placed on the nature of movement, its unique properties, the ways in which it conveys meaning, and its relationship to culture and society. Consent of Instructor required.

DANC 566. Advanced Theory of Dance Pedagogy  
1-6 Credits (1-6)  
Advanced study of dance pedagogy theory and practice. May be repeated up to 6 credits. Consent of Instructor required.

DANC 567. Dance Internship I  
2 Credits  
Internship opportunities in either dance education, dance performance/production, or dance administration. Internship site determined by both Director of Dance Program and graduate student. Consent of Instructor required.

DANC 568. Advanced Theory of Modern Dance Technique  
1 Credit  
Advanced study of dance pedagogy and theory with practice in Modern dance technique. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 426.

DANC 570. Dance Administration and Leadership  
2 Credits  
The study and investigation of both management and leadership theories and how to apply these theories in practice.

DANC 599. Master's Thesis  
1-6 Credits (1-6)  
This course is for graduate dance students who choose to write a thesis instead of a performance or teaching project. May be repeated up to 6 credits. Thesis/Dissertation Grading.

DANC 600. Dance Research  
3 Credits  
Literature review and development of research in the field of dance.

DANC 670. Dance Internship II  
3 Credits  
Internship opportunities in either dance education, dance performance/production, or dance administration. Internship site determined by both Director of Dance Program and graduate student.

DANC 700. Doctoral Dissertation  
3 Credits  
This course is for graduate dance students working toward their EdD or PhD in dance. A dissertation is required. Topic and format to be determined by dissertation committee chair and graduate student. Consent of instructor required. Restricted to Graduate Dance Majors majors.

P E 102. Beginning Weight Training  
1 Credit  
Introduction to basic principles and techniques of weight training.

P E 103. Beginning Weight Training for Women  
1 Credit  
Introduction to basic principles and techniques of weight training as related to women.

P E 104. Military Physical Fitness  
1 Credit  
Directed physical fitness activities designed to develop and maintain muscular strength/endurance, cardiopulmonary efficiency, flexibility, and coordination required for leadership roles after graduation.

P E 109. Pilates  
1 Credit  
Designed exercise program involves the entire body while focusing on strengthening the core muscles of the torso. Exercises promote coordination, balance, and strength.

P E 110. Sports Conditioning  
1 Credit  
Sport specific conditioning using aerobic and resistive overload training. May be repeated for a maximum of 4 credits. Prerequisite: consent of instructor.

P E 112. Beginning Volleyball for Men  
1 Credit  

P E 113. Beginning Volleyball for Women  
1 Credit  

P E 114. Basketball for Women  
1 Credit  

P E 115. Basketball for Men  
1 Credit  

P E 117. Beginning Soccer  
1 Credit  
Introduction to the basic techniques and skills of soccer.

P E 127. Cardio-Kickboxing  
1 Credit  
Activities that mimic punches, blocks, and kicks which have been modified to serve the purpose of providing a cardiovascular workout.
P E 128. Aerobic Dance
1 Credit
Designed to increase knowledge of the human body’s responses to exercise, enhance the level of muscular development, and cardiovascular endurance with the use of music.

P E 129. Step Aerobics
1 Credit
Designed to increase knowledge of the human body’s responses to exercise, enhance the level of muscular development, and cardiovascular endurance with the use of music and steps.

P E 130. Beginning Swimming
1 Credit

P E 131. Aqua Aerobics
1 Credit
Designed to increase knowledge of the human body’s responses to exercise, enhance the level of muscular development, and cardiovascular endurance through exercise in water.

P E 132. Intermediate Swimming
1 Credit
Development of fitness through participation in aquatics activities.
Prerequisite(s): Ability to swim 200 yards.

P E 134. Lifeguard Training
2 Credits
Skills training for a nonsurf lifeguard. Course will include Standard First Aid and CPR certification.
Prerequisites: swim 500 yards, dive to 9-foot depth and retrieve a 10-pound brick, surface dive to 5 feet then swim under water 15 yards, tread water one minute.

P E 147. Beginning Tennis
1 Credit

P E 148. Beginning Racquetball
1 Credit

P E 150. Beginning Golf
1 Credit

P E 154. Personal Defense
1 Credit
Physical conditioning and defense skills for men and women.

P E 159. Introduction to Brazilian Jiu-Jitsu
1 Credit
Brazilian Jiu-Jitsu is primarily a ground fighting art. This course will place heavy emphasis on positional strategy and focus on the sportive aspect of the sport. A Judo/Jiu-Jitsu Gi (uniform) is required.

P E 166. Futsal (Five-A-Side Soccer)
1 Credit
Futsal, official form of indoor soccer, approved by FIFA.

P E 173. Running Fitness
1 Credit
Basic fitness knowledge techniques and training methods of fitness running are practiced and refined.

P E 199. Yoga
1 Credit
A holistic approach to exercise benefiting the body, mind, and spirit. Practices focus on alignment, strength, breath relaxation, and restoration.

P E 202. Intermediate Weight Training
1 Credit
Intermediate training and skill techniques in weight lifting.
Prerequisites: P E 102 or consent of department head.

P E 204. Cross Training
1 Credit
Intensive training program that incorporates both aerobic and resistive overload approaches to training.

P E 205. Walking Fitness
1 Credit
Basic fitness knowledge techniques and training methods of fitness walking are practiced and refined.

P E 206. Beginning Physical Fitness
1 Credit
Progressive exposure to steady state exercise tailored to individual needs for the purpose of determining, improving, and maintaining physical fitness.

P E 208. Marathon Preparation
1 Credit
Gradual training progression for novice and experienced runners to develop and/or refine a training program enabling completion of or better personal record for the marathon. Discussions on equipment, nutrition, injury prevention and treatment.
Prerequisite: presently running three miles, three to four times per week.

P E 209. Intermediate Pilates
1 Credit
Intermediate training and skill techniques in Pilates.
Prerequisite(s): PE 109 or consent of instructor.

P E 212. Intermediate Volleyball-Men
1 Credit
Prerequisite: P E 112 or consent of department head.

P E 213. Intermediate Volleyball-Women
1 Credit
Prerequisite: P E 113 or consent of department head.

P E 215. Intermediate Walking
1 Credit
A continuation of basic fitness knowledge techniques and training methods of fitness walking are practiced and refined.
Prerequisite: P E 205 or consent of department head.

P E 216. Advanced Walking
1 Credit
Advanced walking fitness and training techniques are presented, practiced, and refined.

P E 228. Intermediate Aerobic Dance
1 Credit
Aerobic dance at a high intensity level with a more in-depth study of the body's physiological response to exercise.
Prerequisite: P E 128 or consent of department head.

P E 229. Intermediate Step Aerobics
1 Credit
Step aerobic dance at a high intensity level with a more in-depth study of the body's physiological response to exercise.
Prerequisite: PE 129 or consent of department head.

P E 230. Advanced Swimming
1 Credit
Perfection of basic strokes, survival swimming, and physical fitness.
Prerequisites: P E 130 or ability to swim 100 yards.
P E 247. Intermediate Tennis
1 Credit
Prerequisite: P E 147 or consent of department head.

P E 248. Intermediate Racquetball
1 Credit
Advanced skills and strategies in racquetball.
Prerequisite: P E 148 or consent of instructor.

P E 250. Intermediate Golf
1 Credit
Prerequisite: P E 150 or consent of department head.

P E 253. Outdoor Recreation Skills
1 Credit
Selected outdoor activities. Appropriate subtitles, such as hiking and backpacking, camping and survival, hunting and gun safety, casting and angling skills. May be repeated for maximum of 4 credits.

P E 264. Intermediate Cycling
1 Credit
Introduction to competitive cycling. Content includes techniques in training, riding, racing, and racing tactics.

P E 270. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. Each offering will carry appropriate subtitle. May be repeated for a maximum of 4 credits.

P E 276. Intermediate Aqua Aerobics
1 Credit
A continuation of basic fitness to increase knowledge of the human body’s responses to exercise, enhance the level of muscular development and cardiovascular endurance through exercise in water.

P E 299. Intermediate Yoga
1 Credit
Intermediate training and skill techniques in Yoga.
Prerequisite(s): PE 199 or consent of instructor.

P E 310. Advanced Weight Training: Theory and Practice
3 Credits
For men and women who wish to continue weight training and learn principles of strength training.

PE P 185. Introduction and Foundations
3 Credits
Historical and cultural foundations and vocational, scientific, and educational data on careers in health education, physical education, and recreation. Restricted to: Main campus only.

PE P 208. Fitness for Health and Sport
3 Credits
A study of the fitness needs for health enhancement and sport participation. Restricted to: P E,SP M,KIN,S ED majors.

PE P 210. Theory and Technique of Aquatics
2 Credits
Introduction to fundamental aquatics knowledge and skills.
Prerequisite(s): Ability to swim 100 yards.

PE P 296. Theory of Coaching I
3 Credits
Focus on areas of academic theory associated with coaching athletics. Orientation: theoretical and practical application.

PE P 315. Elementary School Physical Education
3 Credits (2+2P)
Methods for teaching physical education at the elementary level. Primary focus on creating a learning environment for the acquisition and enhancement of developmentally appropriate locomotor, manipulative, and nonmanipulative skills. Field experience included. Consent of instructor required. Restricted to SED/PE P majors.
Prerequisite(s): GPA of 2.5.

PE P 319. Lifetime Activities
2 Credits
Knowledge and skills related to the lifetime activities of swimming, weight training, and other fitness promoting activities with emphasis on learning progressions.
Prerequisite(s): PE P 208.

PE P 323. Racquet Sports
2 Credits
Knowledge and skills related to the racquet sports of tennis, badminton, and pickleball with emphasis on developmental strategies and skill performance that influences pedagogical content knowledge. Administrative issues will be addressed.

PE P 363. Theory and Technique of Lifelong Outdoor Leisure Activities
2 Credits
Knowledge and skills related to lifelong outdoor leisure activities, including the examination of environmental science and awareness, kinesiology, and fundamental motor skills.

PE P 392. Theory and Technique of Sports and Games
2 Credits
Knowledge and skills related to team sports and games, with emphasis on developmental strategies and skill performance that influence pedagogical content knowledge. Administrative issues will also be addressed.

PE P 393. Theory and Technique of Dance and Rhythms
2 Credits
Knowledge and skills related to dance and rhythms, with emphasis on the analysis of dance elements and its role in physical education.

PE P 394. Designing Student Centered Afterschool Physical Activity Clubs
3 Credits
Knowledge, skills and field based practical application for creating student centered and student designed after school physical activity clubs.

PE P 455. Adapted Physical Education
3 Credits
Selection and scope of corrective activities in posture and body mechanics, and the adaptation of movement activities for the exceptional student.
Prerequisite: junior or senior standing.

PE P 465. Senior Seminar
3 Credits
Capstone course for physical education. Graded S/U.
Prerequisite: senior standing.
PE P 466. Methods of Teaching Secondary Physical Education
6 Credits
Theoretical and practical applications of curriculum, pedagogy and assessment for teaching secondary physical education. Provides the students opportunities to develop curriculum, teach, and assess student learning through a supervised practicum in both middle and high school physical education settings. Consent of instructor required. 
Prerequisite(s): PE P 315 and admittance to TEP required.

PE P 499. Problems
1-3 Credits (1-3)
Problems in physical education and recreation and independent work in their solutions. A maximum of 3 credits during any one semester. May be repeated up to 6 credits. Consent of Instructor required.

PE P 501. Special Topics
1-3 Credits (1-3)
Offered under various subtitles that indicate the subject matter. May be repeated for a maximum of 3 credits per semester and a total of 6 credits overall. May be repeated up to 6 credits.

PE P 504. Teaching Processes in Physical Education
3 Credits
Analysis of effective teaching and coaching. Systematic observation strategies will be employed to evaluate instructional variables such as feedback, climate, academic learning time, and styles of teaching.

PE P 515. Advanced Athletic Training Education
3 Credits
Advanced clinical experiences and education in athletic training. Assessment of Athletic Training Program clinical proficiencies as described by the National Athletic Trainers’ Association Education Council. Consent of Instructor required.

PE P 550. Advanced Topics in Physical Education
1-4 Credits
Advanced study in teaching processes, perceptual motor development, bioenergetics, biomechanical instrumentation, psychological bases of performance, or motor control.

PE P 551. Sociology of Sports
3 Credits

PE P 555. Adapted Physical Education
3 Credits
Selection and scope of corrective activities in posture and body mechanics, and the adaptation of movement activities for the exceptional student. Same as PE P 455 with additional requirements for graduate credit. 
Prerequisite: consent of instructor.

PE P 557. Adapted Physical Education: A Practitioner's Approach
3 Credits
Preparation for qualified physical education professionals to teach individuals with disabilities motor and fitness skills. Knowledge of the Adapted Physical Education National Standards is developed so students may become nationally certified in the field. The inclusion of disability sports into general physical education curriculum is also major emphasis of this course. Consent of Instructor required.

PE P 558. Adapted Physical Education National Standards (APENS) Professional Preparation
3 Credits
This distance education course is to prepare physical education teachers to pass the Certified Adapted Physical Education (CAPE) National Examination, which is based on the Adapted Physical Education National Standards (APENS). These standards were developed by professionals in the field to ensure that physical education instruction for students with disabilities is provided by qualified physical education teachers.

PE P 624. BODY IN CULTURE
3 Credits
This course will explore how people’s health and physical activity experiences and choices are often shaped by cultural narratives and expectations of the male and female body. Designed for graduate students in allied health and physical activity professions

SP M 190. Introduction to Athletic Training
3 Credits
Introduction to the principles of athletic training.

SP M 191. Medical Terminology
3 Credits
Study of the structure of medical language with emphasis on sports medicine-related terminology. To include analysis and interpretation of medical documentation. Restricted to: Las Cruces campus only.

SP M 200. CAREER PREPARATION
1 Credit
From concept to implementation: Career exploration, setting up degree plans, finding graduate programs, developing professional resumes, writing letters of application, seeking letters of recommendation, and interview preparation. May be repeated up to 3 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

SP M 223. Exploring Extreme Human Performance
3 Credits
A reading, writing and documentary based course studying human’s quest and the related sacrifices associated with participating in extreme performance activities such as the Olympics, wakeboarding, snowboarding, military special forces, ultra-run events, marathons, etc. Consent of Instructor required. Restricted to Las Cruces campus only.

SP M 250. Emergency Response in Sports Medicine
2 Credits
Designed to provide knowledge and experience in emergency care procedures, blood borne pathogens, and first aid. Students will receive certification in CPR/AED for the Professional Rescuer and in First Aid, upon successful completion of course. May be repeated up to 2 credits. Restricted to Las Cruces campus only.

SP M 271. Anatomy & Physiology I
3 Credits
Detailed study of the structure and function of the human musculoskeletal, cardiovascular, respiratory, and peripheral nervous systems. Designed specifically for students interested in allied health professions. Restricted to Las Cruces campus only.

SP M 271 L. Anatomy and Physiology Laboratory
1 Credit
Compliment to SP M 271. Students will engage in activities designed to enhance appreciation of the anatomical structures related to the content areas for SP M 271. Restricted to Las Cruces campus only.
SP M 272. Clinical Practicum I
2 Credits
Introduction to the clinical aspects of the athletic training education program. Must maintain at least 3.0 GPA. May be repeated up to 4 credits. Consent of Instructor required. Restricted to: SP M majors. Restricted to Las Cruces campus only.

SP M 273. Clinical Practicum II
3 Credits
Athletic training psycho-motor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M majors. Restricted to Las Cruces campus only.

SP M 275 L. A & P LAB PE/DANCE
1 Credit
Practical laboratory involving the kinematic and kinesthetic aspects of Human Anatomy and Physiology as it applied to Physical Education and Dance Restricted to: Physical Education and Dance. Not acceptable for Kinesiology Majors majors. Restricted to Las Cruces campus only.
Prequisite(s): SP M 271.

SP M 290. General Medical Conditions
3 Credits
Study of the recognition, evaluation, management, and treatment of non-orthopedic medical conditions that affect the physically active population. Consent of Instructor required. Restricted to: SP M and KINES majors. Restricted to Las Cruces campus only.
Prequisite(s): SP M 190, 191 and 271/271L.

SP M 303. Health and Exercise Psychology
3 Credits
The course examines the reciprocal relationship among physical activity, exercise behavior, and psychological determinants associated with adopting and maintaining an exercise program. Topics include theories of behavioral change, exercise psychology interventions, the benefits/ pitfalls of exercise, and psychological factors influencing patient rehabilitation.
Prequisite(s): GPA of 2.75.

SP M 304. Psychology of Sport
3 Credits
Development of coaching techniques to enhance sport performance based on understanding and use of psychological principles.
Prequisite(s): GPA of 2.75.

SP M 305. Applied Biomechanics
3 Credits
The application of anatomical, mechanical and electrical concepts to better understand the fundamental nature of human movement.
Prequisite(s): SP M 271 GPA of 2.75.

SP M 305 L. Applied Biomechanics Laboratory
1 Credit
This course serves to provide an introduction to human movement and its analysis. The conceptual framework of the course will allow for the application of anatomical, mechanical, and electrical concepts in order to better understand the fundamental nature of movement.
Prequisite(s): SP M 271; GPA 2.75.

SP M 307. Pathophysiology and Human Function(s)
3 Credits
Students will discuss basic concepts of pathophysiology such as inflammation & repair, infectious diseases, neoplasms, and diseases of specific physiological systems. In addition, students will discuss a variety of case studies, and in so doing will be able to relate pathophysiologic conditions to symptoms, activity restrictions and disability.
Prequisite(s): SP M 271; SP M 271L; SP M 308, GPA 2.75.

SP M 308. Exercise Physiology
3 Credits (2+2P)
Basic physiological principles as they apply to exercise and fitness programs. Laboratory experiences included. GPA of 2.75.
Prequisite(s): SP M 271 or PE P 208.

SP M 309. Neurophysiology and Human Function
3 Credits
Students will discuss neurological control of human movement. Topics will include central and peripheral nervous system functions, with particular emphasis given to somatosensory afferent and motor efferent control. In addition, students will develop an understanding of the techniques employed to assess neurologic function in various patient populations.
Prequisite(s): SP M 271; SP M 271L; SP M 308; and GPA of 2.75.

SP M 310. Orthopedic Examination, Evaluation and Diagnosis of Lower Extremity Injuries
4 Credits
Examines normal human anatomy, mechanisms of athletic injury, and deviation from normal anatomy following athletic injury to the lower extremity. Must maintain at least 3.0 GPA. Consent of Instructor required. Restricted to: SP M and KINES majors.

SP M 319. Lifetime Activites
2 Credits
Knowledge and skills with weight training, cardiovascular exercise, Tai Chi, Pilates, and other lifetime activities related to the promotion of health/fitness through a lifespan.

SP M 320 L. Palpation and Anatomical Kinesiology Laboratory
2 Credits
Practical hands-on clinical laboratory introducing techniques necessary for physiological and functional kinematic evaluation of human function. May be repeated up to 2 credits.
Prequisite(s): SP M 271, SP M 271L, GPA 2.75.

SP M 324. Introduction to Exercise Science: Exercise Physiology and Biomechanics
3 Credits
This course serves to provide a broad introduction to both the physiology of exercise and the mechanics of human movement. The conceptual framework of the course will allow for the development of a broad knowledge base regarding these concepts and the latter portions of the course will focus on real world application of the concepts. Consent of Instructor required.
Prequisite(s): SP M 271 Anatomy and Physiology I.

SP M 330. Exercise Testing and Prescription
4 Credits
This combined lecture and lab class introduces students to the scientific basis for and principles of exercise testing and prescription. The focus is on basic approaches to exercise testing and prescription for healthy adults, while application to some special populations with chronic disease will be discussed. GPA of 2.75.
Prequisite(s): SP M 271 and SP M 308 or consent of instructor.
SP M 341. Motor Development
3 Credits
Covers development of motor skills from infancy through maturity. Focuses on the principles of motor development, early motor behavior, stage theory, and assessment. Field experiences will augment lecture and readings. May be repeated up to 3 credits. Consent of Instructor required.

Prerequisite(s): GPA of 2.5.

SP M 371. Anatomy and Physiology II
3 Credits
Detailed study of the structure and function of the human endocrine, immune, digestive, reproductive, integumentary, central nervous and renal systems. Designed specifically for students interested in allied health professions. GPA of 2.75.

Prerequisite(s): SP M 271G or consent of instructor.

SP M 371 L. Anatomy and Physiology II Lab
1 Credit
The students will develop skills in palpating various bony landmarks as well as origins and insertions of major soft tissues. In addition, problem based learning scenarios will be used to complement the SP M 371 lecture material and thereby further students' understanding of certain physiologic systems including neural, digestive, reproductive, endocrine, and integumentary.

Prerequisite(s): SP M 271; SPM 271 L; GPA 2.75.

SP M 372. Clinical Practicum III
3 Credits
Athletic training psychomotor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M and KINES majors.

SP M 373. Clinical Practicum IV
3 Credits
Athletic training psychomotor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M majors.

SP M 375. Therapeutic Modalities
4 Credits
The physiological effects, indications, contraindication, dosage, and maintenance of therapeutic modalities related to the treatment of athletic or activity-related injuries. May be repeated up to 4 credits. Consent of Instructor required. Must maintain 2.75 GPA. Restricted to: SP M, KIN majors.

Prerequisite(s): Consent of Instructor, SP M 271.

SP M 409. Clinical Biomechanics
3 Credits
The application of biomechanical analysis of human movement as it relates to clinical proficiencies through the use of anatomical, mechanical and electrical concepts.

Prerequisite(s): SPM 271, GPA 3.0.

Corequisite(s): SP M 409 L.

SP M 409 L. Clinical Biomechanics Laboratory
1 Credit
Laboratory experiments and biomechanical analysis of human movement as they relate to clinical proficiencies through the use of anatomical, mechanical and electrical concepts.

Prerequisite(s): SP M 271, SP M 409, GPA 3.0.

Corequisite(s): SP M 409.

SP M 410. Orthopedic Examination, Evaluation and Diagnosis of Upper Extremity Injuries
4 Credits
Examines normal human anatomy, mechanisms of athletic injury, and deviation from normal anatomy following athletic injury to the upper extremity. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M and KINES majors.

SP M 411. Pharmacology in Athletic Training
2 Credits
An introduction to general medical conditions and pharmacological applications in the athletic training setting. Emphasis on the laws governing the development and distribution, indications, contraindications, precautions, and interactions of prescription and over-the-counter medications. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M and KINES majors.

SP M 412. Inferential Statistics in Sport and Exercise Science
3 Credits
Statistical concepts and methods basic to experiential research to include normal distribution, z-tests, t-tests, analysis of variance and regression analysis. An understanding of sport and exercise science theory is required for students enrolling in this course Restricted to: KIN, SP M majors.

Prerequisite(s): GPA of 2.75; or consent of instructor.

SP M 413. Statistical Application in Sports and Exercise Science
3 Credits
An introduction to descriptive statistics and the interpretation of data in the solution of problems in sport and exercise related research. GPA 2.75.

Prerequisite(s): Junior or senior standing.

SP M 415. Therapeutic Exercise
3 Credits
The physiological effects, indications, contraindications, dosage, and maintenance of therapeutic modalities related to the treatment of athletic or activity-related injuries. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M and KINES majors.

SP M 420. Orthopedic Examination, Evaluation and Diagnosis of Core, Spine and Head Injuries
3 Credits
Advanced clinical assessment techniques and applications. Must maintain at least a 3.0 GPA. Consent of Instructor required. Restricted to: SP M majors.

SP M 422. Clinical Practicum V
3 Credits
Athletic training psychomotor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: ATEP, SP M majors.
SP M 423. Clinical Practicum VI
3 Credits
Athletic training psycho-motor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Students might complete a general medical rotation with this course. Consent of Instructor required. Restricted to: SP M majors.

SP M 424. Clinical Practicum VII
3 Credits
Athletic training psychomotor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Students might complete a general medical rotation with this course. Must maintain 2.8 GPA. Consent of Instructor required. Restricted to: Kinesiology majors.

SP M 425. Organization and Administration in Athletic Training
3 Credits
An introduction to management, leadership, financial strategies, professional development and legal issues related to the athletic training setting. Must maintain 3.0 GPA. Consent of Instructor required. Restricted to: SP M majors.

SP M 445. Internship
6,12 Credits (6,12P)
A full-time internship in an approved wellness, fitness, athletic or recreation program with experience in all phases of management and operation. Field instructor supervision. This internship may require relocation to a site outside of the Las Cruces area. May be repeated up to 12 credits. Consent of Instructor required. Restricted to: Kinesiology Majors majors. S/U Grading (S/U, Audit).
Prerequisite(s): Senior standing, GPA of 2.75, completion of all major courses.

SP M 451. Advanced Exercise Physiology
3 Credits
Detailed study of the integrated response of neuromuscular, cardiovascular, and respiratory systems to acute and chronic exercise, nutrition, and environmental conditions with a strong emphasis on laboratory experiences. GPA of 2.75.
Prerequisite(s): SP M 271 and SP M 308 or consent of instructor.

SP M 456. Exercise for Special Populations
3 Credits
Fundamentals of kinesiology adapted for adults with various diseases and disabilities. Focus will be on the application of exercise assessment and prescription for selected conditions.
Prerequisite(s): SP M 308 and SP M 330; GPA of 2.75.

SP M 458. Physical Dimensions of Aging
3 Credits
This course introduces students to physical, physiological, social, mental, and emotional aspects of human aging. Age-related changes in human function are discussed the context of applied healthcare settings, and the implications for appropriate physical activity and functional independence. GPA of 2.75.
Prerequisite(s): SP M 308.

SP M 460. Principles of Strength and Conditioning
3 Credits
Application of research, theory, and methods of high-intensity, resistive overload training. Performance-specific topics include management, nutrition. GPA of 2.75.
Prerequisite(s): SP M 308.

SP M 460 L. Principles of Strength and Conditioning Laboratory
1 Credit
An applied examination of the theory, principles, rules and regulations associated with various strength and conditioning exercises to include but not limited to Olympic lifting, powerlifting, bodybuilding, plyometrics, speed, agility and speed-endurance development. Lab required for Kinesiology majors. GPA of 2.75.
Prerequisite(s): SP M 308.

SP M 465. Ethics and Legal Issues in Athletic Training
3 Credits
Examination of the legal and ethical issues associated with the practice of athletic training and other health care fields. Must maintain a 3.0 GPA. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: SP M majors.

SP M 498. Advanced Athletic Training I
1-3 Credits (1-3)
Advanced clinical experiences and education in athletic training. Assessment of Athletic Training Program clinical proficiencies as described by the National Athletic Trainer’s Association Education Council. Consent of Instructor required.

SP M 499. Problems
1-3 Credits
Problems in athletic training and independent work in their solutions. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Junior or Senior status; Consent of ATEP director.

SP M 504. Psychology of Sport
3 Credits
Development of coaching techniques to enhance sport performance based on understanding and use of psychological principles. Same as SP M 304 with additional requirements for graduate credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

SP M 508. Applied Biomechanics
3 Credits
The application of anatomical, mechanical and electrical concepts to better understand the fundamental nature of human movement. Same as SP M 409 with additional requirements for graduate credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

SP M 509. Clinical Biomechanics
3 Credits
The application biomechanical analysis of human movement as it relates to clinical proficiencies through the use of anatomical, mechanical and electrical concepts. Same as SP M 409 with additional requirements for graduate credits Consent of Instructor required.
Prerequisite(s): Consent of instructor.

SP M 510. Graduate Athletic Training Seminar I
1-3 Credits (1-3)
Advanced seminar topics in athletic training. Students will explore generalized topics within the field of athletic training under the direct supervision of a Commission on Accreditation of Athletic Training Education (CAATE) accredited Athletic Training Program. Students may engage in teaching and research opportunities in unique areas. Students may explore athletic training topics within the classroom or independently through designated resources Consent of Instructor required.
SP M 511. Graduate Athletic Training I
1-3 Credits (1-3)
Advanced clinical experiences and education in athletic training. Students will examine topics in athletic training in conjunction with faculty members within the Commission on Accreditation of Athletic Training Education (CAATE) accredited Athletic Training Program at New Mexico State University. Assessment of Athletic Training Program clinical proficiencies as described by the National Athletic Trainers' Association Education Council. Consent of Instructor required.

SP M 512. Inferential Statistics in Sports and Exercise Science
3 Credits
Statistical concepts and methods basic to experiential research to include normal distribution, z-tests, t-tests, analysis of variance and regression analysis. An understanding of sport and exercise science theory is required for students enrolling in this course. Same as SP M 412 with additional requirements for graduate credit. Consent of Instructor required.
Prerequisite(s): Consent of Instructor.

SP M 513. Graduate Athletic Training Seminar II
1-3 Credits (1-3)
Advanced seminar topics in athletic training. Students will explore more specialized topics within the field of athletic training under the direct supervision of a Commission on Accreditation of Athletic Training Education (CAATE) accredited Athletic Training Program. Students should be prepared to further explore topics previously covered in SP M 512 (Graduate Athletic Training Seminar I). Students may engage in teaching and research opportunities in unique areas. Students may explore athletic training topics within the classroom or independently through designated resources. Consent of Instructor required.

SP M 514. Graduate Athletic Training Research I
1-3 Credits (1-3)
Advanced research topics in athletic training. Students will explore research and evidence based practices within the field of athletic training. Students will work under the direct supervision of a Commission on Accreditation of Athletic Training Education (CAATE) accredited Athletic Training Program faculty member. Students should be prepared to further explore research topics within a specific discipline with the intent of disseminating and sharing information with the athletic training community. Topics previously covered in SP M 512 (Graduate Athletic Training Seminar I). Students may engage in teaching and research opportunities in unique areas. Consent of Instructor required.

SP M 515. Graduate Athletic Training II
3 Credits
Advanced clinical experiences and education in athletic training. Assessment of Athletic Training Program clinical proficiencies as described by the National Athletic Trainers' Association Education Council. Consent of Instructor required.

SP M 545. Skill Acquisition and Performance
3 Credits
Behavioral and physiological examination factors that influence the acquisition and performance of motor skills. May be repeated up to 3 credits. Consent of Instructor required. Crosslisted with: SP M 342.

SP M 551. Advanced Exercise Physiology
3 Credits
Detailed study of the integrated response of neuromuscular, cardiovascular and respiratory systems to acute and chronic exercise, nutrition and environmental conditions with a strong emphasis on laboratory experience. Consent of Instructor required.

SP M 556. Exercise for Special Populations
3 Credits
Fundamentals of kinesiology adapted for adults with various diseases and disabilities. Focus will be on the application of exercise assessment and prescription for selected conditions. Taught with PE P 456 with additional work required at the graduate level. Consent of Instructor required.

SP M 558. Physical Dimensions of Aging
3 Credits
This course introduces graduate students to physical, physiological, social, mental, and emotional aspects of human aging. Age-related changes in human function are discussed in the context of applied healthcare settings, and the implications for appropriate physical activity and functional independence. Graduate students in this course are expected to participate in organizing and leading some of the class discussions and assisting in the identification of appropriate materials for the course. Consent of Instructor required.

SP M 560. Principles of Strength and Conditioning
3 Credits
Application of research, theory, and methods of high-intensity, resistance training. Performance-specific topics include management, nutrition, exercise prescription, periodization, lifting techniques, testing, and evaluation. Course will emphasize standards set forth by the National Strength and Conditioning Association preparing students interested in sitting for the NSCA certification examinations. Consent of Instructor required.

SP M 597. Project
1-12 Credits (1-12)
Selected projects for doctoral students. May be repeated up to 12 credits. Consent of Instructor required.

SP M 600. Kinesiology Research
1-3 Credits (1-3)
Research to be conducted under the direction of a Kinesiology faculty member. May be repeated up to 15 credits. Consent of Instructor required.

SP M 608. Cardiovascular Physiology
3 Credits
This graduate level course provides an in-depth study of cardiovascular structure and function. The course assumes that students have a strong background in human physiology. Topics include, but are not limited to: cellular structure of the heart and vascular system; cardiac function, including electrophysiology of the heart; vascular function; neurohumoral control of the heart and circulation, organ blood flow, exchange function of the microcirculation; the impact of common cardiovascular diseases on cardiovascular structure and function, and cardiovascular adaptations to chronic exercise.

SP M 660. Designing Resistance Training Program
3 Credits
Detailed study of the physiological concepts associated with designing resistance-training programs for children, women, seniors, athletic performance and rehabilitation.

SP M 665. Skeletal Muscle: Structure and Function
3 Credits
Basic muscle morphology and physiology with molecular and cellular adaptations in skeletal muscle as consequences to varying exercise regimens.
The New Mexico State University (NMSU) Athletic Training Bachelors Degree Program is accredited by the Commission on Accreditation of Athletic Training Education (CAATE), and has a competitive application process. The program provides a challenging didactic and comprehensive clinical educational experience, as well as, incorporates the values of a supportive academic and clinical community in order to prepare future leaders in athletic training.

Students who complete the degree requirements earn a Bachelor of Science in Athletic Training and are eligible to sit for the Board of Certification (BOC) examination. Students who pass the BOC exam are referred to as Certified Athletic Trainers (AT).

Please see the program webpage, https://kind.nmsu.edu/training/, for up-to-date information concerning all aspects of the Athletic Training Program (ATP).

Application Procedures for Traditional Undergraduate Students

A limited number of applicants will be admitted to the professional phase of the Athletic Training major. A maximum of 20 students will be admitted to the program each year. Application to the Athletic Training Program takes place during the spring semester. A second round of admissions may occur in the summer for students completing prerequisite coursework during one of the summer terms if space is available. Interested students must meet with the Program Director prior to applying for admissions to the ATP.

Application to the Athletic Training Program requires:

1. A cumulative GPA of 2.75 or higher
2. A prerequisite GPA of 3.00 or higher
3. The following courses have specific grade requirements and are used to calculate the prerequisite GPA
   a. SP M 190 Introduction to Athletic Training with a grade of B or better
   b. SP M 191 Medical Terminology with a grade of B or better
   c. SP M 271 Anatomy & Physiology I with a grade of C- or better
   d. SP M 272 Clinical Practicum I with a grade of B or better
4. The following courses need to be in progress or completed at the time your application is submitted:
   ENGL 111G Rhetoric and Composition

5. Submission of the following:
   a. Program application form
   b. Professional resume
   c. An unofficial NMSU transcript
   d. Submission of official transcripts of any college courses taken at a college/university other than NMSU.
   e. Proof of current Emergency Cardiac Care (ECC) certification.
   f. Three letters of recommendation.
   g. Copy of physical examination completed by a licensed healthcare professional (MD/DO/PA/NP).
   h. Copy of vaccination verification showing completion of the following:1
      i. MMR (2 doses administered 4-8 week apart or serologic test positive for MMR antibody)
      ii. Varicella (2 doses administered 4-8 weeks apart or serologic test positive for Varicella antibody)
      iii. Tetanus-Diphtheria-Pertussis (Tdap) 1 dose within the past 10 years
      iv. Hepatitis B. (3 doses administered over a period of 4-6 months)
      v. Annual TB screening

Applications that cannot provide proof of vaccination due to religious or conscientious objection to vaccinations must meet with the Program Director.

1. A signed copy of the program technical standards for admission form.
2. 500 word minimum essay addressing the question “Why athletic training is the correct major and career path for you”.
3. Completion of 60 hours of clinical observation under the supervision of an Athletic Trainer.

Transfer Student Policy

Transfer students who meet the Application Requirements may be considered for admission into the Athletic Training Program provided there is space available. The admission of transfer students will include a careful evaluation of the student’s cumulative GPA and prerequisite coursework. The Program Director will make all decisions related to the acceptance of transfer courses required for the major. Transfer students should contact the Program Director regarding program requirements and any questions regarding transfer courses. Please see the program webpage, https://kind.nmsu.edu/training/transfer/, for a complete description of the AT program transfer policy.

Degree Requirements

Athletic Training Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HNDS 251</td>
<td>Human Nutrition</td>
<td>3</td>
</tr>
</tbody>
</table>

SP M 700. Doctoral Dissertation

1-18 Credits (1-18)

Doctoral Dissertation hours to be conducted under the direction of a Kinesiology Faculty. May be repeated up to 18 credits. Consent of Instructor required. Thesis/Dissertation Grading.

Name: Robert H Wood, PhD, Academic Department Head

Name: Maggie Karveller, Department Secretary

Office Location: Activity Center Room 204

Phone: (575) 646-2216

Website: https://kind.nmsu.edu/kin/

Math Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 142G</td>
<td>Calculus for the Biological and Management Sciences</td>
<td>3</td>
</tr>
<tr>
<td>MATH 190G</td>
<td>Trigonometry and Precalculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 291G</td>
<td>Calculus and Analytic Geometry III</td>
<td>3</td>
</tr>
</tbody>
</table>
New Mexico State University

SP M 190 Introduction to Athletic Training 3
SP M 191 Medical Terminology 3
SP M 250 Emergency Response in Sports Medicine 2
SP M 271 Anatomy & Physiology I 3
SP M 271 L Anatomy and Physiology Laboratory 1
SP M 272 Clinical Practicum I 2
SP M 273 Clinical Practicum II 3
SP M 305 Applied Biomechanics 3
SP M 307 Pathophysiology and Human Function(s) 3
SP M 308 Exercise Physiology 3
SP M 310 Orthopedic Examination, Evaluation and Diagnosis of Lower Extremity Injuries 4
SP M 371 Anatomy and Physiology II 3
SP M 371 L Anatomy and Physiology II Lab 1
SP M 372 Clinical Practicum III 3
SP M 373 Clinical Practicum IV 3
SP M 375 Therapeutic Modalities 4
SP M 410 Orthopedic Examination, Evaluation and Diagnosis of Upper Extremity Injuries 4
SP M 411 Pharmacology in Athletic Training 2
SP M 415 Therapeutic Exercise 3
SP M 420 Orthopedic Examination, Evaluation and Diagnosis of Core, Spine and Head Injuries 3
SP M 422 Clinical Practicum V 3
SP M 423 Clinical Practicum VI 3
SP M 424 Clinical Practicum VII 3
SP M 425 Organization and Administration in Athletic Training 3

Statistics Requirement
Select 3 credits from the following

STAT 251G Statistics for Business and the Behavioral Sciences
STAT 271G Statistics for Psychological Sciences
AST 311 Statistical Applications
SP M 412 Inferential Statistics in Sport and Exercise Science

Total Credits
78

SP M 460 L Principles of Strength and Conditioning Laboratory
SP M 465 Ethics and Legal Issues in Athletic Training
SP M 499 Problems

Students interested in majoring in Athletic Training are encouraged to meet with the Athletic Training Academic Advisor prior to enrolling in SP M 272 Clinical Practicum I.

Dance - Bachelor of Arts in Dance

The Bachelor of Arts (BA) in Dance provides three concentration areas in which to pursue a dance degree. Undergraduate students can choose to focus their studies in Contemporary Dance, DanceSport or Spanish Dance. All students are required to take core dance courses as well as courses from their concentration area. This provides a variety of cross training that will benefit all dancers to be well rounded professional dancers, competitors and teachers. The B.A. also provides students with an appropriate background for the pursuit of advanced degrees in teaching, performance, choreography and other related fields.

Core Courses
All dance majors are required to take the following 26 credits from the core dance courses:

Core Courses
Select 9 credits of technique classes outside the area of concentration
Select 17 credits from the following:

DANC 151 Master Works
DANC 200 Dance Pedagogy: Educational Theory
DANC 203 Dance Production I
DANC 275 Dance Studio Management
DANC 280 Improvisation I
DANC 303 Dance Production II
DANC 451V World Dance
DANC 465 Senior Culminating Experience
SP M 271 Anatomy & Physiology I
SP M 271 L Anatomy and Physiology Laboratory

Total Credits
26

Athletic Training Electives
Select a minimum of 4 credits from the following or approved by the AT Program Director:

SP M 303 Health and Exercise Psychology
SP M 304 Psychology of Sport
SP M 309 Neurophysiology and Human Function
SP M 320 L Palpation and Anatomical Kinesiology Laboratory
SP M 330 Exercise Testing and Prescription
SP M 341 Motor Development
SP M 342 Motor Learning
SP M 409 Clinical Biomechanics
SP M 409 L Clinical Biomechanics Laboratory
SP M 451 Advanced Exercise Physiology
SP M 456 Exercise for Special Populations
SP M 458 Physical Dimensions of Aging
SP M 460 Principles of Strength and Conditioning

Concentration: Contemporary Dance

Contemporary Dance is the study of ballet, modern, jazz, and tap dance. Students are trained in dance technique, dance education (teaching) and dance production. This concentration prepares dancers for a professional performance and/or teaching career.

Requirements
Select 52 credits from the following:

DANC 127 Tap Dance I
DANC 202 Dance Ensemble
DANC 205 Contemporary Dance Ensemble I
DANC 212 Intermediate Hip-Hop Dance
DANC 223 Ballet Technique II
DANCE 224  Jazz Technique II  
DANCE 226  Modern Dance Technique II  
DANCE 227  Tap Dance II  
DANCE 289  Principles of Choreography I  
DANCE 300  Dance Pedagogy: Creative Movement  
DANCE 305  Contemporary Dance Ensemble II  
DANCE 323  Ballet Technique III  
DANCE 324  Jazz Technique III  
DANCE 326  Modern Dance III  
DANCE 365  Dance Pedagogy: Dance in Education  
DANCE 380  Improvisation II  
DANCE 389  Principles of Choreography II  
DANCE 413  Dance Practicum II  
DANCE 423  Ballet Technique IV  
DANCE 424  Jazz Dance Technique IV  
DANCE 426  Modern Dance Technique IV  
DANCE 466  Dance Pedagogy: Dance Technique  

**Concentration: DanceSport**

DanceSport is the study of Ballroom, Latin, Swing and Night Club dance. Students are trained in dance technique, dance education (teaching) and dance production. This concentration prepares dancers for a professional performance, competition and/or teaching career.

**Requirements**

Select 52 credits from the following:  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANC 204</td>
<td>Dance Sport I</td>
<td>1</td>
</tr>
<tr>
<td>DANC 209</td>
<td>Argentine Tango II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 210</td>
<td>Classical Spanish II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 218</td>
<td>West Coast Swing II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 221</td>
<td>Country Western Dance</td>
<td>1</td>
</tr>
<tr>
<td>DANC 222</td>
<td>Bronze American Rhythm</td>
<td>1</td>
</tr>
<tr>
<td>DANC 225</td>
<td>Bronze American Smooth</td>
<td>1</td>
</tr>
<tr>
<td>DANC 232</td>
<td>Bronze International Latin</td>
<td>1</td>
</tr>
<tr>
<td>DANC 235</td>
<td>Bronze International Standard</td>
<td>1</td>
</tr>
<tr>
<td>DANC 269</td>
<td>DanceSport Choreography I</td>
<td>1</td>
</tr>
<tr>
<td>DANC 304</td>
<td>Dance Sport II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 322</td>
<td>Silver American Rhythm</td>
<td>1</td>
</tr>
<tr>
<td>DANC 325</td>
<td>Silver American Smooth</td>
<td>1</td>
</tr>
<tr>
<td>DANC 332</td>
<td>Silver International Latin</td>
<td>1</td>
</tr>
<tr>
<td>DANC 335</td>
<td>Silver International Standard</td>
<td>1</td>
</tr>
<tr>
<td>DANC 342</td>
<td>DanceSport Pedagogy: Rhythm</td>
<td>1</td>
</tr>
<tr>
<td>DANC 345</td>
<td>DanceSport Pedagogy: Smooth</td>
<td>1</td>
</tr>
<tr>
<td>DANC 369</td>
<td>DanceSport Choreography II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 412</td>
<td>DanceSport Practicum</td>
<td>1</td>
</tr>
<tr>
<td>DANC 422</td>
<td>Gold American Rhythm</td>
<td>1</td>
</tr>
<tr>
<td>DANC 425</td>
<td>Gold American Smooth</td>
<td>1</td>
</tr>
<tr>
<td>DANC 432</td>
<td>Gold International Latin</td>
<td>1</td>
</tr>
<tr>
<td>DANC 435</td>
<td>Gold International Standard</td>
<td>1</td>
</tr>
<tr>
<td>DANC 442</td>
<td>DanceSport Pedagogy: Latin</td>
<td>1</td>
</tr>
<tr>
<td>DANC 445</td>
<td>DanceSport Pedagogy: Standard</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Credits**  

52

**Concentration: Spanish Dance**

Spanish Dance is the study of Flamenco and Classical Spanish dance. Students are trained in dance technique, dance education (teaching) and dance production. This concentration prepares dancers for a professional performance and/or teaching career.

**Requirements**

Select 52 credits from the following:  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANC 206</td>
<td>Spanish Dance Ensembles I</td>
<td>1</td>
</tr>
<tr>
<td>DANC 210</td>
<td>Classical Spanish II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 223</td>
<td>Ballet Technique II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 226</td>
<td>Modern Dance Technique II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 229</td>
<td>Flamenco II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 279</td>
<td>Flamenco Choreography I</td>
<td>1</td>
</tr>
<tr>
<td>DANC 301</td>
<td>Flamenco Pedagogy I</td>
<td>1</td>
</tr>
<tr>
<td>DANC 306</td>
<td>Spanish Dance Ensemble II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 310</td>
<td>Classical Spanish III</td>
<td>1</td>
</tr>
<tr>
<td>DANC 329</td>
<td>Flamenco III</td>
<td>1</td>
</tr>
<tr>
<td>DANC 339</td>
<td>Flamenco Structure and Improvisation</td>
<td>1</td>
</tr>
<tr>
<td>DANC 379</td>
<td>Flamenco Choreography II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 401</td>
<td>Flamenco Pedagogy II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 411</td>
<td>Flamenco Practicum</td>
<td>1</td>
</tr>
<tr>
<td>DANC 462</td>
<td>Flamenco Dance History</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Credits**  

52

**Dance - Undergraduate Minor**

The dance program also offers a minor in dance that consists of a total of 18 credit hours. Dance minors can choose from a variety of dance technique classes, as well as, dance education and dance production classes.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANC 203</td>
<td>Dance Production I</td>
<td>1</td>
</tr>
<tr>
<td>DANC 280</td>
<td>Improvisation I</td>
<td>1</td>
</tr>
</tbody>
</table>

**Elective Courses**

Select 16 credits (6 credits at upper division) from the following:  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANC 151</td>
<td>Master Works</td>
<td>1</td>
</tr>
<tr>
<td>DANC 200</td>
<td>Dance Pedagogy: Educational Theory</td>
<td>1</td>
</tr>
<tr>
<td>DANC 204</td>
<td>Dance Sport I</td>
<td>1</td>
</tr>
<tr>
<td>DANC 205</td>
<td>Contemporary Dance Ensemble I</td>
<td>1</td>
</tr>
<tr>
<td>DANC 206</td>
<td>Spanish Dance Ensembles I</td>
<td>1</td>
</tr>
<tr>
<td>DANC 209</td>
<td>Argentine Tango II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 210</td>
<td>Classical Spanish II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 218</td>
<td>West Coast Swing II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 221</td>
<td>Country Western Dance</td>
<td>1</td>
</tr>
<tr>
<td>DANC 222</td>
<td>Bronze American Rhythm</td>
<td>1</td>
</tr>
<tr>
<td>DANC 223</td>
<td>Ballet Technique II</td>
<td>1</td>
</tr>
<tr>
<td>DANC 224</td>
<td>Jazz Technique II</td>
<td>1</td>
</tr>
</tbody>
</table>
Exercise Science - Undergraduate Minor

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE P 208</td>
<td>Fitness for Health and Sport</td>
<td>3</td>
</tr>
<tr>
<td>SP M 308</td>
<td>Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>SP M 330</td>
<td>Exercise Testing and Prescription</td>
<td>4</td>
</tr>
</tbody>
</table>

Select 8 credits from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE P 319</td>
<td>Lifetime Activities</td>
</tr>
<tr>
<td>SP M 305</td>
<td>Applied Biomechanics</td>
</tr>
<tr>
<td>SP M 451</td>
<td>Advanced Exercise Physiology</td>
</tr>
<tr>
<td>SP M 460</td>
<td>Principles of Strength and Conditioning</td>
</tr>
</tbody>
</table>

Total Credits 18

Kinesiology - Bachelor of Science in Kinesiology

The Bachelor of Science in Kinesiology degree program consists of 15 credit hours of core coursework, plus additional coursework in one of four concentration areas: Exercise Science, Clinical Exercise Science, Performance Psychology, or Physical Education. For the required number of concentration area credit hours see the program descriptions below. Regardless of the concentration, students are required to complete 120 total semester hours for the Kinesiology degree. Additionally, students pursuing a Kinesiology degree will be responsible to ensure that they complete 48 upper division credits (300 and 400 level courses). Kinesiology students must maintain a minimum 2.75 GPA in order to enroll in most upper division SP M and PE P courses. Some courses in the Clinical Exercise Science Concentration require a minimum cumulative GPA of 3.0.

Successful completion of the Kinesiology degree will support a variety of careers in health sciences, biomedical research, and teaching. Information about Kinesiology and potential employment opportunities may be obtained at the Department of Kinesiology and Dance in the Activity Center 204, phone 646-2215.

Required General Education Courses

Area I: English and Communication

Choose one from the following: (ENGL 218G or ENGL 318G recommended)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 203G</td>
<td>Business and Professional Communication</td>
</tr>
<tr>
<td>ENGL 211G</td>
<td>Writing in the Humanities and Social Sciences</td>
</tr>
<tr>
<td>ENGL 218G</td>
<td>Technical and Scientific Communication</td>
</tr>
<tr>
<td>ENGL 311G</td>
<td>Advanced Composition</td>
</tr>
<tr>
<td>ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
</tr>
</tbody>
</table>

Area II: Laboratory Sciences

Choose one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 111G/111GL</td>
<td>Natural History of Life</td>
</tr>
<tr>
<td>BIOL 211G/211GL</td>
<td>Cellular and Organismal Biology</td>
</tr>
</tbody>
</table>

Choose one from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
</tr>
<tr>
<td>PHYS 211G/211GL</td>
<td>General Physics I</td>
</tr>
<tr>
<td>PHYS 212G/212GL</td>
<td>General Physics II</td>
</tr>
</tbody>
</table>

Area IV: Social and Behavioral Sciences

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSY 201G</td>
<td>Introduction to Psychology</td>
</tr>
</tbody>
</table>

Kinesiology Core

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP M 460 L</td>
<td>Principles of Strength and Conditioning</td>
<td>18</td>
</tr>
</tbody>
</table>

Total Credits 18

Note: Official minor documentation must be completed with the Department of Kinesiology and Dance.
Kinesiology - Bachelor of Science in Kinesiology

PE P 185  Introduction and Foundations
PE P 208  Fitness for Health and Sport
PE P 319  Lifetime Activities
SP M 271  Anatomy & Physiology I
SP M 271 L  Anatomy and Physiology Laboratory
SP M 342  Motor Learning

Total Credits  15

Additional coursework for individual kinesiology tracks are listed below. The various tracks require 13-20 credit hours of electives (see advisor for details).

**Concentration: Clinical Exercise Science**

**Required Courses**
- SP M 308  Exercise Physiology  3
- SP M 320 L  Palpation and Anatomical Kinesiology Laboratory  2
- SP M 330  Exercise Testing and Prescription  4
- SP M 371  Anatomy and Physiology II  3
- SP M 371 L  Anatomy and Physiology II Lab  1
- SP M 409  Clinical Biomechanics  3
- SP M 409 L  Clinical Biomechanics Laboratory  1
- SP M 445  Internship  12
- SP M 456  Exercise for Special Populations  3

Select two from the following:  6
- SP M 307  Pathophysiology and Human Function(s)  1
- SP M 309  Neurophysiology and Human Function  1
- SP M 451  Advanced Exercise Physiology  1
- SP M 458  Physical Dimensions of Aging  1

Select one of the following  3
- SP M 303  Health and Exercise Psychology
- SP M 304  Psychology of Sport

Select one of the following  3
- SP M 412  Inferential Statistics in Sport and Exercise Science
- A ST 251G  Statistics for Business and the Behavioral Sciences
- A ST 311  Statistical Applications
- STAT 251G  Statistics for Business and the Behavioral Sciences
- STAT 271G  Statistics for Psychological Sciences

Electives (see advisor for details)  22

Total Credits  64

1  This course carries a pre-requisite of a 3.0 cumulative GPA for admission

**Concentration: Exercise Science**

**Required Courses**
- SP M 305  Applied Biomechanics  3
- SP M 305 L  Applied Biomechanics Laboratory  1
- SP M 308  Exercise Physiology  3
- SP M 330  Exercise Testing and Prescription  4
- SP M 371  Anatomy and Physiology II  3
- SP M 371 L  Anatomy and Physiology II Lab  1
- SP M 445  Internship  12
- SP M 456  Exercise for Special Populations  3
- SP M 460  Principles of Strength and Conditioning  3
- SP M 460 L  Principles of Strength and Conditioning Laboratory  1

Select one of the following  3
- SP M 303  Health and Exercise Psychology
- SP M 304  Psychology of Sport

Electives (see advisor for details)  22

Total Credits  65

**Concentration: Performance Psychology: Minor in Psychology**

**Required Courses**
- SP M 303  Health and Exercise Psychology  3
- SP M 304  Psychology of Sport  3
- SP M 308  Exercise Physiology  3
- SP M 371  Anatomy and Physiology II  3
- SP M 371 L  Anatomy and Physiology II Lab  1
- SP M 445  Internship  12

Select 4 credits from the following:  4
- SP M 305 & 305 L  Applied Biomechanics and Applied Biomechanics Laboratory
- SP M 409 & 409 L  Clinical Biomechanics and Clinical Biomechanics Laboratory

Select one of the following  3
- SP M 412  Inferential Statistics in Sport and Exercise Science
- A ST 251G  Statistics for Business and the Behavioral Sciences
- A ST 311  Statistical Applications
- STAT 251G  Statistics for Business and the Behavioral Sciences
- STAT 271G  Statistics for Psychological Sciences

**Psychology Minor**

Select the official Psychology Minor requiring 18 credit hours in PSY  1

Electives (see advisor for details)  16

Total Credits  66
Courses used for PSY minor cannot also be used for credit as electives.

Note: Official minor documentation must be completed with the Department of Psychology.

### Concentration: Physical Education

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE P 315</td>
<td>Elementary School Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>PE P 323</td>
<td>Racquet Sports</td>
<td>2</td>
</tr>
<tr>
<td>PE P 392</td>
<td>Theory and Technique of Sports and Games</td>
<td>2</td>
</tr>
<tr>
<td>PE P 393</td>
<td>Theory and Technique of Dance and Rhythms</td>
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<tr>
<td>PE P 394</td>
<td>Designing Student Centered Afterschool Physical Activity Clubs</td>
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<td>PE P 455</td>
<td>Adapted Physical Education</td>
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<tr>
<td>PE P 466</td>
<td>Methods of Teaching Secondary Physical Education</td>
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**SP M 324** Introduction to Exercise Science: Exercise Physiology and Biomechanics 3
**SP M 341** Motor Development 3
**CEP 210** Educational Psychology 2 3
**EDLT 368** Integrating Technology with Teaching 2 3
**EDUC 181** Field Experience I 2 1
**EDUC 315** Multicultural Education 3 3
**SPED 350** Introduction to Special Education in a Diverse Society 2 3
**RDG 414** Content Area Literacy 1 3
**EDUC 471** Secondary Student Teaching 1 9
**EDUC 482** Middle and High School Student Teaching Seminar 1 3

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### Kinesiology - Doctor of Philosophy

The PhD in Kinesiology requires a minimum of 36 credit hours of formal coursework (beyond a masters degree) and an expected 24 credit hours of research and dissertation work. Thus, the minimum expected credit hour accumulation is 60 credit hours.

At least 12 credit hours must come from graduate courses in the department of Kinesiology & Dance, and the student must have at least one course in each of the foundational knowledge content areas (CA) in Kinesiology, including:

1. relationships among physical activity, health, and quality of life
2. scientific foundations for study of physical activity and human movement
3. social, cultural and historical context of the study of physical activity
4. the practice of physical activity.

At least 12 credit hours must be taken in research methodologies, at least 3 credits of which must be in experimental statistics, and at least 3 credits from a qualitative methods course(s). There are many options for these courses on the NMSU campus that will permit the student to meet this requirement.

The remaining 12 credit hours are taken at the direction of the student’s advisor and committee, and agreed upon at the time of the student’s qualifying exam (see below).

### Examinations

Students seeking the Doctor of Philosophy degree in Kinesiology must pass a qualifying examination that must be completed before accumulating more than 24 credit hours towards their degree, a Comprehensive Exam including written and oral elements that must be completed prior to beginning a final dissertation project, and a Final Exam that features the defense of their final dissertation study.

### Dissertation

The candidate for the degree of Doctor in Philosophy in Kinesiology must complete a dissertation in a focused area of study. The student and his/her committee must agree upon the dissertation topic, and approval of the dissertation requires consent of the plurality of the student’s committee members. The student must complete a minimum of 18 dissertation credit hours.

### Graduate courses currently offered in the department of Kinesiology & Dance

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SP M 451</td>
<td>Advanced Exercise Physiology 2</td>
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<tr>
<td>SP M 456</td>
<td>Exercise for Special Populations 1,4</td>
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<td>SP M 458</td>
<td>Physical Dimensions of Aging 1</td>
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<td>SP M 460</td>
<td>Principles of Strength and Conditioning 2,4</td>
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<tr>
<td>SP M 460 L</td>
<td>Principles of Strength and Conditioning Laboratory</td>
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<tr>
<td>SP M 508</td>
<td>Applied Biomechanics 1</td>
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<tr>
<td>SP M 509</td>
<td>Clinical Biomechanics 1,2</td>
<td>3</td>
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<tr>
<td>SP M 510</td>
<td>Graduate Athletic Training Seminar I</td>
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<tr>
<td>SP M 511</td>
<td>Graduate Athletic Training I</td>
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</tr>
<tr>
<td>SP M 512</td>
<td>Inferential Statistics in Sports and Exercise Science</td>
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<td>SP M 513</td>
<td>Graduate Athletic Training Seminar II</td>
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<td>SP M 514</td>
<td>Graduate Athletic Training Research I</td>
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<td>SP M 515</td>
<td>Graduate Athletic Training II</td>
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<tr>
<td>SP M 545</td>
<td>Skill Acquisition and Performance 2</td>
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<tr>
<td>SP M 551</td>
<td>Advanced Exercise Physiology 2</td>
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<tr>
<td>SP M 556</td>
<td>Exercise for Special Populations 1,4</td>
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<tr>
<td>SP M 558</td>
<td>Physical Dimensions of Aging 1</td>
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<tr>
<td>SP M 560</td>
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<td>SP M 597</td>
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<tr>
<td>SP M 600</td>
<td>Kinesiology Research 1</td>
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<tr>
<td>SP M 608</td>
<td>Cardiovascular Physiology 2</td>
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<tr>
<td>SP M 660</td>
<td>Designing Resistance Training Program 4</td>
<td>3</td>
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<tr>
<td>SP M 665</td>
<td>Skeletal Muscle: Structure and Function 2</td>
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</table>
Special Education/Communication Disorders

Undergraduate Program Information

The Department of Special Education/Communication Disorders offers two undergraduate programs that prepare professionals to work with exceptional populations in school, community, hospital and residential settings. The Special Education program prepares students to provide educational services to individuals with disabilities. The Communication Disorders program provides training for students interested in speech-language pathology or audiology.

Graduate Program Information

The Department of Special Education/Communication Disorders offers programs designed for students with career goals as master special education teachers, special education consultants and directors, and speech-language pathologists, or as higher education faculty in the fields of Special Education and Communication Disorders. The program in Special Education is accredited by the National Council for Accreditation of Teacher Education (NCATE). The Council on Academic Accreditation (CAA) accredits the program in Communication Disorders.

The department offers the following programs leading to a Master's degree:

- MA in Communication Disorders
- MA in Special Education

The department offers the following programs leading to a Doctoral degree:

- Doctor of Education (Ed.D.)
- Doctor of Philosophy (Ph.D.)

For detailed information about these programs, including graduate admissions requirements, please view the degree pages in this catalog or contact the department at 575-646-2401 or http://spedcd.nmsu.edu/.

Degrees for the Department

Communication Disorders - Bachelor of Science in Education (p. 519)
Special Education - Bachelor of Science in Education (p. 522)
Special Education - Master of Arts (p. 521)
Communication Disorders - Master of Arts (p. 520)
Special Education - Doctor of Education (p. 522)
Special Education - Doctor of Philosophy (p. 523)

Minors for the Department

Special Education - Graduate Minor (p. 524)

Professor, Robert Wood, Interim Department Head

Associate Professors: Rhein, Salas, Valdez; Assistant Professors: Keeley, Lehnhert-Lehouillier (Interim Program Director in Communication Disorders), Mishra, Mohapatra, Potter (Program Director in Special Education), Ramdoss, Rau, Sherrow; College Assistant Professors: Choudhury, Cobos, Mason, Trammel-Yeboah; Emeritus Professors: Farmer, Gallegos, Poel

M. Choudhury, Au.D. (Arizona School of Health Sciences); A. Cobos, MA (Arizona State University) dysphagia; R. Keeley, Ph.D. (New Mexico State University) inclusive classroom interventions, high incidence disabilities, secondary special education; H. Lehnhert-Lehouillier, Ph.D. (State University of New York at Buffalo) speech science, phonetics, voice & speech sound disorders; L. Mason, Ed.D. (University of Northern Colorado) visual
C D 221. Introduction to Communication Disorders
3 Credits
Basic information about speech, language, and hearing disorders; orientation to the professions of speech-language pathology and audiology.

C D 301. Language Acquisition
3 Credits
This course introduces students to the study of the development of language, speech, and communication. Includes language sampling. May be repeated up to 3 credits. Crosslisted with: C D 509. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221; Cumulative GPA of 3.2 or higher.

C D 322. Anatomy and Physiology of Speech Mechanisms
3 Credits
Structure and function of systems underlying human speech sound production and processing, including respiratory, phonatory, and articularatory components. May be repeated up to 3 credits. Crosslisted with: C D 502. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422, C D 324, and C D 301; and minimum 3.2 GPA.

C D 323. Phonetics
3 Credits
The science of phonetics, including work with the International Phonetic Alphabet. Taught with C D 501. May be repeated up to 3 credits. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221; Cumulative GPA of 3.2 or better.

C D 324. Introduction to Speech Science
3 Credits
Basic concepts and theories in acoustics, speech production and speech perception. Includes laboratory experience with instrumental measurement and analysis of speech systems. May be repeated up to 3 credits. Crosslisted with: C D 503. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422; and minimum 3.2 GPA.

C D 325. Language Disorders
3 Credits
Prerequisite(s): C- or better in C D 221.

C D 326. Clinical Methods and Procedures
3 Credits
Guidelines and procedures associated with the clinical and supervisory processes. Provide opportunities to complete the supervised clinical observation requirement for participation in clinical practicum. May be repeated up to 3 credits. Crosslisted with: C D 506. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422, C D, 324, C D 301; and minimum 3.2 GPA.

C D 374. American Sign Language I
3 Credits
Introduction to the basics of ASL including questions, commands, sentence types, time, subjects and objects, classifiers, locative case, pluralization, and temporal and distributional aspects.
Prerequisite: C D 374 or consent of instructor.

C D 421. Speech and Language Disorders
3 Credits
Bases, symptoms, etiologies, and clinical management of issues related to disorders of articulation, phonology, voice and resonance, and fluency. May be repeated up to 3 credits. Crosslisted with: C D 504. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422, C D 324, and C D 301; and minimum 3.2 GPA.

C D 422. Audiology
3 Credits
Anatomy and physiology of the auditory system, bases of auditory disorders, and basic audiometric procedures. May be repeated up to 3 credits. Crosslisted with: C D 507. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, and a minimum of 3.2 GPA.

C D 423. Neural Bases of Communication Disorders
3 Credits
Study of the neuroanatomy and neurophysiology of communication and communication disorders. Includes review of the central nervous system and peripheral nervous system relationship to speech motor control, language, and hearing. May be repeated up to 3 credits. Crosslisted with: C D 510. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 301, C D 323, C D 422, C D 324, C D 421, C D 322, C D 326 and minimum 3.0 GPA.

C D 424. Aural Rehabilitation
3 Credits
Overview of hearing aids and amplification devices including cochlear implants. Review of the bases and psychosocial aspects of hearing loss. Clinical management of hearing loss consistent with ASHA's scope of practice for SLPs. May be repeated up to 3 credits. Crosslisted with: C D 508. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422, C D 324, C D 301, C D 421, C D 322, C D 326; and minimum 3.2 GPA.
C D 425. Professional Reasoning and Scientific Thinking
3 Credits
Overview of constructive thinking, problem solving, and decision making theories and strategies associated with professional reasoning and scientific thinking that are to be used academically and clinically in the transition from student to scholar to professional. Taught with C D 593. May be repeated up to 3 credits. Restricted to: C DS, C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422, C D 324, C D 301, C D 421, C D 322, C D 326, and a minimum cumulative GPA of 3.2.

C D 476. American Sign Language III
3 Credits
Continuation of C D 375, ASL II. Focus on more complex grammatical features. Students will comprehend and generate medium length stories, narratives, and discussions including culturally significant topics.
Prerequisite: C D 375.

C D 501. Phonetics
3 Credits
The science of phonetics, including work with the International Phonetic Alphabet. Restricted to majors. Same as C D 390 with differentiated assignments for graduate students.
Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 502. Anatomy and Physiology of Speech Mechanisms
3 Credits
Structure and function of systems underlying human speech sound production and processing including nervous, respiratory, and articulatory components. Restricted to majors. Same as C D 370 with differentiated assignments for graduate students.
Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 503. Speech Science
3 Credits (2+3P)
Basic concepts and theories in acoustics, speech production, and speech perception. Laboratory experience with instrumental measurement and analysis of speech systems. Restricted to majors. Same as C D 380 with differentiated assignments for graduate students.
Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 504. Speech and Language Disorders
3 Credits
Prerequisite(s): B or better GPA.

C D 505. Research Methods
3 Credits
Introduction to basic qualitative, quantitative, and single subject research methodology in speech-language pathology and audiology. Restricted to majors.
Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 506. Clinical Methods and Procedures
3 Credits
Guidelines and procedures associated with the clinical and supervisory processes. Provide opportunities to complete the supervised clinical observation requirement for participation in clinical practicum. Differentiated assignments for graduate students. Taught with C D 326. Restricted to: C DS, C D majors.
Prerequisite(s): B or better GPA.

C D 507. Audiology
3 Credits
Anatomy and physiology of the auditory system, bases of auditory disorders, and basic audiometric procedures. Differentiated assignments for graduate students. Taught with C D 422. Restricted to: C D, C DS majors.
Prerequisite(s): Minimum of 3.0 GPA.

C D 508. AURAL REHABILITATION
3 Credits
Prerequisite(s): Minimum 3.0 GPA.

C D 509. Language Acquisition
3 Credits
Normal development of communication across the age span. Includes language sampling and analysis. A minimum grade of B- in all graduate courses and a minimum overall GPA of 3.0 required. Taught with C D 360 with differentiated assignments for graduate students. Restricted to CD majors and LING majors majors.

C D 510. Neural Bases of Communication Disorders
3 Credits
Study of the neuroanatomy and neurophysiology of communication and communication disorders. Includes review of the central nervous system and peripheral nervous system relationship to speech motor control, language, and hearing. Crosslisted with: C D 423. Restricted to: CD, CDS majors.

C D 521. Professional Issues and Multicultural Practices in Communication Disorders
3 Credits
This course includes a range of topics pertinent to students entering professional practice as speech-language pathologists including current legal, cultural, ethical, and clinical service provision issues. Restricted to: C DS, C D majors.
Prerequisite(s): Minimum of 3.0 GPA.

C D 522. Interpreter Workplace Skills in Communication Studies
1 Credit
The purpose of this course is to identify principles and procedures necessary to be an effective interpreter and to use an interpreter in the field speech, language, hearing and swallowing disorders. Students will identify the history the use of interpreters, the interpreting process, bilingual vocabulary appropriate for the scope of practice in the field, bilingual assessment principles, second language learning principles and multicultural aspects to consider in the interview and interpreting process. The students will engage in several interpreter scenarios for interview, assessment and intervention cases. Restricted to: C D majors.
Prerequisite(s): Minimum of 3.0 GPA.

C D 523. Assessment of Communication Disorders
3 Credits
Diagnostic theories and management of communication disorders using standardized and descriptive methodology. Includes the practice of interviewing, testing, and oral and written reporting. Restricted to: C DS, C D majors.
Prerequisite: A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.
C D 525. Pediatric Language and Disorders
3 Credits
Normal communication development of neonates, infants, toddlers, and preschoolers; etiologies, and treatment of cognitive, linguistic and social elements of communication problems in family systems. Restricted to majors.
Prerequisite(s): minimum grade of B- and an overall GPA of 3.0 or higher.

C D 530. School Age Language and Disorders
3 Credits
Normal communication-learning development of elementary, secondary, and postsecondary students; etiologies, diagnosis, and treatment of interpersonal communication and language-based academic disorders.
Restricted to majors.
Prerequisite(s): a minimum grade of B- in all graduate courses and an overall GPA of 3.0 or higher.

C D 535. Aphasia & Cognitive Linguistic Disorders
3 Credits
Etiologies, diagnosis, assessment, and treatment of adult aphasia and cognitive-linguistic disorders. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 541. Advanced Spanish Morpho-Syntax for Education Professionals
3 Credits
This class has been designed for Heritage Speakers of Spanish who work in educational settings. It will cover the essential linguistic theory and fundamental structures of the Spanish language. This includes, but is not limited to, verb morphology, morphosyntactic and syntactic structures. The main goal of this course is to determine what usages fall within the norms of an individual’s speech community, or if there are elements that fall outside those norms.
Prerequisite(s): Students have to be fluent in Spanish as course will be conducted in Spanish.

C D 542. Articulation and Phonological Disorders
3 Credits
Advanced study of the symptoms, etiologies, assessment, and clinical management of articulation and phonological disorders including cleft palate and disorders of resonance Restricted to: C DS,C D majors.
Prerequisite(s): A minimum grade of B- in all graduate courses and a minimum overall GPA of 3.0 is required.

C D 545. Introduction to Augmentative and Alternative Communication
3 Credits
Assessment and intervention for children and adults with developmental disabilities; Alternative communication strategies and systems for individuals with severe speech and/or language impairments. May be repeated up to 3 credits. Restricted to: C DS,C D majors.
Prerequisite(s): Graduate standing; overall GPA of 3.0.

C D 547. Cognitive-Linguistic Communication Disorders
3 Credits
Topics include attention, memory, executive function, and underlying neuropsychopathologies, with emphasis on assessment, diagnosis, prognosis, treatment and recovery processes in cognitive communication disorders related to traumatic brain injury, dementia, and right hemisphere brain damage. May be repeated up to 3 credits. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0.

C D 548. Best Practices in Bilingual/Multicultural Assessment for Practitioners
3 Credits
The purpose of this course is to provide future speech-language pathologists, educational diagnosticians and special educators with a foundation for evaluating the linguistic, cognitive and academic skills of students from any cultural linguistic background. The course covers a review of the literature on best practices for working with interpreters during assessments. Practitioners will be expected to gather qualitative information about cultural/linguistic and educational histories of school-age children and integrate those results with the results of standardized tests.
Prerequisite(s): C D 594.

C D 555. Instrumentation in Communication Disorders
2 Credits
This course will provide graduate students with information regarding the purpose and operation of a variety of perceptual assessment and instrumental tools for the evaluation and treatment of voice, fluency, and resonance disorders. Restricted to: C D majors.

C D 574. American Sign Language III
3 Credits
Continuation of ASL II. Focus on more complex grammatical features. Students will comprehend and generate medium length stories, narratives, and discussions including culturally significant topics.
Prerequisite: C D 375 or consent of instructor.

C D 583. Dysphagia
3 Credits
Study of the anatomy and physiology of swallowing and upper aerodigestive systems. Review of the bases and etiologies of child and adult swallowing disorders, including diagnosis, assessment, and treatment. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 584. Fluency Disorders
3 Credits
Speech fluency development and the disorders of stuttering, cluttering, and neurogenic dysfluency. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 585. Motor Speech Disorders
3 Credits
Advanced studies of dysfunction of the nervous system that affect speech. Includes evaluation, diagnosis, and treatment of speech apraxias and dysarthrias. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 586. Voice Disorders/Head and Neck Anomalies
3 Credits
Advanced studies of anatomy and physiology of the vocal tract with emphasis on diagnosis, assessment, and treatment of voice disorders, laryngectomy, cleft palate, and other oral-facial anomalies. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.
C D 587. Cleft Palate and Syndromes  
2 Credits  
An advanced study of etiology, assessment and treatment of craniofacial anomalies with a focus on the effects of clefts of the lip and/or palate on speech, resonance and velopharyngeal dysfunction. Review of the contribution of interdisciplinary cleft palate team care managing feeding, audiologic, surgical, orthodontic, and psychosocial aspects. General review of embryology and common syndromes with associated speech, language, and hearing disorders. Consent of Instructor required. Restricted to: C D,C DS majors.  
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 589. Practicum in Speech-Language Pathology  
1-4 Credits (1-4)  
Supervised clinical practice in a variety of speech, language, and hearing disorders. Practicum includes diagnostic, treatment, and management work through direct patient/client contact. Attendance at weekly clinical staff meetings is required. May be repeated for a maximum of 15 credits. Restricted to majors.  
Prerequisite: good standing in the graduate school; a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 590. Clinical Education  
1 Credit  
This course is specifically designed to target the knowledge base necessary to initiate clinical practicum in the CD Program. The learning objectives are based upon the Council of Academic Accreditation in Audiology and Speech-language Pathology (CAA) standards and knowledge areas. These learning outcomes are developed to assist students in clinical practicum and are specific to the services provided to clients of the NMSU Edgar R. Garrett Speech and Hearing Center. Restricted to: C DS,C D majors.  
Corequisite(s): C D 589.

C D 591. Special Topics  
1-9 Credits  
Individual and/or group study of special topics identified by subtitle. May be repeated for a maximum of 9 credits.  
Prerequisite: prior arrangement with faculty; a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 593. Professional Reasoning and Scientific Thinking  
3 Credits  
Overview of constructive thinking, problem solving, and decision making theories and strategies associated with professional reasoning and scientific thinking that are to be used academically and clinically in the transition from student to scholar to professional. Restricted to majors. Same as C D 393 except for differentiated assignments for graduate students.  
Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 599. Master's Thesis  
15 Credits  
Thesis.

C D 640. Externship in Communication Disorders  
3-9 Credits (3-9)  
This course is designed to provide opportunities for the developing clinician to provide treatment to and evaluations for clients in a full term externship experience under the supervision of a licensed SLP. May be repeated up to 9 credits. Consent of Instructor required. Restricted to: C DS,C D majors.

SPED 201. Topics  
3 Credits  
Offered under various subtitles that indicate the subject matter to be covered. May be repeated 3 times for a maximum of 9 credits.

SPED 202. Culture, Learning and Academic Achievement in a Diverse Society  
3 Credits  
Development of culturally responsive learning strategies, skills and utilization of support services, to enhance academic achievement. Restricted to: Main campus only.

SPED 210. Introduction to Special Education  
3 Credits  
For paraprofessional students who will be working with a teacher in a Special Education classroom. This class will provide an overview of characteristics of children with special needs, legal issues, framework of effective instruction and a variety of practical teaching and learning strategies that are relevant to the tasks and academic demands required in inclusive classrooms.

SPED 350. Introduction to Special Education in a Diverse Society  
3 Credits  
Characteristics, identification, and educational needs of exceptional learners. Attention is given to the various types of programs serving exceptional learners. Designed for all professional personnel who work with exceptional learners.

SPED 355. Introduction to Bilingual/Multicultural Special Education  
3 Credits  
Introduction to issues related to the provision of services to culturally and linguistically diverse students with exceptionalities. Same as BIL 355.

SPED 360. Elementary Curriculum, Methods, and Materials for Special Education in a Diverse Society  
3 Credits  
Curriculum theory and development for special education programs. Various teaching methods utilized with elementary exceptional learners and techniques involved in identifying, adapting, and developing materials will be addressed.

SPED 406. High Incidence Disabilities in a Diverse Society  
3 Credits  
Examines those areas of disability that most frequently occur in the special education population, including mental retardation, learning disabilities, communication disorders, and behavioral and emotional disorders.

SPED 407. Low Incidence Disabilities in a Diverse Society  
3 Credits  
Examines those disabilities that occur less frequently in the special education population, including hearing loss, visual disorders, autism, and other severe manifestations.

SPED 409. Reading for Elementary Exceptional Learners in a Diverse Society, K-6  
3 Credits  
Emphasizes reading diagnosis and materials for students with special developmental and learning problems. Taught with SPED 509.

SPED 411. Reading for Elementary Exceptional Learners in a Diverse Society, 7-12  
3 Credits  
Extends information covered in SPED 509, which covers grades K-6. Strategies and materials are addressed.
SPED 450. Working with Young Children with Special Needs, Ages 3-8
3 Credits
Addresses competencies for working with young children with exceptionalities, ages three-eight, and their families. Public school, private school, Head Start and other models are included. Taught with SPED 550.
Prerequisite(s): SPED 350 or equivalent.

SPED 451. Assessment of Young Children, Birth-Eight
3 Credits
Covers instruments and procedures for assessing young children and their families in order to determine atypical development. Screening, diagnosis, program planning, placement and evaluation issues are covered. Same as SPED 551.
Prerequisite: SPED 450.

SPED 452. Foundations of Visual Impairment
3 Credits
This course provides an overview of the history and theory of teaching students with visual impairments, including those with additional disabilities. The impact of educational, legislative, and societal trends on the psychosocial adjustment, quality of life, and post-school outcomes of individuals with visual impairments is explored. Taught with SPED 532 and SPED 632. Consent of Instructor required.

SPED 453. Functional Implications of Low Vision
3 Credits
This course examines the structure and function of the visual system in relation to associated diseases and syndromes with an emphasis on measuring functional vision and determining appropriate educational adaptations. Taught with SPED 533 and SPED 633.

SPED 454. Strategies for Teaching Students with Visual and Multiple Impairments
3 Credits
This course defines the roles and responsibilities of the teacher of students with visual impairments as part of the transdisciplinary team that serves students with visual impairments and additional disabilities. Emphasis is on assessment, curricula (both academic and functional), communication, behavior management, assistive technologies, inclusion, transition, and independent living. Taught with SPED 534 and SPED 634.
Prerequisite(s): SPED 453.

SPED 455. Braille I: Literacy for Students with Visual Impairments
3 Credits
This course facilitates an in-depth study of the Uncontracted and Contracted Literary Braille codes as well as methods of teaching pre-braille, braille reading, and braille writing skills to tactual learners. Taught with SPED 536 and SPED 636.

SPED 457. Braille II: Literacy Skills for Students with Visual Impairments
3 Credits
This course facilitates an in-depth study of the Nemeth Braille Code for Mathematics and Science Notation as well as instructional strategies for using the abacus and developing numeracy. Specialized braille codes for computers, music, and foreign languages will be introduced. Taught with SPED 538 and SPED 638.
Prerequisite(s): SPED 455 or SPED 536 or SPED 636 or Consent of Instructor.

SPED 458. Intellectual Disabilities in a Diverse Society: An Introduction
3 Credits
Dealing with history, philosophy, goals and objectives, classification, and characteristics of intellectual disabilities. Taught with SPED 558 and SPED 658 with differentiated assignments. Consent of Instructor required. Restricted to SPED majors.
Prerequisite(s): SPED 350 or SPED 500 or consent of instructor.

SPED 459. Classroom Management for Diverse Learners
3 Credits
Behavior-change strategies for exceptional learners.

SPED 460. Strategies for Teaching Students with Visual Impairments
3 Credits
This course covers individualized educational programming in both the core and expanded core curriculums for children and youth with visual impairments with an emphasis on assessment, curricular adaptations, IFSP/IEP/ITP planning, and evidence-based practices. Taught with SPED 539 and SPED 639. Consent of Instructor required. Restricted to: SPED majors.
Prerequisite(s): SPED 453, SPED 455, SPED 457 or Consent of Instructor.

SPED 463. Introduction to Assessment of Diverse Exceptional Learners
3 Credits
Theory and use of norm and criterion-referenced instruments and learning theories in the classroom; planning of prescriptive instructional programs.

SPED 466. The Learning Disabled Student in a Diverse Society
3 Credits
Current definitions, conceptualizations, and techniques. Taught with SPED 566 SPED 666 with differentiated assignments. Restricted to SPED majors.
Prerequisite(s): SPED 350 or 500 or consent of instructor.

SPED 467. Behavior Disorders in a Diverse Society
3 Credits
An in-depth study of the classification, characteristics, educational needs, and professional literature regarding individuals with behavior disorders. Taught with SPED 567 and SPED 667 with differentiated assignments. Restricted to SPED majors.
Prerequisite(s): SPED 350 or SPED 500 or consent of instructor.

SPED 470. Life Span Development and Transition in a Diverse Society
3 Credits
Special problems associated with transitions over the life span, with emphasis on adolescent and adult needs. Attention to service approaches for public schools, sheltered workshops, residential hospitals, and group homes.

SPED 480. Secondary Curriculum, Methods, and Materials for Special Education in a Diverse Society
3 Credits
Curriculum theory and development for elementary special education programs. Various teaching methods utilized with secondary exceptional learners and techniques for identifying, adapting, and developing materials will be addressed. Taught with SPED 580.

SPED 481. Practicum in Education, Equity and Cultural Diversity
3 Credits
This is a supervised experience in providing special education services to local preK-12 students. In the context of the public school classroom, teacher candidates are guided to apply content knowledge from the seminar meetings and from prior coursework. Restricted to: SPED majors.
Prerequisite(s): SPED 350 and SPED 360 or consent of instructor.
SPED 482. Student Teaching SPED
12 Credits
Supervised teaching in a special education classroom and participation in a required seminar. Restricted to: SPED majors.
Prerequisite(s): SPED 481 and admission to student teaching.
SPED 483. Early Childhood SPED Student Teaching
6 Credits
A student teaching experience designed for students studying early childhood special education. Restricted to majors. Same as SPED 583.
Prerequisites: SPED 281 and admission to student teaching.
SPED 485. Introduction to Autism
3 Credits
This course will provide an overview of autism spectrum disorders as a triad of impairments, including historical and theoretical perspectives, assessment issues, characteristics of autism, intervention programs, and family issues. Taught with SPED 585 and SPED 685.
SPED 486. Behavior and Autism
3 Credits
This course will cover the first of the triad of impairments. Students will gain an understanding of the behaviors of children with autism. Students will examine several behavior management philosophies and research based interventions and how they can be applied in the educational setting. Attention will also be given to play skills. The family perspective and participation in the proactive behavior management process will be incorporated throughout the course. Taught with SPED 586 and SPED 686 with differentiated assignments.
Prerequisite(s)/Corequisite(s): SPED 485 or SPED 585 or SPED 685.
SPED 487. Social Skills and Autism
3 Credits
This course will cover the second of the triad of impairments. As a blend of researched based models and evidenced based practical applications, students will gain an understanding of the social skill deficits often associated with autism spectrum disorders. Review a variety of social cognition theories and explore effective social skill interventions for children functioning at a variety of levels along the autism spectrum. Taught with SPED 587 and SPED 687 with differentiated assignments.
Prerequisite(s)/Corequisite(s): SPED 485 or SPED 585 or SPED 685.
SPED 488. Communication and Autism
3 Credits
This course will cover the third of the triad of impairments. Students will gain an overview of communication characteristics and difficulties often associated with autism spectrum disorders. Review current tools and strategies used to assess speech, language, and interaction skills. Use assessment results to identify needs and implement appropriate interventions. Explore a variety of intervention strategies aimed at building receptive, expressive, and pragmatic language of children functioning at a variety of levels along the autism spectrum. Taught with SPED 588 and SPED 688 with differentiated assignments.
Prerequisite(s): SPED485 or SPED585 or SPED685.
SPED 489. Topics
3 Credits
Offered under various subtitles which indicate the subject matter to be covered. May be repeated 3 times for a maximum of 9 credits.
SPED 495. Directed Study courses in Special Education
1-3 Credits
Each course shall be identified by a qualifying subtitle. A maximum of 3 credits per semester and a grand total of 9 credits.
SPED 500. Introduction to Special Education in a Diverse Society
3 Credits
This course introduces the field of special education to regular educators.
SPED 501. Topics in Special Education
1-3 Credits
Offered under various subtitles which indicate the subject matter to be covered. Maximum of 6 credits, 3 credits per semester.
SPED 502. Problems
1-3 Credits
Offered under various subtitles which indicate the subject matter to be covered. Maximum of 6 credits, 3 credits per semester.
SPED 503. Contemporary Development
1-3 Credits
Offered under various subtitles which indicate the subject matter to be covered. Maximum of 6 credits, 3 credits per semester.
SPED 504. Introduction to Assessment of Diverse Exceptional Learners
3 Credits
Required for students seeking licensure at graduate level. Theory and use of norm-and criterion-referenced instruments and learning theories in the classroom; planning of prescriptive instructional programs with differentiated assignments for graduate students. Crosslisted with: SPED 463. Restricted to: SPED majors.
SPED 506. High Incidence Disabilities in a Diverse Society
3 Credits
Examines those areas of disability that most frequently occur in the special education population, including mental retardation, learning disabilities, communication disorders, and behavioral and emotional disorders.
SPED 507. Low Incidence Disabilities in a Diverse Society
3 Credits
Examines those disabilities that occur less frequently in the special education population, including hearing loss, visual disorders, autism, and other severe manifestations. Taught with SPED 607 with differentiated assignments.
SPED 508. Nature and Needs of Gifted Learners
3 Credits (3)
An introductory course in the education of gifted students. The course provides an overview of the current and historical issues in the field. The intellectual, social, emotional, development, and educational characteristics of gifted students are introduced. Appropriate educational opportunities and programming are discussed. Issues in identification of the gifted, special gifted populations, and current research are reviewed. Taught with SPED 608
SPED 509. Reading for Elementary Exceptional Learners in a Diverse Society, K-6
3 Credits
Emphasizes reading diagnosis and materials for students with special developmental and learning problems. Taught with SPED 409.
SPED 510. Current Issues in Special Education for Teaching in Culturally Responsive Society
3 Credits
Theoretical and empirical bases for special education practices. Skill development in critical thinking, reading, and writing in relation to contemporary problems. Taught with SPED 610.
SPED 511. Reading for Secondary Exceptional Learners in a Diverse Society, 7-12 3 Credits
Extends information covered in SPED 509, which covers grades K-6. Strategies and materials are addressed. Taught with SPED 411.

SPED 512. Curriculum for Gifted Learners 3 Credits (3)
This course focuses upon the development of appropriate curriculum, courses, and units for gifted learners. Taught with SPED 612.

SPED 513. Current Research in Special Education 3 Credits
Current investigations and research techniques.

SPED 514. Twice Exceptional and Special Populations of Gifted Learners 3 Credits (3)
This course is designed for all professional personnel who work with students who are gifted. It focuses on special populations of gifted learners who possess unique characteristics and needs. Emphases are placed on issues related to the characteristics, identification, and development of appropriate educational services for twice exceptional and special populations of gifted learners. Taught with SPED 614

SPED 516. Strategies for Teaching Gifted Learners 3 Credits (3)
This course comprehensively reviews teaching-learning models that can be used in the development and implementation of a curriculum for gifted students. The field of gifted education has seen new program models developed, more research accomplished, and new materials published, and this class examines these changes. Taught with SPED 616

SPED 519. School Interventions and Organization in a Diverse Society 3 Credits
Introduces public school organization and laws and the psychosocial perspective of education. Curriculum and theory, teaching methods and materials will be presented and operationalized through a psycho-educational point of view. Restricted to majors. Taught with SPED 619.

SPED 520. Reading Disabilities Structure of Language 3 Credits
The purpose of this course is to introduce the student to the structure of language, including phonology, morphology, syntax, semantics, and to orthography. In addition, students in this course will study each area of language and able to use this information in analyzing the process of reading and writing.

SPED 521. Intervention Techniques for Reading Disabilities 3 Credits
This course focuses on the systematic and explicit teaching of reading and writing skills. Included will be a summation of the most current reading research and its relevance to the field.

SPED 522. Practicum in Reading Disabilities 3 Credits
Supervised experience in assessing a student with reading disability, developing and intervention plan, and implementing and monitoring the interventions across time.

SPED 523. Advanced Curriculum for Diverse Exceptional Learners 3 Credits
Strategies for developing curricula appropriate to handicapped and gifted learners.
Prerequisite: SPED 360 or consent of instructor.

SPED 524. Foundations of Visual Impairment 3 Credits
This course provides an overview of the history and theory of teaching students with visual impairments, including those with additional disabilities. The impact of educational, legislative, and societal trends on the psychosocial adjustment, quality of life, and post-school outcomes of individuals with visual impairments is explored. Taught with SPED 452 and SPED 632 with differentiated assignment.

SPED 525. Functional Implications of Low Vision 3 Credits
This course examines the structure and function of the visual system in relation to associated diseases and syndromes with an emphasis on measuring functional vision and determining appropriate educational adaptations. Taught with SPED 453 and SPED 633.

SPED 526. Strategies for Teaching Students with Visual and Multisensory Impairments 3 Credits
This course defines the roles and responsibilities of the teacher of students with visual impairments as part of the transdisciplinary team that serves students with visual impairments and additional disabilities. Emphasis is on assessment, curricula (both academic and functional), communication, behavior management, assistive technologies, inclusion, transition, and independent living. Taught with SPED 454 and SPED 634.
Prerequisite(s): SPED 533.

SPED 527. Independent Readings in Special Education 1-3 Credits
Each course shall be identified by a qualifying subtitle. Maximum of 6 credits, 3 credits per semester.

SPED 528. Braille I: Literacy for Students with Visual Impairments 3 Credits
This course facilitates an in depth study of the Uncontracted and Contracted Literary Braille codes as well as methods of teaching pre-braille, braille reading, and braille writing skills to tactual learners. Taught with SPED 455 and SPED 636.

SPED 529. Independent Readings in Special Education 1-3 Credits
Each course shall be identified by a qualifying subtitle. Maximum of 6 credits, 3 credits per semester.

SPED 530. Braille II: Numeracy for Students with Visual Impairments 3 Credits
This course facilitates an in depth study of the Nemeth Braille Code for Mathematics and Science Notation as well as instructional strategies for using the abacus and developing numeracy. Specialized braille codes for computers, music, and foreign languages will be introduced. Taught with SPED 457 and SPED 638 with differentiated assignments.
Prerequisite(s): SPED 455 or SPED 536 or SPED 636 consent of instructor.

SPED 531. Strategies for Teaching Students with Visual Impairments 3 Credits
This course covers individualized educational programming in both the core and expanded core curriculums for children and youth with visual impairments with an emphasis on assessment, curricular adaptations, IFSP/IEP/ITP planning, and evidence-based practices. Taught with 460 and SPED 639. Restricted to: SPED majors.
Prerequisite(s): SPED 533, SPED 536, SPED 538.

SPED 532. Assessment of Reading and Writing 3 Credits
Differential diagnosis of reading and writing disabilities is the focus of this course. Students will develop competencies to diagnose different types of reading problems, including dyslexia. Students will be taught how accurate differential diagnosis leads directly to targeted intervention.
SPED 545. Technology and Exceptionality in a Diverse Society
3 Credits
This class will address the unique educational needs of learners with
exceptionalities, and will provide information and practice in addressing
those needs through the use of technology-based interventions. Taught
with SPED 645.

SPED 548. Field Experience in Education, Equity & Cultural Diversity
3 Credits
This is a supervised experience in providing special education services
to local preK-12 students. In the context of the public school classroom,
teacher candidates are guided to apply content knowledge from the
seminar meetings and from prior coursework. This experience is
designed for both the practicing general education classroom teacher
pursuing special education licensure and for graduate teacher candidates
pursuing initial special education licensure. Restricted to: SPED majors.
Prerequisite(s): SPED 350 and SPED 360, or SPED 500 and SPED 523, or
consent of instructor.

SPED 550. Working with Young Children with Special Needs, Ages 3-8
3 Credits
Addresses competencies for working with young children with
exceptionalities, ages three eight, and their families. Public school,
private school, Head Start and other models are included. Same as
SPED 450 with differentiated assignments for graduate students. Same
as ECED 550.
Prerequisite: SPED 500 or equivalent, or consent of instructor.

SPED 551. Assessment of Young Children, Birth Eight
3 Credits
Covers instruments and procedures for assessing young children and
their families in order to determine atypical development. Screening,
diagnosis, program planning, placement and evaluation issues are
covered. Same as SPED 451.
Prerequisite: SPED 550 or consent of instructor.

SPED 552. Introduction to Orientation and Mobility
3 Credits
This course provides an overview of the history and theory of formalized
orientation and mobility instruction as it relates to the ability to live
independently. The impact of visual impairment and concomitant
impairments on the development of spatial concepts and motor
skills in relation to independent locomotion is emphasized. Topics
covered include mobility aids; navigation, familiarization, and protective
techniques; structured pre-cane assessment and instruction; the
development and use of tactual maps; and the relationship of orientation
and mobility to other areas of the expanded core curriculum. Consent of
Instructor required. Restricted to: SPED,EDUC majors.

SPED 553. Beginning Orientation and Mobility
3 Credits
This course provides an overview of the profession of orientation and
mobility and how sensory, motor, and psychosocial function affects
movement and spatial orientation. Consent of Instructor required.
Restricted to: SPED majors.
Prerequisite(s): SPED 552.

SPED 554. Intermediate Orientation and Mobility
3 Credits
This course focuses on strategies and methods for conducting
assessments and appropriately sequencing skill acquisition for learners
across the lifespan who may or may not have additional disabilities.
Adaptive technology and other aids that assist with travel in a variety
of environmental conditions using different mobility systems will also be
covered. Consent of Instructor required. Restricted to: SPED majors.
Prerequisite(s): SPED 553.

SPED 555. Advanced Orientation and Mobility
3 Credits
This course focuses on the development and monitoring of cane
skills needed for safe and efficient travel in indoor, residential, and
business districts, including the use of public transportation systems.
Development, administration, and supervision of orientation and mobility
services is also covered. Consent of Instructor required. Restricted to:
SPED majors.
Prerequisite(s): SPED 554.

SPED 558. Intellectual Disabilities in a Diverse Society: An Introduction
3 Credits
Dealing with history, philosophy, goals and objectives, classification,
and characteristics of intellectual disabilities. Same as SPED 458 and
SPED 558 with differentiated assignments for graduate students.
Consent of instructor required. Restricted to SPED majors.
Prerequisite(s): SPED 350 or SPED 500.

SPED 563. Assessment and Consultation for Exceptional Multicultural
Populations
3 Credits
Covers formal and informal methods of assessment as well as
consultation models for multicultural populations. Same as BIL 563, BIL
663, SPED 663.

SPED 566. The Learning Disabled Student in a Diverse Society
3 Credits
Current definitions, conceptualizations, and techniques. Taught with
SPED 466 with differentiated assignments for graduate students.
Restricted to SPED majors.
Prerequisite(s): SPED 350 or SPED 500.

SPED 567. Behavior Disorders in a Diverse Society
3 Credits
An in-depth study of the classification, characteristics, educational needs,
and professional literature regarding individuals with behavior disorders.
Taught with SPED 467 and SPED 667 with differentiated assignments.
Restricted to SPED majors.
Prerequisite(s): SPED 350 or SPED 500 or consent of instructor.

SPED 570. Life Span Development and Transition in a Diverse Society
3 Credits
Covers special problems associated with transitions over the life
span, with emphasis on adolescent and adult needs. Attention to
service approaches for public schools, sheltered workshops, residential
hospitals, and group homes. Taught with SPED 470.
SPED 580. Curriculum, Methods, and Materials for Secondary Special Education
3 Credits
Curriculum theory and development for elementary special education programs. Various teaching methods utilized with secondary exceptional learners and techniques for identifying, adapting, and developing materials will be addressed. Taught with SPED 480.

SPED 582. Student Teaching SPED
12 Credits
Culminating course required for graduate level students seeking initial licensure. Restricted to SPED majors.
Prerequisite(s): Bachelor's degree, SPED 548, and admission to student teaching.

SPED 585. Introduction to Autism
3 Credits
This course will provide an overview of autism spectrum disorders as a triad of impairments, including historical and theoretical perspectives, assessment issues, characteristics of autism, intervention programs, and family issues. Taught with SPED 485 and SPED 685. Differentiated Assignments.

SPED 586. Behavior and Autism
3 Credits
This course will cover the first of the triad of impairments. Students will gain an understanding of the behaviors of children with autism. Students will examine several behavior management philosophies and research based interventions and how they can be applied in the educational setting. Attention will also be given to play skills. The family perspective and participation in the proactive behavior management process will be incorporated throughout the course. Taught with SPED 486 and SPED 686 with differentiated assignments.
Prerequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 587. Social Skills and Autism
3 Credits
This course will cover the second of the triad of impairments. As a blend of researched based models and evidenced based practical applications, students will gain an understanding of the social skill deficits often associated with autism spectrum disorders. Review a variety of social cognition theories and explore effective social skill interventions for children functioning at a variety of levels along the autism spectrum. Taught with SPED 487 and SPED 687 with differentiated assignments.
Prerequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 588. Communication and Autism
3 Credits
This course will cover the third of the triad of impairments. Students will gain an overview of communication characteristics and difficulties often associated with autism spectrum disorders. Review current tools and strategies used to assess speech, language, and interaction skills. Use assessment results to identify needs and implement appropriate interventions. Explore a variety of intervention strategies aimed at building receptive, expressive, and pragmatic language of children functioning at a variety of levels along the autism spectrum. Taught with SPED 488 and SPED 688 with differentiated assignments.
Prerequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 590. Masters Degree Seminar
3 Credits
Capstone review of current issues in special education. Each student will participate in a practice comprehensive oral exam.

SPED 598. Special Research Problems
1-3 Credits
Individual investigation either analytical or experimental. May be repeated for a maximum of 6 credits, 3 credits per semester.

SPED 599. Master's Thesis
15 Credits
Thesis.

SPED 600. Doctoral Research
1-15 Credits
Research.

SPED 605. Independent Study Topics in Special Education
1-6 Credits
A problem and seminar course for those pursuing an advanced graduate degree. Each course to bear an appropriate subtitle.

SPED 606. High Incidence Disabilities in a Diverse Society
3 Credits
Examines those areas of disability that most frequently occur in the special education population, including mental retardation, learning disabilities, communication disorders, and behavioral and emotional disorders. Taught with SPED 506. Restricted to SPED and CD majors.
Prerequisite: Master's Degree.

SPED 607. Low Incidence Disabilities
3 Credits
Examines those disabilities that occur less frequently in the special education population, including hearing loss, visual disorders, autism, and other severe manifestations. Taught with SPED 507 with differentiated assignments.

SPED 608. Nature and Needs of Gifted Learners
3 Credits (3)
An introductory course in the education of gifted students. The course provides an overview of the current and historical issues in the field. The intellectual, social, emotional, development, and educational characteristics of gifted students are introduced. Appropriate educational opportunities and programming are discussed. Issues in identification of the gifted, special gifted populations, and current research are reviewed. Taught with SPED 508

SPED 610. Current Issues in Special Education for Teaching in a Culturally Responsive Society
3 Credits
Required for students seeking the Ed.D./Ph.D. Taught with SPED 510.

SPED 612. Curriculum for Gifted Learners
3 Credits (3)
This course focuses upon the development of appropriate curriculum, courses, and units for gifted learners. Taught with SPED 512

SPED 613. Current Research in Special Education
3 Credits
Required for students seeking the Ed.D./Ph.D. Restricted to majors. Same as SPED 513.
Prerequisite: M.A. degree.

SPED 614. Twice Exceptional and Special Populations of Gifted Learners
3 Credits (3)
This course is designed for all professional personnel who work with students who are gifted. It focuses on special populations of gifted learners who possess unique characteristics and needs. Emphases are placed on issues related to the characteristics, identification, and development of appropriate educational services for twice exceptional and special populations of gifted learners. Taught with SPED 514
SPED 616. Strategies for Teaching Gifted Learners  
3 Credits (3)  
This course comprehensively reviews teaching-learning models that can be used in the development and implementation of a curriculum for gifted students. The field of gifted education has seen new program models developed, more research accomplished, and new materials published, and this class examines these changes. Taught with SPED 516.

SPED 619. School Intervention and Organization in a Diverse Society  
3 Credits  
Introduces public school organization and laws and the psychosocial perspective of education. Curriculum and theory, teaching methods and materials will be presented and operationalized through a psycho-educational point of view. Restricted to majors. Taught with SPED 519.

SPED 632. Foundations of Visual Impairment  
3 Credits  
This course provides an overview of the history and theory of teaching students with visual impairments, including those with additional disabilities. The impact of educational, legislative, and societal trends on the psychosocial adjustment, quality of life, and post-school outcomes of individuals with visual impairments is explored. Taught with SPED 452 and SPED 532.

SPED 633. Functional Implications of Low Vision  
3 Credits  
This course examines the structure and function of the visual system in relation to associated diseases and syndromes with an emphasis on measuring functional vision and determining appropriate educational adaptations. Taught with SPED 453 and SPED 533.

SPED 634. Strategies for Teaching Students with Visual and Multiple Impairments  
3 Credits  
This course defines the roles and responsibilities of the teacher of students with visual impairments as part of the transdisciplinary team that serves students with visual impairments and additional disabilities. Emphasis is on assessment, curricula (both academic and functional), communication, behavior management, assistive technologies, inclusion, transition, and independent living. Taught with SPED 454 and SPED 534.  
Prerequisite(s): SPED 633.

SPED 636. Braille I: Literacy for Students with Visual Impairments  
3 Credits  
This course facilitates an in-depth study of the Uncontracted and Contracted Literary Braille codes as well as methods of teaching pre-braille, braille reading, and braille writing skills to tactile learners. Taught with SPED 455 and SPED 536.

SPED 638. Braille II: Numeracy for Students with Visual Impairments  
3 Credits  
This course facilitates an indepth study of the Nemeth Braille Code for Mathematics and Science Notation as well as instructional strategies for using the abacus and developing numeracy. Specialized braile codes for computers, music, and foreign languages will be introduced. Taught with SPED 457 and SPED 538.  
Prerequisite(s): SPED 455 or SPED 536 or SPED 636.

SPED 639. Strategies for Teaching Students with Visual Impairments  
3 Credits  
This course covers assessment, curricular adaptation's, knowledge of transition age, young children with multiple disabilities, and assistive technology. Taught with SPED 460 and SPED 539. Consent of Instructor required. Restricted to: SPED majors.  
Prerequisite(s): SPED 633, SPED 636, SPED 638 or Consent of Instructor.

SPED 640. Internship in Special Education  
1-6 Credits  
Each course bears a qualifying subtitle. Maximum of 6 credits per semester.

SPED 645. Technology and Exceptionality in a Diverse Society  
3 Credits  
This class will address the unique educational needs of learners with exceptionalities, and will provide information and practice in addressing those needs through the use of technology-based interventions. Taught with SPED 545.

SPED 662. Elementary Curriculum Methods and Materials for Special Education in a Diverse Society  
3 Credits  
ESL and bilingual methods applied to bilingual exceptional students. Appropriate curriculum needs and materials development are also included. Taught with SPED 360, SPED 562.

SPED 685. Introduction to Autism  
3 Credits  
This course will provide an overview of autism spectrum disorders as a triad of impairments, including historical and theoretical perspectives, assessment issues, characteristics of autism, intervention programs, and family issues. Differentiated Assignments. Taught with SPED 585 and SPED 485.

SPED 686. Behavior and Autism  
3 Credits  
This course will cover the first of the triad of impairments. Students will gain an understanding of the behaviors of children with autism. Students will examine several behavior management philosophies and research based interventions and how they can be applied in the educational setting. Attention will also be given to play skills. The family perspective and participation in the proactive behavior management process will be incorporated throughout the course. Taught with SPED 486 and SPED 586 with differentiated assignments.  
Prerequisite(s): SPED485 or SPED585 or SPED685.

SPED 687. Social Skills and Autism  
3 Credits  
This course will cover the second of the triad of impairments. As a blend of researched based models and evidenced based practical applications, students will gain an understanding of the social skill deficits often associated with autism spectrum disorders. Review a variety of social cognition theories and explore effective social skill interventions for children functioning at a variety of levels along the autism spectrum. Taught with SPED 487 and SPED 587 with differentiated assignments.  
Prerequisite(s)/Corequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 688. Communication and Autism  
3 Credits  
This course will cover the third of the triad of impairments. Students will gain an overview of communication characteristics and difficulties often associated with autism spectrum disorders. Review current tools and strategies used to assess speech, language, and interaction skills. Use assessment results to identify needs and implement appropriate interventions. Explore a variety of intervention strategies aimed at building receptive, expressive, and pragmatic language of children functioning at a variety of levels along the autism spectrum. Taught with SPED 488 and SPED 588 and differentiated assignments.  
Prerequisite(s): SPED 485 or SPED 585 or SPED 685.
SPED 690. Doctoral Seminar
1-4 Credits (1-4)
The seminar will engage doctoral students in scholarly dialogue and production. It will assist in preparing them for future careers in leadership roles. Same as CD 690.

SPED 698. Selected Topics in Special Education
1-6 Credits
Offered under various subtitles which indicate the subject matter to be covered. Maximum of 6 credits, 3 credits per semester.

SPED 700. Dissertation
9 Credits
Credit may be earned by students who have successfully completed their doctoral comprehensive exams and presented their dissertation proposals to their committees. At least 18 credits are required during the course of dissertation study. May be repeated for a maximum of 24 credits. Restricted to majors.

Name: Dr. Robert Wood, Interim Department Head
Name: Racquel Avelar, Administrative Assistant
Office Location: Speech Building
Phone: (575) 646-2402
Website: https://spedcd.nmsu.edu/

Autism Spectrum Disorders - Graduate Certificate
The Graduate Certificate in Autism Spectrum Disorders is composed of 12 credit hours. To earn a certificate that is noted on transcripts, students must apply for admission to the certificate program through the Department of Special Education and Communication Disorders with an intended major of "Graduate Certificate" and a concentration of "Autism Spectrum Disorders." The certificate can be pursued separately or in conjunction with an MA in Special Education. Graduate students in other related programs who meet admission criteria for the certificate are encouraged to apply. Required courses include:

SPED 585 Introduction to Autism 3
SPED 586 Behavior and Autism 3
SPED 587 Social Skills and Autism 3
SPED 588 Communication and Autism 3

Communication Disorders - Bachelor of Science in Education
The Communication Disorders curriculum provides specialized preparation for students who plan to enter a graduate program in speech-language pathology or audiology. Students supplement their academic study of typical communication development, communication disorders, and clinical management with observation of the clinical experience in the department's Edgar R. Garrett Speech and Hearing Center and/or via alternative clinical education such as virtual patients. Students must maintain a B or better in all CD courses and maintain a cumulative GPA of 3.2 or higher, to remain in the program.

The undergraduate program provides approximately one-half of the academic requirements needed for certification by the American Speech-Language-Hearing Association and licensure by the New Mexico Regulations & Licensing Department. Certification and licensure at state and national levels require completion of the master's degree. Details regarding certification are available from the American Speech-Language-Hearing Association (http://www.asha.org/certification) (ASHA), and the New Mexico Regulations & Licensing Department (http://www.rld.state.nm.us/boards/speech_language_pathology_audiology_and_hearing_aidDispensing_practices.aspx).

Professional employment opportunities for speech-language pathologists and audiologists are numerous within settings such as school systems, community clinics, medical centers, hospitals, private practice, residential programs and schools for individuals with disabilities.

General Requirements
See the "General Requirements (p. 452)" in the College of Education section. A list of specific general education courses is available at the Advisement Center.

Program Requirements
Required coursework (120 credits; minimum 51 upper-division credits)
Electives to meet the 120 minimum credit hours for this degree can either come from any minor that a student chooses to pursue or any other elective courses not counting elsewhere towards the degree. Recommended minors for this degree are Linguistics, Spanish, or CEP.

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<thead>
<tr>
<th>General Education Courses</th>
<th>35</th>
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<tbody>
<tr>
<td>Area I: English and Communication</td>
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<tr>
<td>ENGL 111G Rhetoric and Composition</td>
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<td>Choose one from the following:</td>
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<tr>
<td>ENGL 203G Business and Professional Communication</td>
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<td>ENGL 211G Writing in the Humanities and Social Sciences</td>
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<tr>
<td>ENGL 218G Technical and Scientific Communication</td>
<td></td>
</tr>
<tr>
<td>ENGL 311G Advanced Composition</td>
<td></td>
</tr>
<tr>
<td>ENGL 318G Advanced Technical and Professional Communication</td>
<td></td>
</tr>
<tr>
<td>Choose one from the following:</td>
<td></td>
</tr>
<tr>
<td>COMM 253G Public Speaking</td>
<td></td>
</tr>
<tr>
<td>COMM 265G Principles of Human Communication</td>
<td></td>
</tr>
<tr>
<td>AXED 201G Effective Leadership and Communication in Agricultural Organizations</td>
<td></td>
</tr>
<tr>
<td>Area II: Mathematics</td>
<td></td>
</tr>
<tr>
<td>MATH 121G College Algebra ((any MATH beyond 121G))</td>
<td></td>
</tr>
<tr>
<td>Choose one from the following:</td>
<td></td>
</tr>
<tr>
<td>A ST 251G Statistics for Business and the Behavioral Sciences</td>
<td></td>
</tr>
<tr>
<td>or STAT 251G Statistics for Business and the Behavioral Sciences</td>
<td></td>
</tr>
<tr>
<td>STAT 271G Statistics for Psychological Sciences</td>
<td></td>
</tr>
<tr>
<td>A ST 311 Statistical Applications</td>
<td></td>
</tr>
<tr>
<td>Area III: Laboratory Science</td>
<td></td>
</tr>
<tr>
<td>Choose one from the following:</td>
<td></td>
</tr>
<tr>
<td>BIOL 101G Human Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 110G Contemporary Problems in Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 111G Natural History of Life</td>
<td></td>
</tr>
</tbody>
</table>
Choose one from the following:

- **CHEM 110G** Principles and Applications of Chemistry
- **CHEM 111G** General Chemistry I
- **CHEM 112G** General Chemistry II
- **PHYS 110G** The Great Ideas of Physics
- **PHYS 120G** Introduction to Acoustics (recommended)
- **PHYS 211G** General Physics I
- **PHYS 212G** General Physics II

**Area IV: Social and Behavioral Sciences**

- **PSY 201G** Introduction to Psychology
- **SOC 101G** Introductory Sociology
  - or **SOC 201G** Contemporary Social Problems

Choose one from the following:

- **ANTH 120G** Human Ancestors
- **ANTH 125G** Introduction to World Cultures
- **ANTH 201G** Introduction to Anthropology
- **ANTH 202G** Introduction to Archaeology and Physical Anthropology
- **ANTH 203G** Introduction to Language and Cultural Anthropology

**Area V: Humanities and Fine Arts**

Choose one from the following:

- **ENGL 115G** Perspectives on Literature
- **ENGL 116G** Perspectives on Film
- **ENGL 220G** Introduction to Creative Writing
- **ENGL 244G** Literature and Culture

Select one additional course from the following:

- **ART 101G** Orientation in Art
- **ART 110G** Visual Concepts
- **DANC 101G** Dance Appreciation
- **HIST 101G** Roots of Modern Europe
- **HIST 102G** Modern Europe
- **HIST 110G** Making History
- **HIST 111G** Global History to 1500
- **HIST 112G** Global History Since 1500
- **HIST 201G** Introduction to Early American History
- **HIST 202G** Introduction to Recent American History
- **HIST 211G** East Asia to 1600
- **HIST 212G** East Asia since 1600
- **HIST 221G** Islamic Civilizations to 1800
- **HIST 222G** Islamic Civilizations since 1800
- **MUS 101G** An Introduction to Music
- **MUS 201G** History of Jazz in Popular Music: A Blending of Cultures
- **PHIL 100G** Philosophy, Law and Ethics
- **PHIL 101G** The Art of Wondering
- **PHIL 124G** Philosophy of Music
- **PHIL 136G** The Quest for God
- **PHIL 201G** Introduction to Philosophy
- **PHIL 211G** Informal Logic
- **THTR 101G** The World of Theatre

**Viewing a Wider World Courses**

- **C EP 110G** Human Growth and Behavior 3
- **LING 200G** Introduction to Language 3
  - or **LING 302V** Language and Society 3
- **CD 374** American Sign Language I 3
  - or **SPAN 111** Elementary Spanish I
  - or **SPAN 113** Spanish for Heritage Learners I
  - or **SPAN 211** Intermediate Spanish I
- **CD 375** American Sign Language II 3
  - or **SPAN 112** Elementary Spanish II
  - or **SPAN 212** Intermediate Spanish II
  - or **SPAN 213** Spanish for Heritage Learners II
- **C EP 451V** Introduction to Counseling 3

**Major Requirements (non-CD courses)**

- **CD 221** Introduction to Communication Disorders 3
- **C D 323** Phonetics 3
- **C D 422** Audiology 3
- **C D 301** Language Acquisition 3
- **C D 324** Introduction to Speech Science 3
- **C D 322** Anatomy and Physiology of Speech Mechanisms 3
- **C D 326** Clinical Methods and Procedures 3
- **C D 421** Speech and Language Disorders 3
- **C D 423** Neural Bases of Communication Disorders 3
- **C D 425** Professional Reasoning and Scientific Thinking 3
- **C D 424** Aural Rehabilitation 3

**Electives: to bring total to 28**

**Communication Disorders - Master of Arts**

Students entering the graduate program with an undergraduate major in Communication Disorders can expect to complete the program in two years and be awarded a Masters of Arts in Communication Disorders with a specialization in Speech-Language Pathology. The graduate program for students without a Communication Disorders background is generally one year longer because one year of leveling is required. Enrollment in graduate courses in Communication Disorders is limited to students who have been accepted into the graduate program in Communication Disorders. To complete this course of study, each student is expected to meet the program’s academic and clinical competency criteria which are aligned with the requirements of state and national certifying bodies for licensure and clinical certification. Details regarding certification are available from the American Speech-Language-Hearing Association (http://www.asha.org/certification) (ASHA), and the New Mexico Regulations & Licensing Department (http://www.rld.state.nm.us/boards/speech_language_pathology_audiology_and_hearing_aid Dispensing_practices.aspx).
The Master’s degree program in Speech-Language Pathology at New Mexico State University is accredited by the Council on Academic Accreditation (CAA) in Audiology and Speech-Language Pathology. Admission requirements and procedures can be found on the program website (https://spedcd.nmsu.edu/cd/graduate_general_info/graduate_admission_info).

Program Requirements
The traditional Master’s degree plan requires a minimum of 54 graduate credit hours and the completion of at least 400 clinical hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C D 505</td>
<td>Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>C D 523</td>
<td>Assessment of Communication Disorders</td>
<td>3</td>
</tr>
<tr>
<td>C D 525</td>
<td>Pediatric Language and Disorders</td>
<td>3</td>
</tr>
<tr>
<td>C D 542</td>
<td>Articulation and Phonological Disorders</td>
<td>3</td>
</tr>
<tr>
<td>C D 590</td>
<td>Clinical Education</td>
<td>2</td>
</tr>
<tr>
<td>C D 589</td>
<td>Practicum in Speech-Language Pathology</td>
<td>13</td>
</tr>
<tr>
<td>C D 535</td>
<td>Aphasia &amp; Cognitive Linguistic Disorders</td>
<td>3</td>
</tr>
<tr>
<td>C D 586</td>
<td>Voice Disorders/Head and Neck Anomalies</td>
<td>3</td>
</tr>
<tr>
<td>C D 584</td>
<td>Fluency Disorders</td>
<td>3</td>
</tr>
<tr>
<td>C D 583</td>
<td>Dysphagia</td>
<td>3</td>
</tr>
<tr>
<td>C D 585</td>
<td>Motor Speech Disorders</td>
<td>3</td>
</tr>
<tr>
<td>C D 521</td>
<td>Professional Issues and Multicultural Practices</td>
<td>3</td>
</tr>
<tr>
<td>C D 640</td>
<td>Externship in Communication Disorders</td>
<td>6</td>
</tr>
<tr>
<td>Elective Course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C D 547</td>
<td>Cognitive-Linguistic Communication Disorders</td>
<td>3</td>
</tr>
<tr>
<td>or C D 545</td>
<td>Introduction to Augmentative and Alternate</td>
<td></td>
</tr>
<tr>
<td>or C D 591</td>
<td>Communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
<td>54</td>
</tr>
</tbody>
</table>

Bilingual Program
In addition to the traditional program of study, students with proficiency in English and Spanish may pursue the bilingual program in Speech-Language Pathology, which requires the following additional coursework:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C D 541</td>
<td>Advanced Spanish Morpho-Syntax for Education</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Professionals</td>
<td></td>
</tr>
<tr>
<td>C D 548</td>
<td>Best Practices in Bilingual/Multicultural Assessment for Practitioners</td>
<td>3</td>
</tr>
<tr>
<td>Course offered through UNM online (SHS 359)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Leveling Program
The graduate courses to be taken during the leveling year for students without a Communication Disorders undergraduate degree are as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C D 504</td>
<td>Speech and Language Disorders</td>
<td>3</td>
</tr>
<tr>
<td>C D 507</td>
<td>Audiology</td>
<td>3</td>
</tr>
<tr>
<td>C D 501</td>
<td>Phonetics</td>
<td>3</td>
</tr>
<tr>
<td>C D 502</td>
<td>Anatomy and Physiology of Speech Mechanisms</td>
<td>3</td>
</tr>
</tbody>
</table>

Special Education - Master of Arts
Enrollment in graduate licensure program courses with field experiences in Special Education is limited to persons who have been accepted into the graduate program in Special Education. For other special education graduate courses, enrollment of students outside of the special education program is contingent upon meeting prerequisites and availability after enrollment of Special Education graduate students. To complete a course of study, each student must meet the program’s academic and field based competency criteria, including a grade of B or higher in each course in the program of study, satisfactory evaluation in field experiences for those seeking licensure, and a passing score on the MA Comprehensive Exam. The Master of Arts in Special Education has five pathways to meet the varied needs of students pursuing graduate education and can be completed in two years for full-time students.

MA in Special Education Pathways
1. MA in Special Education (preparation for an initial license in Special Education). This route is 42 credits including student teaching and provides preparation for the New Mexico pre-K-12 Special Education license. Candidates must be admitted to the Teacher Education Program before completing practicum and student teaching experiences.

2. MA in Special Education (preparation for a second license, in Special Education, for students who already have an initial license in another area such as Early Childhood, Elementary, or Secondary Education). This route requires 30 credits of special education coursework and provides preparation for the New Mexico pre-K-12 Special Education license.

3. MA in Special Education (preparation using the Alternative Licensure process). This route includes 39 credits. It begins with completion of alternative licensure components, which includes 21 credits of state-approved coursework and two semesters of university supervision while concurrently employed as the special education teacher of record in a classroom. After completion of the alternative components, students complete the remaining coursework (18 credits) and degree requirements.

4. MA in Special Education (a Scholarly route for students who are not seeking licensure or who already have a license and are seeking additional depth of knowledge). This route requires 30 credits of special education coursework and does not lead to licensure.

5. MA in Special Education with an emphasis in Visual Impairment (preparation for licensure in teaching school-aged children/infants/toddlers and/or orientation and mobility). This route requires 30-36 credit hours in visual impairment and special education coursework. Students who meet qualifications and are interested in visual impairment may elect to pursue licensure only, rather than a master’s degree, with 15-27 credits leading to a Blind and Visually
Impaired Teaching License or National Certification in Orientation and Mobility.

Admission

The Special Education Program has a “rolling admissions” procedure for MA programs. Applications are reviewed upon submission to determine if candidates meet admission requirements. Application requirements follow:

1. A completed Graduate School admission application.
2. A letter of interest explaining the applicant’s goals in pursuing an MA in Special Education.
3. Complete transcripts of all college work, including notation of a BA or BS Degree and a cumulative GPA of a 3.0 or higher.
4. A curriculum vitae or resume.
5. Email addresses to contact three individuals who can provide a professional recommendation, such as professors, employers, or others qualified to evaluate potential for graduate work.
6. For alternative licensure, a letter from a school district indicating consideration for a position.
7. For international students with English language testing requirements, TOEFL test results of at least 79 iBT; 550 paper, or IELTS results of at least 6.5.

Special Education - Bachelor of Science in Education

The undergraduate special education program is an NCATE accredited program designed to prepare teacher candidates for dual licensure in special education and either elementary or secondary education. Students graduate with the preparation to teach in environments across the continuum of special education services. In addition to special education coursework, students complete an academic teaching field within their dual major (elementary or secondary). General education requirements are similar for all degree programs in the College of Education. Students should meet with an advisor to plan appropriate general education courses for a special education major.

Requirements

Professional Education Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 350</td>
<td>Introduction to Special Education in a Diverse Society</td>
<td>3</td>
</tr>
<tr>
<td>SPED 360</td>
<td>Elementary Curriculum, Methods, and Materials for Special Education in a Diverse Society</td>
<td>3</td>
</tr>
<tr>
<td>SPED 406</td>
<td>High Incidence Disabilities in a Diverse Society</td>
<td>3</td>
</tr>
<tr>
<td>SPED 407</td>
<td>Low Incidence Disabilities in a Diverse Society</td>
<td>3</td>
</tr>
<tr>
<td>SPED 459</td>
<td>Classroom Management for Diverse Learners</td>
<td>3</td>
</tr>
<tr>
<td>SPED 463</td>
<td>Introduction to Assessment of Diverse Exceptional Learners</td>
<td>3</td>
</tr>
</tbody>
</table>

Dual License in Elementary Education (48 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 481</td>
<td>Practicum in Education, Equity and Cultural Diversity</td>
<td>3</td>
</tr>
<tr>
<td>SPED 482</td>
<td>Student Teaching SPED</td>
<td>12</td>
</tr>
</tbody>
</table>

Options

Select one of the following options:

- Dual License in Elementary Education
- Dual License in Secondary Education

Total Credits

Dual License in Elementary Education

All special education students must choose one of the following dual majors:

Dual License in Elementary Education (48 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 481</td>
<td>Practicum in Education, Equity and Cultural Diversity</td>
<td>3</td>
</tr>
<tr>
<td>SPED 482</td>
<td>Student Teaching SPED</td>
<td>12</td>
</tr>
</tbody>
</table>

Options

Select one of the following options:

- Dual License in Elementary Education
- Dual License in Secondary Education

Total Credits

Dual License in Secondary Education (45 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 481</td>
<td>Practicum in Education, Equity and Cultural Diversity</td>
<td>3</td>
</tr>
<tr>
<td>SPED 482</td>
<td>Student Teaching SPED</td>
<td>12</td>
</tr>
</tbody>
</table>

Options

Select one of the following options:

- Dual License in Elementary Education
- Dual License in Secondary Education

Total Credits

Dual License in Secondary Education

Complete first teaching field requirements in one area (36 credits minimum)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 489</td>
<td>Topics</td>
<td>3</td>
</tr>
<tr>
<td>RDG 371</td>
<td>Instruction for Special Reading Needs</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one from the following appropriate for teaching field:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 460</td>
<td>Teaching Language Arts at the Middle and High School Level</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 461</td>
<td>Teaching Social Studies at the Middle and High School Level</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 462</td>
<td>Teaching Mathematics at the Middle and High School Level</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 463</td>
<td>Teaching Science at the Middle and High School Level</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits

Dual License in Secondary Education

Complete first teaching field requirements in one area (36 credits minimum)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 489</td>
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<td>3</td>
</tr>
<tr>
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<td>Instruction for Special Reading Needs</td>
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</tr>
</tbody>
</table>

Select one from the following appropriate for teaching field:

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<tr>
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<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 460</td>
<td>Teaching Language Arts at the Middle and High School Level</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 461</td>
<td>Teaching Social Studies at the Middle and High School Level</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 462</td>
<td>Teaching Mathematics at the Middle and High School Level</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 463</td>
<td>Teaching Science at the Middle and High School Level</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits

General Requirements

See “General Requirements” in the “College of Education (p. 452)” section. Students must be admitted to the Teacher Education Program as a condition for enrolling in courses that lead to licensure.

Special Education - Doctor of Education

The Special Education Doctorate Program is committed to preparing professionals in the areas of teaching, research, service, and leadership positions. All students within this program are trained to conduct independent research, become critical/independent thinkers, and embrace the notion of diversity. Upon completion of the doctorate the student will be able to inform policies that promote the well-being of all individuals with exceptionalities at the local, community, societal, and global levels. The Department of Special Education/Communication Disorders is pleased to offer two different, but equally rigorous, pathways (a Ph.D. or an Ed.D.). The two degrees can be differentiated in this way: a potential candidate seeks to drive educational change through either the
use of existing research (Ed.D.) or the creation of new research (Ph.D.). Additionally, there are two areas of specialization: Bilingual/Multicultural Special Education and Autism Spectrum Disorders. A student may also choose to minor in a related area such as Communication Disorders and must work carefully with an advisor to plan a program of study if a minor is desired.

**Admission**

Doctoral admission is competitive. To maximize consideration for admittance, applications must be submitted by February 10 for admission in the following semester. Admissions decisions are made based on evaluation of the student's potential for success in research, teaching, and service to the profession. Requirements include the following:

1. Completed Graduate school admission application.
2. Letter of Intent that explains professional goals and area of research interest.
3. Complete transcripts from all post-secondary educational experiences, with notation of a bachelor’s degree, a master’s degree in a related field of study, and a minimum 3.0 cumulative GPA on a 4.0 scale.
4. Scores from the Graduate Record Examination.
5. Curriculum vitae or resume.
6. Email addresses by which the graduate school application system will contact three individuals who can provide letters of professional recommendation.
7. Scholarly Writing Sample (10-15 scholarly paper following APA guidelines about a current issue in the field of Special Education).
8. A letter of support from a faculty member indicating an interest in fulfilling the role of advisor.
9. For international students with English language testing requirements, TOEFL results of at least 79 IBT; 550 PBT or IELTS scores of at least 6.5.

**Coursework**

60 credit hours (42 credit hours in coursework and 18 credits of dissertation research) is the minimum credit hours required for either a Ph.D. or Ed.D. The required coursework is planned with the student's committee members who take into account the student's research interest, research design, availability of coursework, and independent research study(s) which occur under the direction of the advisor of record and/or a faculty member. Additional coursework is contingent and may be recommended by the Doctoral Qualifying Committee, the advisor of record, and the student. Coursework requirements follow:

<table>
<thead>
<tr>
<th>Required Core Coursework</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 523</td>
<td>Advanced Curriculum for Diverse Exceptional Learners</td>
</tr>
<tr>
<td>SPED 610</td>
<td>Current Issues in Special Education for Teaching in a Culturally Responsive Society</td>
</tr>
<tr>
<td>SPED 613</td>
<td>Current Research in Special Education</td>
</tr>
<tr>
<td>SPED 606</td>
<td>High Incidence Disabilities in a Diverse Society</td>
</tr>
</tbody>
</table>

| Area of Research Interest (individually based on the student area of interest) | 18+ |

**Examinations**

Students must pass a qualifying examination (during the first year of study), a Comprehensive Exam including written electronic portfolio and oral elements (prior to beginning a dissertation), and a final dissertation defense. The doctoral handbook on the departmental website provides procedural and other details regarding each exam.

**Dissertation**

Every student working toward the doctoral degree will submit a dissertation embodying the results of original research. The dissertation is expected to demonstrate the student's ability in independent investigation and to be a contribution to human knowledge. The dissertation shall display a mastery of the literature of the subject field and present an organized, coherent development of ideas with a clear exposition of results, and provide a critical discussion of the limits and validity of the student's conclusions.

**Special Education - Doctor of Philosophy**

The Special Education Doctorate Program is committed to preparing professionals in the areas of teaching, research, service, and leadership positions. All students within this program are trained to conduct independent research, become critical/independent thinkers, and embrace the notion of diversity. Upon completion of the doctorate the student will be able to inform policies that promote the well-being of all individuals with exceptionalities at the local, community, societal, and global levels. The Department of Special Education/Communication Disorders is pleased to offer two different, but equally rigorous, pathways (a Ph.D. or an Ed.D.). The two degrees can be differentiated in this way: a potential candidate seeks to drive educational change through either the use of existing research (Ed.D.) or the creation of new research (Ph.D.). Additionally, there are two areas of specialization: Bilingual/Multicultural Special Education and Autism Spectrum Disorders. A student may also choose to minor in a related area such as Communication Disorders and must work carefully with an advisor to plan a program of study if a minor is desired.

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3. Complete transcripts from all post-secondary educational experiences, with notation of a bachelor's degree, a master's degree
in a related field of study, and a minimum 3.0 cumulative GPA on a 4.0 scale.

4. Scores from the Graduate Record Examination.

5. Curriculum vitae or resume that includes at least 3 years prior (or continuing concurrent) direct and/or related teaching experience in an educational field.

6. Email addresses by which the graduate school application system will contact three individuals who can provide letters of professional recommendation.

7. Scholarly Writing Sample (10-15 page scholarly paper following APA guidelines about a current issue in the field of Special Education).

8. A letter of support from a faculty member indicating an interest in fulfilling the role of advisor.

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**Required core coursework:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 523</td>
<td>Advanced Curriculum for Diverse Exceptional Learners</td>
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<td>SPED 610</td>
<td>Current Issues in Special Education for Teaching in a Culturally Responsive Society</td>
</tr>
<tr>
<td>SPED 613</td>
<td>Current Research in Special Education</td>
</tr>
<tr>
<td>SPED 606</td>
<td>High Incidence Disabilities in a Diverse Society</td>
</tr>
<tr>
<td>or SPED 607</td>
<td>Low Incidence Disabilities</td>
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**Research Sequence (9 credits in quantitative research design/statistics based)**

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**Area of Research Interest (individually based on the student’s area of interest)**

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**Dissertation**

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Examinations
Students must pass a qualifying examination (during the first year of study), a Comprehensive Exam including written portfolio and oral elements (prior to beginning a dissertation), and a final dissertation defense. The doctoral handbook on the departmental website provides procedural and other details regarding each exam.

Dissertation
Every student working toward the doctoral degree will submit a dissertation embodying the results of original research. The dissertation is expected to demonstrate the student’s ability in independent investigation and to be a contribution to human knowledge. The dissertation shall display a mastery of the literature of the subject field and present an organized, coherent development of ideas with a clear exposition of results, and provide a critical discussion of the limits and validity of the student’s conclusions.

Special Education - Graduate Minor

A minor in special education requires 9 credits of graduate coursework that carries the SPED prefix. Official minor documentation must be completed with the Department of Special Education and Communication Disorders.
COLLEGE OF ENGINEERING

Dean - Lakshmi Reddi, P.E.
Associate Dean (Academic Programs) - Sonya Cooper, P.E.
Associate Dean/Director of Engineering Research Center - Phillip DeLeon
Associate Dean (Outreach) - Patricia Sullivan
Business Manager - Monica Lopez
Communications and Special Events coordinator - Linda Fresques
Student Programs Coordinator - Elizabeth Howard

The College of Engineering comprises six departments:

- Chemical Engineering (p. 527);
- Civil Engineering (p. 539);
- Electrical and Computer Engineering (p. 549);
- Engineering Technology and Surveying Engineering (p. 572);
- Industrial Engineering (p. 590);
- Mechanical and Aerospace Engineering (p. 595).

Mission of the College of Engineering

The College of Engineering will uphold the land grant mission of NMSU through nationally recognized programs in education, research and professional & public service.

With respect to our undergraduate programs, we will accomplish our mission by focusing on the following goals:

1. To be nationally and internationally recognized for academic & research programs in Engineering & Engineering Technology.
2. Provide world-class engineers & engineering technologists for industrial, government, and academic constituents of the College of Engineering
3. To be the University of Choice for undergraduate engineering & engineering technology education in the region
4. To serve as an engine for economic development in New Mexico through the advancement of engineering and technology

Furthermore, graduates receiving baccalaureate degrees will demonstrate:

- an ability to apply knowledge of mathematics, science and engineering;
- an ability to design and conduct experiments, as well as to analyze and interpret data;
- an ability to design a system, component or process to meet desired needs;
- an ability to function on multi-disciplinary teams;
- an ability to identify, formulate, and solve engineering problems;
- an understanding of professional and ethical responsibility;
- an ability to communicate effectively;
- the broad education necessary to understand the impact of engineering solutions in a global and societal context;
- a recognition of the need for, and an ability to engage in life-long learning;
- a knowledge of contemporary issues; and
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Undergraduate Student Advisement

Starting with the Fall 2017 semester, students entering the College of Engineering will be advised by the Center for Academic Advising and Student Support (CAASS) located in Garcia Annex. Students may also change majors at the CAASS. Students uncertain about choosing a major may list themselves as undeclared in the College of Engineering and be advised by the CAASS. Undeclared students will be asked to choose a major after two semesters in the college. Students must have a declared major in order to graduate.

At the discretion of the associate dean, students who do not demonstrate satisfactory progress may be required to leave the College of Engineering.

Undergraduate General Education

With the exception of math and science, the College accepts all coursework approved for inclusion in the New Mexico General Education Common Core. Calculus I, General Chemistry I and Engineering Physics I are required to satisfy areas II and III of the common core.

S/U Coursework

The College requires most degree requirements to be taken with traditional grading. Students may take selected humanities and social science courses under the S/U option. Other exceptions are specifically noted in the program descriptions later in this catalog.

Undergraduate Math Placement

Entering freshmen are placed into an appropriate math course based upon the results of the Math Placement Exam administered regularly by the NMSU mathematics department. Students with Advanced Placement or transfer credit for mathematics will be placed accordingly. Math placement may be altered at the discretion of the associate dean.

Minors

Minors are available from most departments within the College of Engineering are outlined in the individual program descriptions.

Undergraduate Cooperative Education

After two semesters of satisfactory academic work (2.5 GPA), an engineering student may go on a work phase with one of the many companies or governmental agencies with which the university has co-op agreements. The experience obtained through alternating periods of academic and fieldwork greatly contributes to the preparation of a student for professional life. Work phases are considered to be a vital part of the educational process, and students are counseled in the selection of co-op positions that will lead to progressive learning experiences. Earnings while on work phase provide a source of financial assistance to meet educational expenses.

A significant number of undergraduate engineering students are in the cooperative education program. Students may, with the approval of their department head, earn credit while participating in a co-op work phase. Co-op credits do not normally count toward the degree requirements but do show on the transcript.
Undergraduate General Academic Requirements

For regular admission to the University and the College of Engineering, incoming freshman and transfer applicants must meet the University's qualifications for regular admission as stated in the undergraduate catalog in effect at the time of application. Students admitted to the College of Engineering will be classified by the college as a Pre-[major] until the standard requirements described below for admission to the program major are met.

Pre-[major] students will be admitted into their respective programs once they have met the following criteria:

- Earn a minimum grade of C- in all of the following courses:
  - CHEM 111G General Chemistry I 4
  - or CHEM 110 (engineering technology) 3
  - SPCD 111G Advanced ESL Composition 4
  - ENGR 100 Introduction to Engineering 3
  - MATH 191G Calculus and Analytic Geometry I 4
  - or MATH 235 (engineering technology) 3
  - PHYS 213 Mechanics 3
  - or PHYS 215G Engineering Physics I 3
  - or PHYS 211 (engineering technology) 3

Any of the above courses with earned AP credit (minimum score of 3) is exempt from the list. Transfer students must meet this criteria with determined passing credit of equivalent courses. PRE [major] students will be advised by their EG [major] department.

NMSU College of Engineering reserves the right to independently test any student's English proficiency upon arrival, including those who have earned scores satisfying minimum admission criteria. If the demonstrated level of English proficiency is not sufficient for academic success as determined by the Center for English Language Programs, support classes may be required to improve proficiency.

Students must earn a minimum cumulative GPA of 2.0 before enrolling in engineering courses numbered 300 or above.

Students must earn a grade of C- or better in all engineering, technology, math and science courses (including associated prerequisite courses) required for the degree and also courses taken to satisfy the general education requirements for Area I-Communications, Area II-Mathematics/Algebra, and Area III-Laboratory Science. If a grade lower than C- is earned in any of these courses, the student is required to retake the course immediately during the next semester it is offered. An undergraduate student may attempt an engineering, math, or physical science course no more than three times to earn a passing grade of C- or better. Anytime a student earns less than a C-, a meeting with the appropriate Engineering academic advisor is required to develop a plan for addressing this issue. If the student fails to pass any of these courses after three attempts, then the student will not be able to continue as an Engineering major and will be counseled on other degree options.

Engineering Transfer Policy

Policy for engineering majors enrolling in courses at other institutions to meet College of Engineering Departmental Core Requirements.

1. NMSU Policy Manual Chapter 6, section 89, paragraph A. “The decision to award a student credit for work completed at another institution rests with the faculty.”
2. NMSU main campus engineering majors may take core classes at other institutions of higher education to meet NMSU College of Engineering Departmental Core if the NMSU core course cannot accommodate any more eligible students.
3. The following conditions and restrictions apply to any course not taken on the NMSU main campus.
   - The department must approve the course prior to enrollment (student to provide course syllabus and any other documentation to department head).
   - The course must be a class in a program that is accredited by an accreditation commission of ABET, Inc. and cannot be graded S/U.
   - The course must be substantially the same as the equivalent NMSU class and the student must have satisfied all NMSU prerequisite requirements.
   - The student shall provide a corresponding course syllabus and any other documentation required.
   - If NMSU prerequisite requirements are not satisfied, credit will be denied regardless of a passing grade for the course at the other institution.

4. In addition to 3 above, the following conditions apply to any on-line course not taken from the NMSU main campus.
   - Scheduled exams, if any, shall be proctored².
   - If NMSU prerequisite requirements are not satisfied, credit will be denied regardless of a passing grade for the course at the other institution.

1. Core requirements are defined as required departmental, discipline-related, courses within the major.
2. The student may choose to have NMSU proctor Exams (http://distance.nmsu.edu/faculty/requiring-a-proctored-exam/)

For more information about transferring to New Mexico State University from another accredited institution, visit the NMSU Transfer Center.

Requirements for Graduation

The minimum requirements for undergraduate degrees are:

1. Satisfaction of the university requirements as previously outlined in the Regulations (p. 53) section of this catalog.
2. Satisfaction of the college requirements as outlined under General Academic Requirements, above.
3. Satisfaction of the departmental rules and course requirements as outlined in the individual program descriptions.

NOTE: In order to maintain quality, remain current, and satisfy changes in accreditation criteria, requirements which have been published may be changed. Any such changes will be announced and will not be retroactive. Always consult an academic advisor before registering for classes.

Graduate Degrees

Graduate study is available in the

- Aerospace Engineering (p. 595),
- Chemical Engineering (p. 527),

Graduate study is available in the
Bachelor Degrees
Bachelor of Information and Communication Technology (p. 572)

Bachelor of Science in Engineering
Majors in:
- Aerospace Engineering (p. 563)
- Chemical Engineering (p. 527)
- Civil Engineering (p. 539)
- Electrical Engineering (p. 549)
- Engineering Physics (p. 563)
- Engineering Technology (p. 572)
- Geomatics (p. 572)
- Industrial Engineering (p. 590)
- Mechanical Engineering (p. 563)

Dual Degrees
Bachelor of Science/ Master of Science-Electrical Engineering (p. 549)

Masters Degree
Master of Science in Aerospace Engineering (p. 595)
Master of Science in Chemical Engineering (p. 527)
Master of Science in Civil Engineering (p. 539)
- Geotechnical Engineering
- Structural Engineering
- Water Resource Engineering
Master of Science in Electrical Engineering (p. 549)
Master of Science in Environmental Engineering (p. 539)
Master of Science in Industrial Engineering (p. 590)
Master of Science in Mechanical Engineering (p. 595)

Doctoral Degree
Doctor of Philosophy
Majors in:
- Aerospace Engineering (p. 595)
- Chemical Engineering (p. 527)
- Electrical Engineering (p. 549)
- Engineering
  - Civil Engineering (p. 539)
  - Industrial Engineering (p. 590)
  - Mechanical Engineering (p. 595)

Undergraduate Minors
- Aerospace Engineering (p. 595)
- Agricultural Engineering (p. 539)
- Biomedical Engineering (p. 527)
- Brewery Engineering (p. 527)
- Computational Engineering (p. 527)
- Computer Engineering (p. 549)
- Digital Electronic Applications (p. 572)
- Digital Forensics (p. 572)
- Electrical Engineering (p. 549)
- Entrepreneurship (p. 590)
- Geomatics (p. 572)
- Information Security Technology (p. 572)
- Manufacturing (p. 572)
- Materials Engineering (p. 527)
- Mechanical Engineering (p. 595)
- Nuclear Chemical Engineering (p. 527)
- Pre-Law in Intellectual Property (p. 527)
- Pre-Medicine Studies (p. 527)
- Renewable Energy Technologies (p. 572)

Graduate Minor
- Materials Engineering (p. 527)

Accreditation
ABET (formerly the Accreditation Board for Engineering and Technology), established in 1933 and composed of representatives from technical societies, assures professional standards by periodic evaluations of the programs in the College of Engineering. (ABET may be contacted at http://www.abet.org)

Continuous accreditation by the Engineering Accreditation Commission (EAC) of ABET has been in force since
- 1938 for civil, electrical, and mechanical engineering,
- 1967 for chemical engineering,
- 1971 for industrial engineering,
- 2001 for surveying engineering and
- 2005 for engineering physics.

The electronics and computer, civil, and mechanical engineering technology baccalaureate degree programs have been accredited by the Technology Accreditation Commission (TAC) of ABET since 1988.

The college is a member of the American Society for Engineering Education (ASEE).

Chemical & Materials Engineering
Mission
The New Mexico State University Chemical & Materials Engineering Department strives to prepare Chemical Engineering Bachelor of Science graduates to successfully and safely practice the chemical engineering profession, to engage in life-long personal and professional development, and to contribute to the betterment of their community and society.
Undergraduate Program Information

Chemical engineers solve problems by combining the fundamentals of physical science (chemistry and physics) and life science (biology, microbiology, biochemistry) with the principles of engineering analysis, mathematics, and economics. The curriculum of study leading to the BSCHE continuously builds on prerequisite knowledge. The capstone course requires completion of a series of seven prerequisite courses, each having its own prerequisites. In this manner, the BSCHE produces graduates with highly developed problem-solving capabilities, strong communication and interpersonal skills, and an ability to seek out and assimilate knowledge beyond the classroom. Graduates apply these competencies to solve problems across a wide range of industries in the private and public sectors.

The work of a chemical engineer typically leads to the development of processes that convert raw materials (chemicals) into more useful or valuable products. Chemical engineers are pioneers of modern materials and associated processes that are essential to the fields of:

- nanotechnology;
- fuel cells;
- computer chip manufacture;
- environmental restoration and pollution prevention;
- biomedical, biotechnology and bioengineering;
- pharmaceutical manufacturing;
- food production;
- transportation (automotive and aerospace);
- advanced materials;
- petrochemical and refining;
- chemical synthesis and production; and
- power & energy (including the nuclear industry).

Graduates are also well-prepared to continue the study of law, medicine or advanced engineering topics at the graduate level.

Undergraduate Program Educational Objectives

The Chemical & Materials Engineering Department at New Mexico State University strives to produce undergraduates who will:

1. apply their problem-solving and communication skills to chemical engineering industries, government research labs, academia, and related fields;
2. implement safety practices in their work;
3. be on the path to leadership; and
4. build new skills sets through continuing education and professional development.

These Program Educational Objectives (PEOs), which are modified based on input from our constituencies, are consistent with the missions of NMSU, the College of Engineering and the Department of Chemical & Materials Engineering.

Graduate Program Information

The Department of Chemical and Materials Engineering offers graduate study leading to the Master of Science degree and the Ph. D. with an emphasis in chemical engineering. Admission to the program is in accord with the general regulations of the Graduate School. The Graduate Record Examination (GRE) General Test is required for all applicants. All graduate students are required to pass all graduate engineering courses with a minimum grade of B-.

All graduate students must select a thesis or dissertation advisor by the end of their first year in the chemical engineering graduate program. Thesis/dissertation may be pursued in absentia at various industrial sites by special arrangement.

Graduate teaching and research assistantships, fellowships and traineeships are available. For consideration for financial assistance, completed applicants must be received by March 1. All support is contingent upon availability, eligibility and satisfactory progress toward the degree.

Each student admitted to the CHME grad program who has an undergraduate degree in a discipline other than chemical engineering must schedule a meeting with the CHME Department Head to define the undergraduate course deficiencies the student must take to obtain a graduate degree in chemical engineering.

Graduate Program Educational Objectives

The Chemical & Materials Engineering Department at New Mexico State University strives to produce graduate students who will:

1. design research studies to solve complex engineering problems using engineering and science fundamentals combined with statistics and economic principles to justify their technical recommendations;
2. apply their engineering knowledge to critically evaluate relevant literature and emerging technologies;
3. work independently and collaboratively;
4. apply professional and ethical responsibilities of the engineering profession;
5. evaluate the impact of their work on society;
6. effectively present engineering results in both written and oral formats; and
7. serve as effective leaders of their peers.

Degrees for the Department

Chemical Engineering - Bachelor of Science in Chemical Engineering (p. 535)
Chemical Engineering - Master of Science in Chemical Engineering (p. 537)
Chemical Engineering - Doctor of Philosophy (p. 536)

Minors for the Department

Brewery Engineering - Undergraduate Minor (p. 535)
Biomedical Engineering - Undergraduate Minor (p. 535)
Computational Engineering - Undergraduate Minor (p. 537)
Materials Engineering - Undergraduate Minor (p. 538)
Nuclear Chemical Engineering - Undergraduate Minor (p. 538)
Pre-Law in Intellectual Property - Undergraduate Minor (p. 538)
Pre-Medicine Studies - Undergraduate Minor (p. 538)
Materials Engineering - Graduate Minor (p. 537)

**Professor, David A. Rockstraw**
Department Head

**Professor, Martha C. Mitchell**
Associate Department Head

**Professors Mitchell**, **Rockstraw**; **Associate Professors** Andersen, Houston, Luo; **Assistant Professors** Brewer, Foudazi, Manz; **Emeritus Professors** Bhada, Ghassemi, Johnson, Long, Patton

**Professors: M.C. Mitchell**, Ph.D. (Minnesota) computer modeling and simulation of molecular-level phenomena, thermodynamic characterization of aerospace fuels, statistical mechanics, engineering education, diversity and inclusion in STEM; **D.A. Rockstraw**, Department Head, Ph.D. (Oklahoma) chemical process design, analysis & simulation, catalysis and reaction kinetics, activated carbon, trade secret and intellectual property litigation; **Associate Professors:** P.K. Andersen, Ph.D. (California-Berkeley) physicochemical hydrodynamics, nuclear chemical engineering, modeling and simulation, education and training; J. Houston, Ph.D. (Texas A&M) biomedical engineering, biophotonics, flow cytometry; H. Luo, Ph.D. (Tulane) nanostructured materials, thin films, photovoltaics, batteries, electrocatalysts, photovoltaics; **Assistant Professors:** C.E. Brewer, Ph.D. (Iowa State) biomass thermochemical processing, sustainable agriculture, biorenewable resources; R. Foudazi, Ph.D.(Cape Peninsula University of Technology, South Africa) soft matter, membranes, rheology of complex fluids, colloid and interface science, adsorption; U. Jena, Ph. D. (Georgia) biological and agricultural engineering; biosystems engineering, hydrothermal processing of biomass; catalysis, biofuel characterization and analysis; T.A. Manz, Ph.D. (Purdue) quantum chemistry simulations of materials, catalysis, and space physics; M. Zhou, Ph.D. (New Mexico State) gas adsorption and separation, energy storage devices, capacitive deionization.

1 Registered Professional Engineer

**CHME 101. Introduction to Chemical Engineering Calculations**

2 Credits
Introduction to the discipline of chemical engineering, including: an overview of the curriculum; career opportunities; units and conversions; process variables; basic data treatments; and computing techniques including computer programming and use of spreadsheets.

**Prerequisite(s)/Corequisite(s):** MATH 190G. Restricted to Las Cruces campus only.

**CHME 102. Material Balances**

2 Credits
Perform material balances in single- and multi-phase, reacting and non-reacting systems under isothermal conditions.

**Prerequisite(s)/Corequisite(s):** CHEM 111G or CHEM 115. Prerequisite(s): MATH 190G, CHME 101.

**CHME 201. Energy Balances & Basic Thermodynamics**

3 Credits
Chemical Engineering energy balances; combined energy and material balances including those with chemical reaction, purge and recycle; thermochemistry; application to unit operations. Introduction to the first and second laws of thermodynamics and their applications. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

**Prerequisite(s):** CHME 102, CHEM 115 or CHEM 111G, and MATH 192G.

**CHME 301. Chemical Engineering Thermodynamics I**

3 Credits
Applications of the first and second law to chemical process systems, especially phase and chemical equilibria and the behavior of real fluids. Development of fundamental thermodynamic property relations and complete energy and entropy balances.

**Prerequisite(s)/Corequisite(s):** CHME 392 or MATH 392. Prerequisite(s): CHME 201, MATH 291G. Restricted to: CHME majors.

**CHME 302. Chemical Engineering Thermodynamics II**

2 Credits
Continuation of CHME 301. Restricted to: CHME majors.

**Prerequisite(s):** CHME 301 AND (CHME 392 OR MATH 392).

**CHME 302 L. Thermodynamic Models of Physical Properties**

1 Credit

**Prerequisite(s)/Corequisite(s):** CHME 302.

**CHME 303. Chemical Engineering Thermodynamics**

4 Credits
Applications of the First Law and Second Law to chemical process systems, especially phase and chemical equilibria and the behavior of real fluids. Development of fundamental thermodynamic property relations and complete energy and entropy balances. Modeling of physical properties for use in energy and entropy balances, heat and mass transfer, separations, reactor design, and process control. May be repeated up to 4 credits.

**Prerequisite(s)/Corequisite(s):** MATH 392. Prerequisite(s): CHME 201, MATH 291.

**CHME 305. Transport Operations I: Fluid Flow**

3 Credits

**Prerequisite(s)/Corequisite(s):** CHME 392. Prerequisite(s): CHME 201, PHYS 215G, MATH 291G. Restricted to: CHME majors.


4 Credits

**Prerequisite(s):** CHME 305 and (CHME 392 or MATH 392).


3 Credits

**Prerequisite(s):** CHME 302, CHME 306.
CHME 311. Engineering Data Analysis
3 Credits
Methodology and techniques associated with analyzing engineering data. Extensive spreadsheet use to analyze data and develop statistically significant conclusions based on the data. Data sets range from single variable experiments to multifactor regression analysis.
Prerequisite(s): MATH 192.

CHME 323 L. Transport Operations and Instrumentation Laboratory I
1 Credit
Laboratory experiments demonstrate the principles of process measurement and instrumentation through the determination of thermodynamic properties, transport phenomena properties, heat transfer, and material physical properties. Treatment of data includes regression techniques, analysis of error, and statistical analysis.
Prerequisite(s)/Corequisite(s): CHME 306. Prerequisite(s): STAT 371 or CHME 311. Restricted to: CHME majors.

CHME 324 L. Transport Operations and Instrumentation Laboratory II
1 Credit
Continuation of CHME 323L. Restricted to: CHME majors.
Prerequisite(s): CHME 323L.

CHME 330. Environmental Management Seminar I
1 Credit
Survey of practical and new developments in environmental management field, hazardous and radioactive, waste management, and related health issues, provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: E E 330, E S 330, E T 330, I E 330, M E 330 and WERC 330

CHME 352 L. Simulation of Unit Operations
1 Credit
Definition, specification, and convergence of basic unit operations in a process simulator. Course will cover pipe networks, pressure changers, heat exchangers, distillation columns, and chemical reactors.
Prerequisite(s)/Corequisite(s): CHME 307, CHME 441. Restricted to: CHME majors.

CHME 361. Engineering Materials
3 Credits
Bonding and crystal structure of simple materials. Electrical and mechanical properties of materials. Phase diagrams and heat treatment, corrosion and environmental effects. Application of concepts to metal alloys, ceramics, polymers, and composites. Selection of materials for engineering design.
Prerequisite(s): (CHEM 111G or CHEM 114 or CHEM 115) and MATH 190G.

CHME 391. Industrial Employment
1-2 Credits
Employment in chemical, petroleum, food, biotechnology, materials, environmental, pharmaceutical, or other industry relevant to the discipline, with opportunity for professional experience and training in chemical engineering. Requires written report covering work period approved by employer. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CHME, CH E majors.
Prerequisite(s): Consent of department head.

CHME 392. Numerical Methods in Engineering
3 Credits
Study and application of numerical methods in solving problems commonly encountered in engineering. The numerical methods are motivated by engineering problems rather than by mathematics. However, sufficient mathematical theory will be provided so that students can appreciate the insight into the techniques and their shortcomings of different methods. MATLAB will be used as the working environment for implementing and performing the numerical methods in computers. This course is an engineering elective open to all engineering majors. May be repeated up to 3 credits.
Prerequisite(s): MATH 392.

CHME 395V. Brewing Science and Society
3 Credits
An overview of the science of brewing and the interrelationships between society, technology, business, and the evolution of the current beer market. Topics covered are history of brewing and the interrelationships between societal attitudes, technology, and cultural preferences; beer styles and evaluation techniques; production and characteristics of ingredients used in brewing; brewing unit operations; biochemistry of malting, mashing, and fermentation; engineering in the brewery; homebrewing; and societal and health issues related to beer and alcohol. Students must be at least 21 years of age by the first day of instruction of the semester to enroll in this course.

CHME 412. Process Dynamics and Control
3 Credits
Prerequisite(s): CHME 441.

CHME 423 L. Unit Operations Laboratory I
1 Credit
Experiments with chemical engineering unit operations including the use of computer data acquisition. Covers control system instrumentation and development of empirical models from process data. Includes written and oral reports. Restricted to: CHME majors.
Prerequisite(s): CHME 307, CHME 441, CHME 324L.

CHME 424 L. Process Control Laboratory
1 Credit
Experiments with chemical engineering process control including the use of computer data acquisition and closed-loop process control. Covers control system instrumentation. Includes written and oral reports. Restricted to: CHME majors.
Prerequisite(s): CHME 412, CHME 423L.

CHME 430. Environmental Management Seminar II
1 Credit
Survey of practical and new developments in environmental management field, hazardous and radioactive, waste management, and related health issues, provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: C E 430, E E 430, E S 430, E T 430, I E 430, M E 430 and WERC 430.
CHME 441. Chemical Kinetics and Reactor Engineering
3 Credits
Analysis and interpretation of kinetic data and catalytic phenomena. Applied reaction kinetics; ideal reactor modeling; non-ideal flow models. Mass transfer accompanied by chemical reaction. Application of basic engineering principles to design, operation, and analysis of industrial reactors.
Prerequisite(s)/Corequisite(s): CHME 307. Prerequisite(s): CHEM 313, CHME 302. Restricted to: CHME, CH E majors.

CHME 443. Industrial Catalysis
3 Credits
Fundamentals of catalytic processes, including chemistry, catalyst preparation, properties and reaction engineering. Addresses heterogeneous catalytic processes employed by industry. Detailed analysis of existing catalysts and catalytic reactions, and process design in chemical engineering.
Prerequisite(s): CHME 441.

CHME 448. Industrial Safety
3 Credits
An introduction to the fundamentals of chemical process safety, including toxicology, industrial hygiene, source models, fires and explosions, relief systems, hazard identification, risk assessment, environmental fate and transport, hazardous waste generation, pollution prevention, and regulatory requirements.
Prerequisite(s): CHEM 115 or CHEM 111G.

CHME 449. Intellectual Property for Engineers and Scientists
3 Credits
An overview of intellectual property with an emphasis on patents. Terminology, patentability requirements, invention disclosures, inventorship, scope of claims, patent application content and the patent prosecution process, and post-allowance matters including infringement and enforcement. Taught with CHME 549.
Prerequisite(s): CHEM 110G, CHEM 111G, or CHEM 115G; and senior standing in engineering or a fundamental science major; or consent of instructor.

CHME 452. Chemical Process Design & Economic Evaluation
3 Credits
Concepts in chemical engineering process design, including: capital and manufacture cost estimation; discounted cash flows; interest; taxes; depreciation; profitability analysis; project specifications. Restricted to: CHME, CH E majors.
Prerequisite(s): CHME 307, CHME 441.

CHME 452 L. Chemical Process Simulation
1 Credit
Construction and convergence of chemical processes in a process simulator. Students will understand how to access variables, define and converge design specifications and converge tear/recycle streams.
Prerequisite(s)/Corequisite(s): CHME 452. Prerequisite(s): CHME 352L. Restricted to: CHME majors.

CHME 455. Chemical Plant Design
3 Credits
Design and analysis of integrated process plants. Consideration given to optimizing performance, operability, reliability, safety, control, energy integration, and cost effectiveness. Requires written report covering solution of a capstone design problem. Restricted to: CHME majors.
Prerequisite(s): CHME 452.

CHME 455 L. Chemical Plant Simulation
1 Credit
Construction, convergence, and optimization of chemical processes in a process simulator. Dynamic process simulation and control.
Prerequisite(s)/Corequisite(s): CHME 455. Prerequisite(s): CHME 412, CHME 452L. Restricted to: CHME majors.

CHME 461. Calculation of Material and Molecular Properties
3 Credits
The aim is to describe and apply techniques for computing common properties of materials and molecules: optimized geometries, transition states, vibrational spectra, energies (electronic, internal energy, enthalpy, and Gibbs free energy), heat capacities, net atomic charges, atomic spin moments, and effective bond orders. These techniques allow one to estimate the thermodynamic properties of a chemical, as well as to compute the mechanisms and energy barriers for chemical reactions and catalytic processes, and to quantify the electronic, magnetic, and chemical ordering in materials. The theory behind these techniques will be described and students will perform hands-on computer exercises using common computational chemistry programs. Taught with CHME 561.
Prerequisite(s): CHEM 116, MATH 192G, (PHYS 214 or PHYS 216).

CHME 462. MEMs, BioMEMs, and Nano Devices & Technologies
3 Credits
Device-fabrication approaches and testing methodologies for micro-electro-mechanical (MEM) systems and nanoscale devices. Applications of such devices, and their working principles will also be part of this course. A laboratory component of this course will also be included. Taught with CHME 562. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): CH E 361, CHEM 111.

CHME 463. Soft Matter
3 Credits
Prerequisite(s): CH E 302, CH E 305, CH E 361.

CHME 464. Polymer Science & Engineering
3 Credits
This course covers concepts in science and engineering of macromolecules, such as synthesis and chemistry, characterization of molecular weight, morphology, rheology, and mechanical behavior, structure and property relationships, and polymer processing. Taught with CHME 564. May be repeated up to 3 credits.
Prerequisite(s): CHEM 314.

CHME 465. Rheology and Viscoelasticity
3 Credits
Navier-Stokes equation; non-Newtonian fluids; flow fields; rheometry; viscoelastic models; non-linear viscoelasticity; material functions; complex fluids, including emulsions, suspensions and nanocomposites. Taught with CHME 565. Consent of Instructor required.
Prerequisite(s): CHME 306.
CHME 467. Nanoscience and Nanotechnology
3 Credits
This is a lecture/laboratory course designed to present the basic concepts, the techniques and the tools to synthesize and characterize nanomater scale materials, and the latest achievements in current and future nanotechnology applications in engineering, materials, physics, chemistry, biology, electronics and energy. It is intended for a multidisciplinary audience with a variety of backgrounds. This course should be suitable for graduate students as well as advanced undergraduates. Topics covered will include: nanoscience and nanotechnology, nanofabrication, self-assembly, colloidal chemistry, sol-gel, carbon nanotubes, graphene, thin film, lithography, physical vapor deposition, chemical vapor deposition, quantum dots, lithium batteries, X-ray diffraction, scanning electron microscopy, transmission electron microscopy, nanoelectronics, nanophotonics and nanomagnetics, etc. Taught with PHYS 520 and CH E 567. Crosslisted with: PHYS 520 and PHYS 467.
Prerequisite(s): (CHEM 116 or CHEM 112G), (PHYS 211G or PHYS 215G), (EH&S Safety training to include the courses: (1) Employee & Hazard Communication Safety (HazCom); (2) Hazardous Waste Management; and (3) Laboratory Standard).

CHME 468. Adsorption
3 Credits
Introduction to adsorption science and technology, which includes adsorption equilibrium and kinetic theories, adsorbent materials and characterization, adsorption processes and design. Selected applications of adsorption processes in chemical and pharmaceutical industries and environmental protections will also be discussed. Taught with CHME 568. Restricted to: CHME,CH E majors.
Prerequisite(s): CHME 201.

CHME 470. Introduction to Nuclear Energy
3 Credits
Atomic and nuclear structure, nuclear stability and radioactivity, nuclear reactions, detection and measurement of radiation, interaction of radiation with matter, radiation doses and hazard assessment, principles of nuclear reactors, and applications of nuclear technology.
Prerequisite(s): CHEM 111G, MATH 192G.

CHME 471. Health Physics
3 Credits
Introduction to radiation protection, radiation/radioactivity, radioactive decay/fission, interactions of radiation and matter, biological effects of radiation, radiation measurement and statistics, sampling for radiation protection, radiation dosimetry, environmental transport, radiation protection guidance, external and internal radiation protection, and hazards analysis.
Prerequisite(s): MATH 192G, CHME 470.

CHME 472. Detection Techniques for Radionuclides and Volatile Organic Compounds
3 Credits
Basics of analytical techniques used to detect and quantify the presence of radionuclides, with focus on lung and whole-body counting by gamma-ray spectrometry and gas chromatography/mass spectrometry techniques. Course also covers sampling techniques, chain-of-custody methods, and includes hands-on instrument experience at the Carlsbad Environmental Monitoring & Research Center (CEMRC). Course fee required for travel to CEMRC.
Prerequisite(s): CHME 470.

CHME 473. Nuclear Regulations and Compliance Practices
3 Credits
Introduction, through the use of case studies, to the best technical compliance practices for regulations governing the siting, licensing, constructing, operating and decommissioning of nuclear fuel cycle facilities. Consent of Instructor required.
Prerequisite(s): MATH 191G, (CHEM 111G or CHEM 115), CHME 470.

CHME 474. Power Plant Design
3 Credits
Principles of electric power generation. Review of DC and AC systems, energy sources, and prime movers. Analysis of hydroelectric, fossil fuel, nuclear, and alternative power systems. Environmental and economic considerations.
Prerequisite(s): MATH 191G, CHEM 111G.

CHME 475. Nuclear Reactor Theory
3 Credits
An overview of the properties of nuclei, nuclear structure, radioactivity, nuclear reactions, fission, resonance reactions, moderation of neutrons, will be followed by mathematical treatment of the neutronics behavior of fission reactors, primarily from a theoretical, one-speed perspective. Criticality, fission product poisoning, reactivity control, reactor stability and introductory concepts in fuel management, slowing down and one-speed diffusion theory.
Prerequisite(s): (CHEM 112G or CHEM 116G) PHYS 215G, MATH 291G, CHME 470.

CHME 476. Nuclear Fuel Cycles
3 Credits
Physical and chemical processes in the conventional nuclear fuel cycle: uranium mining and milling, conversion, enrichment, fuel fabrication, reactor operations, interim storage, reprocessing and recycling, waste treatment and disposal. Alternative fuel cycles and future prospects. Consent of Instructor required.
Prerequisite(s): CHME 470.

CHME 477. Corrosion and Degradation of Materials
3 Credits
Failure of engineering materials in aggressive environments. Chemical and electrochemical mechanisms of corrosion. Influence of chemical composition and microstructure on corrosion behavior. Types of corrosion and chemical attack, including uniform corrosion, galvanic corrosion, pitting and other forms of localized corrosion, stress corrosion cracking, and corrosion fatigue. Methods of corrosion mitigation including cathodic protection, coatings, passivation, and corrosion inhibitors. Corrosion in nuclear reactors and nuclear waste repositories.
Prerequisite(s): CHME 361.

CHME 481. Biomedical Engineering and Engineering Healthcare
3 Credits
Orientation to solving human and world health issues with biological engineering systems, tools, and analysis methods. Introduces general concepts including applied biology for engineers, biophotonics, biosensing, bioinstrumentation, tissue and biomaterials engineering, biomedical engineering research practices, and physical bioanalytical methods. Taught with CHME 581. Restricted to: CHME,CH E majors.
Prerequisite(s): CHEM 116G, CHME 201.
CHME 485. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Taught with CHME 585. Crosslisted with: AGRO 485 and HORT 486.
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

CHME 486. Biofuels
3 Credits
Introduction to the fundamentals and applications of biofuels and bioenergy production; biomass resources and their composition; types of biofuels; conversion technologies (thermochemical and biochemical conversion processes); biodiesel production, algae to biofuels; economic and environmental assessments; term paper of selected topics relevant to biofuels. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): CHME 201.

CHME 488. Elements of XRD
3 Credits
Introduction to x-ray diffraction and reflectivity spectra. Topics include X-ray sources and detectors, atomic spectra, characteristic x-rays, thermionic emission, synchrotron radiation, instrument components, and beam conditioners. Crosslisted with: PHYS 468.
Prerequisite(s)/Corequisite(s): PHYS 431 or CHME 490.

CHME 489. Introduction to Modern Materials
3 Credits
Structure and mechanical, thermal, electric, and magnetic properties of materials. Modern experimental techniques for the study of material properties. Crosslisted with: PHYS 315 and PHYS 315 L.

CHME 490. Senior Seminar
1 Credit
Research seminar attended by graduate students is open to CHME undergraduates who are research active. May be repeated up to 2 credits.
Prerequisite(s)/Corequisite(s): CHME 498. Prerequisite(s): Senior Standing. Restricted to: CHME, CH E majors.

CHME 491. Special Topics
3 Credits
Lecture and/or laboratory instruction on special topics in chemical engineering. May be repeated to a maximum of 6 credits under different subtitles listed in the Schedule of Classes. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CHME, CH E majors.
Prerequisite(s): Consent of instructor.

CHME 495. Brewing Science & Engineering
4 Credits (3+3P)
Details of beer production, fermentation science, brewery operations, and process design & economics. Engineering considerations including process safety, fermentation kinetics, unit operations, and economies of scale. Beer styles, recipe formulation, product quantification for tax purposes, and brew analytical methods will also be discussed. Restricted to: CHME CH E majors.
Prerequisite(s): CHME 441, CHME 452.

CHME 498. Undergraduate Research
1-3 Credits (1-3P)
Provides an opportunity for undergraduate students to work in research or areas of special interest such as design problems and economic studies under the direction of a faculty member. Written report covering work required. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CHME, CH E majors.
Prerequisite(s): Consent of instructor and department head.

CHME 501. Graduate Thermodynamics for Chemical Engineers
3 Credits
Advanced applications of the first and second law to chemical process systems. The calculus of thermodynamics, equilibrium and stability criteria. Properties relationships for real fluids, both pure materials and mixtures. An introduction to molecular thermodynamics and statistical mechanics. Restricted to: CHME, CH E majors.

CHME 506. Graduate Transport Phenomena(s)
3 Credits

CHME 513. Intermediate Chemical Engineering Data Analysis (s)
3 Credits
Intermediate topics in the design and analysis of typical chemical engineering experiments. Topics covered include: linear models, constrained experimental space, non-linear models, model discrimination, and response surface methodologies. Restricted to: CHME, CH E majors.

CHME 516. Numerical Methods in Chemical Engineering
3 Credits
Survey of numerical methods for solving problems commonly encountered in heat and mass transfer, fluid mechanics, and chemical reaction engineering.

CHME 530. Environmental Management Seminar I
1 Credit

CHME 541. Chemical Kinetics and Reactor Engineering
3 Credits
Same as CHME 441 with differentiated assignments for graduate students. Consent of Instructor required.
Prerequisite(s): Consent of Instructor.

CHME 542. Graduate Reactor Analysis and Design (s)
3 Credits
Application and analysis of equations of continuity to multicomponent reaction systems. Introduction to homogeneous and heterogeneous catalysis, single-phase combustion, and shock reaction systems.

CHME 549. Intellectual Property for Engineers and Scientists
3 Credits
An overview of intellectual property, including patents, trade secrets, copyright, and trademark. Specialized terminology; protectable subject matter and applicable legal standards; inventorship, authorship and ownership; application content and preparation; procedural and substantive application components; and infringement and enforcement. Taught with CHME 449.
Prerequisite(s): CHEM 111G or CHEM 115.
CHME 561. Calculation of Material and Molecular Properties
3 Credits
The aim is to describe and apply techniques for computing common properties of materials and molecules: optimized geometries, transition states, vibrational spectra, energies (electronic, internal energy, enthalpy, and Gibbs free energy), heat capacities, net atomic charges, atomic spin moments, and effective bond orders. These techniques allow one to estimate the thermodynamic properties of a chemical, as well as to compute the mechanisms and energy barriers for chemical reactions and catalytic processes, and to quantify the electronic, magnetic, and chemical ordering in materials. The theory behind these techniques will be described and students will perform hands-on computer exercises using common computational chemistry programs. Taught with CHME 463. Consent of Instructor required.
Prerequisite(s): CHEM 116, MATH 192G, and (PHYS 214 or PHYS 216G).

CHME 563. Soft Matter
3 Credits
The physiochemistry of soft materials including gels, polymers and colloids, self-assembly, intermolecular forces, and colloidal forces. Taught with CHME 463.
Prerequisite(s): CHME 302, CHME 305, CHME 361.

CHME 564. Polymer Science & Engineering
3 Credits
Synthesis, structure, property relationships of synthetic polymers. Taught with CHME 464. May be repeated up to 3 credits.
Prerequisite(s): CHME 201, CHEM 314.

CHME 565. Rheology and Viscoelasticity
3 Credits
This course is an introduction to rheology and viscoelasticity. In particular, the flow behavior of Non-Newtonian Fluids and Viscoelastic Fluids will be covered. Rheometry, the technique for characterization of fluids, will be discussed. Most of the course is quantitative and uses mathematical modeling. Taught with CHME 465.
Prerequisite(s): CHME 306.

CHME 567. Nanoscience and Nanotechnology
3 Credits
This is a lecture/laboratory course designed to present the basic concepts, the techniques and the tools to synthesize and characterize nanometer scale materials, and the latest achievements in current and future nanotechnology applications in engineering, materials, physics, chemistry, biology, electronics and energy. It is intended for a multidisciplinary audience with a variety of backgrounds. This course should be suitable for graduate students as well as advanced undergraduates. Topics covered will include: nanoscience and nanotechnology, nanofabrication, self-assembly, colloidal chemistry, sol-gel, carbon nanotubes, graphene, thin film, lithography, physical vapor deposition, chemical vapor deposition, quantum dots, lithium batteries, X-ray diffraction, scanning electron microscopy, transmission electron microscopy, nanoelectronics, nanophotonics and nanomagnetics, etc. Taught with CHME 467.
Prerequisite(s): (CHEM 112G or CHEM 116G) and (PHYS 211G or PHYS 215G).

CHME 568. Intermediate Adsorption
3 Credits
Introduction to the fundamentals and applications of biofuels and bioenergy produced from biomass; renewable feedstocks, their production, availability and attributes for biofuel/bioenergy production; types of biomass-derived fuels and energy; thermochemical conversion of biomass to heat, power, and fuel; biochemical conversion of biomass to fuel; biodiesel production; environmental impacts of biofuel production; economics and life-cycle analysis of biofuel; value-added processing of biofuel residues; term paper of selected topics relevant to biofuels. Taught with CHME 468.
Prerequisite(s): CHME 201.

CHME 579. Corrosion and Degradation of Materials
3 Credits
Failure of engineering materials in aggressive environments. Chemical and electrochemical mechanisms of corrosion. Influence of chemical composition and microstructure on corrosion behavior. Types of corrosion and chemical attack, including uniform corrosion, galvanic corrosion, pitting and other forms of localized corrosion, stress corrosion cracking, and corrosion fatigue. Methods of corrosion mitigation including cathodic protection, coatings, passivation, and corrosion inhibitors. Corrosion in nuclear reactors and nuclear waste repositories. Taught with CHME 479.
Prerequisite(s): CHME 361.

CHME 581. Biomedical Engineering & Healthcare Engineering
3 Credits
Orientation to solving human and world health issues with biological engineering systems, tools, and analysis methods. Introduces general concepts including applied biology for engineers, biophotonics, biosensing, bioinstrumentation, tissue and biomaterials engineering, biomedical engineering research practices, and physical bioanalytical methods. Taught with CHME 481.
Prerequisite(s): CHEM 116G, CHME 201.

CHME 585. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing and applications of biomass materials to fulfill food, feed, fiber, fuel and chemical feedstock needs with energy, water, cost, sustainability, and waste management considerations. Taught with CHME 485.
Prerequisite(s): CHEM 211 or 313 or consent of instructor.

CHME 586. Biofuels
3 Credits
Introduction to the fundamentals and applications of biofuels and bioenergy production; biomass resources and their composition; types of biofuels; conversion technologies (thermochemical and biochemical conversion processes); biodiesel production, algae to biofuels; economic and environmental assessments; term paper of selected topics relevant to biofuels. May be repeated up to 3 credits. Restricted to: CHME,CH E majors.
Prerequisite(s): CHME 201.

CHME 588. Elements of XRD
3 Credits
Introduction to x-ray diffraction and reflectivity spectra. Topics include X-ray sources and detectors, atomic spectra, characteristic x-rays, thermionic emission, synchrotron radiation, instrument components, and beam conditioners. Crosslisted with: PHYS 568.
CHME 589. Modern Materials
3 Credits
Same as PHYS 489 with differentiated assignments for graduate students. Crosslisted with: PHYS 589.
Prerequisite(s): PHYS 455 or PHYS 554.

CHME 590. Graduate Seminar
1 Credit
Presentations on topics of professional interest in chemical engineering. Includes seminars by faculty, graduate students, and invited speakers from academia, government, and industry. May be repeated for a total of 6 credits. May be repeated up to 6 credits. Restricted to: CHME majors.

CHME 594. Professional Communication in Chemical Engineering
2 Credits
Connections between interpersonal relationships and the effective communication of information. Strategies for formal and informal written and verbal communication in the context of presentations, interviews, reports and publications. Factors affecting non-verbal communication. Special focus will be given to understanding and adapting to the audience's perspective. 2 credits. Open to chemical engineering graduate students or by permission of instructor. This class will prepare you to communicate technical information effectively within a variety of contexts and to a variety of audiences. Class assignments will be partially based on current student needs such as preparing presentations for professional conferences, giving research progress reports, and writing research manuscripts. Restricted to: CHME majors.
Prerequisite(s): CHME graduate student standing.

CHME 598. Ph.D. Research- Level I
1-9 Credits (1-9)
Individual investigations either analytical or experimental. May be repeated up to 6 credits.

CHME 599. Master's Thesis
15 Credits
Thesis.

CHME 690. Graduate Seminar
1 Credit
Presentations on topics of professional interest in chemical engineering. Includes seminars by faculty, graduate students, and invited speakers from academia, government, and industry. Required each semester for every Ph.D. student. All candidates for graduate degrees required to give seminar. May be repeated for a maximum of 8 credits. May be repeated up to 8 credits. Restricted to: CHME majors.

CHME 698. Ph.D. Research- Level II
1-9 Credits (1-9P)
Advanced topics for current research. Course subtitled in the Schedule of Classes. May be repeated up to 99 credits. Consent of Instructor required.
Prerequisite(s): CHME 698 (9 credits) and successful completion of Ph D qualifying exam.

CHME 700. Doctoral Dissertation
15 Credits (15)
Individual research in selected topics of current interest in chemical engineering. May be repeated up to 88 credits. Thesis/Dissertation Grading.
Prerequisite(s): CHME 698 (9 credits) and successful completion of comprehensive exam.
Name: David A. Rockstraw, Ph. D., P. E. (drockstr@nmsu.edu)
Office Location: Jett Hall 268 (https://maps.nmsu.edu/?id=353&type=building"Jett)
Phone: (575) 646-1214
Website: http://chme.nmsu.edu/

Biomedical Engineering - Undergraduate Minor

The Biomedical Engineering minor-of-study is a 20-credit hour program of study designed to accomplish two objectives:

1. Require courses in basic biology, anatomy, physiology to provide students a basic understanding of life and the design and mechanics/dynamics of the human body. Also required is the only biomedical engineering course taught on the NMSU campus.

2. Permit students to select from a wide range of elective courses (https://chme.nmsu.edu/academics/minors/biomedical-engineering/) numbered above 400 that emphasize engineering topics with application to the design and development of medical devices.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHME 481</td>
<td>Biomedical Engineering and Engineering Healthcare</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 353</td>
<td>Pre-Professional Human Anatomy</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 354</td>
<td>Physiology of Humans</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
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<td>6</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

Brewery Engineering- Undergraduate Minor

It has long been recognized that the study of chemical engineering is appropriate to the understanding of a vast range of concepts associated with the brewing industry. In 1935, this article by M. B. Donald described many of the fundamental process steps for which the BSCE prepares a student to begin work in the industry. This 18 credit hour minor of study is designed to prepare CHME students for careers in the brewing industry or as a craft brew entrepreneur per the 4-year curriculum suggestions of the Master Brewer's Association of the Americas. Elective courses are to be selected from the lists and guidelines maintained on the Brewery Engineering minor of study webpage (https://chme.nmsu.edu/academics/minors/brewery-engineering).

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHME 395V</td>
<td>Brewing Science and Society</td>
<td>3</td>
</tr>
<tr>
<td>CHME 495</td>
<td>Brewing Science &amp; Engineering</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 311</td>
<td>General Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 311L</td>
<td>General Microbiology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BCHE 395</td>
<td>Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

Chemical Engineering - Bachelor of Science in Chemical Engineering
The BS Chemical Engineering program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Requirements (Total Credits 136)

In addition to satisfying the requirements of New Mexico State University and the College of Engineering, CHME majors must pass departmental courses with a grade of C- or better.

CHME majors must have completed CHME 201 Energy Balances & Basic Thermodynamics prior to taking any 400-level CHME elective courses.

Degree requirements can also be found summarized in flow diagrams found on the CHME website (https://chme.nmsu.edu/academics/undergrad/chme-flow-diagrams/).

General Education

State of New Mexico Common Core

Area I: Communications
ENGL 111G  Rhetoric and Composition  4
ENGL 218G  Technical and Scientific Communication  3
COMM 265G  Principles of Human Communication  3

Area II: Mathematics
MATH 191G  Calculus and Analytic Geometry I  4

Area III: Natural Science
CHEM 115  Principles of Chemistry I  4
CHEM 116  Principles of Chemistry II  4

Area IV: Social and Behavioral Sciences
Economics, Political Science, Psychology, Sociology, and Anthropology electives  9

Area V: Humanities and Fine Arts
History, Philosophy, Literature, Art, Music, Dance, Theater, or Foreign Language electives  6

Viewing a Wider World Elective
Viewing a Wider World electives  3

Program Specific Requirements

Mathematics
MATH 192G  Calculus and Analytic Geometry II  4
MATH 291G  Calculus and Analytic Geometry III  3
MATH 392  Introduction to Ordinary Differential Equations  3

Natural Science
BIOL 211G  Cellular and Organismal Biology  3
CHEM 313  Organic Chemistry I  3
CHEM 314  Organic Chemistry II  3
CHEM 315  Organic Chemistry Laboratory  2
CHEM 433  Physical Chemistry I  3
PHYS 215G  Engineering Physics I  3
PHYS 215GL  Engineering Physics I Laboratory  1
PHYS 216G  Engineering Physics II  3
PHYS 216GL  Engineering Physics II Laboratory  1

Engineering
ENGR 100  Introduction to Engineering  3
IE 311  Engineering Data Analysis  3
IE 365  Quality Control  3

Chemical Engineering Common Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHME 101</td>
<td>Introduction to Chemical Engineering</td>
<td>2</td>
</tr>
<tr>
<td>CHME 102</td>
<td>Material Balances</td>
<td>2</td>
</tr>
<tr>
<td>CHME 201</td>
<td>Energy Balances &amp; Basic Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>CHME 303</td>
<td>Chemical Engineering Thermodynamics</td>
<td>4</td>
</tr>
<tr>
<td>CHME 305</td>
<td>Transport Operations I: Fluid Flow</td>
<td>3</td>
</tr>
<tr>
<td>CHME 306</td>
<td>Transport Operations II: Heat and Mass Transfer</td>
<td>4</td>
</tr>
<tr>
<td>CHME 307</td>
<td>Transport Operations III: Staged Operations</td>
<td>3</td>
</tr>
<tr>
<td>CHME 323 L</td>
<td>Transport Operations and Instrumentation Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>CHME 324 L</td>
<td>Transport Operations and Instrumentation Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>CHME 352 L</td>
<td>Simulation of Unit Operations</td>
<td>1</td>
</tr>
<tr>
<td>CHME 361</td>
<td>Engineering Materials</td>
<td>3</td>
</tr>
<tr>
<td>CHME 392</td>
<td>Numerical Methods in Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CHME 412</td>
<td>Process Dynamics and Control</td>
<td>3</td>
</tr>
<tr>
<td>CHME 423 L</td>
<td>Unit Operations Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>CHME 424 L</td>
<td>Process Control Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHME 441</td>
<td>Chemical Kinetics and Reactor Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CHME 448</td>
<td>Industrial Safety</td>
<td>3</td>
</tr>
<tr>
<td>CHME 452</td>
<td>Chemical Process Design &amp; Economic Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>CHME 452 L</td>
<td>Chemical Process Simulation</td>
<td>1</td>
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<tr>
<td>CHME 455</td>
<td>Chemical Plant Design</td>
<td>3</td>
</tr>
<tr>
<td>CHME 455 L</td>
<td>Chemical Plant Simulation</td>
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</tr>
<tr>
<td>CHME Electives</td>
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<tr>
<td>Total Credits</td>
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<td>136</td>
</tr>
</tbody>
</table>

1. See the required courses (p. 47) section of the catalog for a full list of courses.
2. See the Viewing a Wider World (p. 49) section of the catalog for a full list of courses. Also see the bottom of the page. CHMEs meet the 9-credit hour rule through the sequence CHEM 313/314/433, and thus only need to complete 3 credits of VWW.
3. chme.nmsu.edu/academics/syllabi/#CHME_Elective_Courses (https://chme.nmsu.edu/academics/syllabi/#CHME_Elective_Courses)

Chemical Engineering - Doctor of Philosophy

The program of study leading to the Ph.D. is available to students who have either a BS or MS in chemical engineering. Students with a BS must complete 30 course credits and 24 dissertation credits, for a total of 54 credits, including:

- required core CHME courses (14 credits);
- graduate elective courses (12 credits);
- CHME elective courses (3 credits);
- independent research as CHME 698 Ph.D. Research- Level II prior to completion of the comprehensive exam (12 credits);
• dissertation as CHME 700 after completion of the comprehensive exam (12 credits); and
• graduate seminar as CHME 690 Graduate Seminar (1 credit).

Ph.D. students must pass:

1. a qualifying examination within 24 months of starting their Ph.D. studies;
2. a comprehensive examination completed a minimum of nine months prior to the dissertation defense; and
3. an oral defense of the written dissertation before the dissertation committee.
4. PhD candidates in the College of Engineering, who have successfully completed their PhD Qualifier Examination after January 1, 2018, must satisfy a publication requirement which requires two papers:

   Paper #1: An archival paper accepted or published in any journal listed in the source publication list for the Web of Science, or a refereed Journal or Conference Proceeding approved by the student’s doctoral committee and the cognizant Department Head(s), before the Doctorate of Philosophy final examination. The candidate should be listed as the lead author in Paper #1.

   Paper #2: An additional archival paper submitted, accepted, or published in any journal listed in the source publication list for the Web of Science. Alternatively, one conference paper accepted or published in a national or international conference proceedings.

The program of study leading to the MS consists of 32 credits which includes:

• required CHME core graduate courses (14 credits);
• CHME elective courses numbered 455-589 (3 credits);
• other graduate elective courses (9 credits); and
• thesis as CHME 599 Master’s Thesis (6 credits).

### Required Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CHME 501</td>
<td>Graduate Thermodynamics for Chemical Engineers</td>
<td>3</td>
</tr>
<tr>
<td>CHME 506</td>
<td>Graduate Transport Phenomena(s)</td>
<td>3</td>
</tr>
<tr>
<td>CHME 516</td>
<td>Numerical Methods in Chemical Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CHME 542</td>
<td>Graduate Reactor Analysis and Design (s)</td>
<td>3</td>
</tr>
<tr>
<td>CHME 594</td>
<td>Professional Communication in Chemical Engineering</td>
<td>2</td>
</tr>
<tr>
<td>CHME electives (select from CHME 455-CHME 589)</td>
<td>3</td>
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</tbody>
</table>

### Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHME 690</td>
<td>Graduate Seminar</td>
<td>1</td>
</tr>
<tr>
<td>CHME 698</td>
<td>Ph.D. Research- Level II</td>
<td>12</td>
</tr>
<tr>
<td>CHME 700</td>
<td>Doctoral Dissertation</td>
<td>12</td>
</tr>
</tbody>
</table>

**Total Credits** 54

1. Elective courses are intended to supplement the research work of each graduate student. These courses must be numbered 450 or above and must be approved by the dissertation advisor.
2. Minimum 12 credits AFTER completion of the qualifying exam and BEFORE completion of the comprehensive exam.
3. Minimum 12 credits AFTER completion of the comprehensive exam.

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**Chemical Engineering - Master of Science in Chemical Engineering**

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**Materials Engineering - Graduate Minor**
The Materials Engineering minor at New Mexico State University is part of a materials education program that addresses the growing demand for engineers and scientists with understanding of the wide range of materials, their properties and means of characterization. A student must pass 18 credits of courses with a grade C or better. The minor includes one required course (CHME 361 Engineering Materials), and the balance elective courses chosen from menus available on the Chemical and Materials Engineering website (http://chme.nmsu.edu/academics/minors/materials-engineering/). No courses may be taken S/U. All prerequisites for the classes must be met or consent of the instructor obtained before enrolling in class.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHME 361</td>
<td>Engineering Materials</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

**Materials Engineering - Undergraduate Minor**

The Materials Engineering minor at New Mexico State University is part of a materials education program that addresses the growing demand for engineers and scientists with understanding of the wide range of materials, their properties and means of characterization. A student must pass 18 credits of courses with a grade C or better. The minor includes one required course (CHME 361 Engineering Materials), and the balance elective courses chosen from menus available on the Chemical and Materials Engineering website (http://chme.nmsu.edu/academics/minors/materials-engineering/). No courses may be taken S/U. All prerequisites for the classes must be met or consent of the instructor obtained before enrolling in class.

**Required Courses**

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<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHME 361</td>
<td>Engineering Materials</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

**Pre-Law in Intellectual Property - Undergraduate Minor**

The Pre-Law Intellectual Property minor at New Mexico State University is part of a pre-law education program that addresses the growing demand for lawyers with a strong understanding of a broad cross-section of STEM subjects. A student must pass 19 credits of courses with a grade C or better chosen from Pre-Law Intellectual Property minor (https://chme.nmsu.edu/academics/minors/pre-law-intellectual-property-minor) page available on the Chemical and Materials Engineering website. No courses may be taken S/U. All prerequisites for the classes must be met or consent of the instructor obtained before enrolling in class.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHME 449</td>
<td>Intellectual Property for Engineers and Scientists</td>
<td>3</td>
</tr>
<tr>
<td>COMM 351</td>
<td>Persuasion Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td>BLAW 316</td>
<td>Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 311G</td>
<td>Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 308</td>
<td>Prepping for Law School Admissions Test</td>
<td>1</td>
</tr>
<tr>
<td>GOVT 100G</td>
<td>American National Government</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 100G</td>
<td>Philosophy, Law and Ethics</td>
<td>3</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>19</td>
</tr>
</tbody>
</table>

**Pre-Medicine Studies - Undergraduate Minor**

The Pre-Medical School minor at New Mexico State University is part of a pre-medicine education program that addresses the growing demand for doctors, surgeons, and biomedical researchers with a strong understanding of a broad cross-section of STEM subjects and who model the human body as a series of interacting chemical process units. This minor of study is designed for students seeking a strong pre-med background (for both MCAT prep and program entry prereq completion) or who may be targeting a graduate degree in biomedical engineering. A student must pass 22 credits of courses with a grade C or better. The minor includes 19 credit hours of required courses, and 3 credit hours of elective courses. No courses may be taken S/U. All prerequisites for the classes must be met or consent of the instructor obtained before enrolling in class.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHME 305</td>
<td>Transport Operations I: Fluid Flow</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 353</td>
<td>Pre-Professional Human Anatomy</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 353 L</td>
<td>Pre-Professional Human Anatomy Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 354</td>
<td>Physiology of Humans</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 354 L</td>
<td>Laboratory of Human Physiology</td>
<td>1</td>
</tr>
<tr>
<td>BCHE 395</td>
<td>Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>22</td>
</tr>
</tbody>
</table>
Civil Engineering

Undergraduate Program Information

The curriculum in civil engineering is designed to provide a broad background and is so arranged that students may, in their senior year, specialize in one or more of the options listed or work in one or more areas of civil engineering. Students may elect to obtain more than one option in civil engineering.

Mission

The mission of the Civil Engineering Department is to offer a high quality and accredited degree that prepares our graduates for professional licensure leading to successful civil engineering careers in industry and government or for success at the graduate level. Toward this end, the Civil Engineering Department will recruit and maintain a diverse, highly skilled faculty.

Program Educational Objectives

In support of the mission, the Civil Engineering Department adopts the following program educational objectives:

1. Prepare our graduates to achieve professional engineering licensure and productivity in a civil engineering setting.
2. Prepare our graduates to be future leaders and public sector employees in civil engineering fields.
3. Prepare our graduates to pursue and complete a graduate level degree.
4. Maintain and further develop a high quality accredited civil engineering program that is competitive with comparable programs throughout the nation.

Program Criteria

The Civil Engineering curriculum is developed based on the program criteria established collaboratively by the Engineering Accreditation Commission (EAC) of ABET Inc. and the American Society of Civil Engineers (ASCE). The curriculum specifically prepares civil engineering students at the baccalaureate level to graduate with the ability to:

1. Apply knowledge of mathematics through differential equations, calculus-based physics, general chemistry, and probability and statistics to assess uncertainty.
2. Analyze and solve problems in various areas of civil engineering.
3. Conduct experiments associated with civil engineering, as well as analyze and interpret the collected data.
4. Design a system, component, or process in various civil engineering contexts considering sustainability.
5. Explain basic concepts related to project management, business, public policy, and leadership.
6. Analyze issues related to professional ethics and explain the importance of professional licensure.

In accordance with the program criteria of ABET and ASCE, the Civil Engineering faculty responsible for teaching design-oriented courses are qualified in their respective professional areas by means of licensure, or a combination of education and design experience. Furthermore, the faculty are given responsibility and sufficient authority to define, revise, implement, and achieve program objectives.

Graduate Program Information

Mission Statement

Provide research-based, post-baccalaureate programs leading to Master of Science (MS) and Doctor of Philosophy (Ph.D.) degrees for students pursuing advanced practice-oriented or academic careers in the areas of structural, geotechnical, water resources, transportation, and environmental engineering.

Vision Statement

The program goal is to enhance social well-being by modernizing civil infrastructure for improved performance, efficiency, reliability, and resilience. Through a combination of coursework plus applied and fundamental research, the program aims to produce graduates capable of developing innovative, sustainable, and cost-effective infrastructure for the next generation.

The Civil Engineering Department offers excellent opportunities for advanced study and professional training in several fields leading to the MSCE, MS ENVE, and the Ph.D. degrees. Students work closely with the faculty on contemporary issues including, but not limited to, ground stabilization, high performance materials, intelligent transportation systems, remote sensing, renewable energy, resilient infrastructure, structural health monitoring, sustainable construction, traffic modeling and simulation, and water treatment and reuse.

The department has excellent facilities including some 15 teaching and/or research laboratories with facilities for mechanical, chemical and biological research. The outstanding feature of the program is the energetic, highly motivated faculty and the low student-faculty ratio. The department currently has several ongoing research projects of various size and scope employing graduate students. Office space is normally provided for those students pursuing an advanced degree. Teaching and research assistantships are available to qualified students.

Students enrolling for graduate work in civil engineering must have received a bachelor’s degree in engineering or one of the allied fields. A candidate for the master’s degree may choose either a thesis or a non-thesis option. When a student enrolls for the Ph.D., a doctoral committee is formed to assist the student in planning a program appropriate to the student’s background and goals and to administer the required examinations. All Ph.D. candidates in civil engineering must have a demonstrated proficiency in English and two research tools. Mutual understanding between the Ph.D. candidate and his or her doctoral committee on the final nature of these two research tools will be on an individual basis.

Combined BS/MS Program

This program option provides students the opportunity to complete a BSCE and MSCE or MS ENVE with 151 credit hours; the normal tracks require 157 credit hours (BS = 127 plus MS = 30). Students accepted into this program follow the normal Civil Engineering undergraduate curriculum during their freshmen, sophomore, and junior level semesters, and the first semester of their senior year. In their final undergraduate semester, students take two graduate courses (> 500) in place of two undergraduate electives (> 450). Alternatively, students may petition for the two undergraduate electives to be counted as substitutes for the two graduate courses. In either case, the courses must be approved by the department head and completed with at least a grade of B. At this point, students receive their BSCE degree and the MSCE or MS ENVE degree.
can be completed with 24 credit hours in 2 to 3 semesters for full-time students. Students must apply for admission during the final semester of their junior year and obtain prior approval by the department head before starting this program option.

Degrees for the Department
Civil Engineering - Bachelor of Science in Civil Engineering (p. 544)
Civil Engineering - Master of Science in Civil Engineering (p. 546)
Environmental Engineering - Master of Science in Environmental Engineering (p. 548)
Engineering - Doctor of Philosophy (p. 548)

Minors for the Department
Agricultural Engineering - Undergraduate Minor (p. 544)

Professor David V. Jauregui1, Department Head
Professor J. Phillip King1, Associate Department Head

Professors Jauregui1, Khandan1, King1, Martin1, Newton1, Reddi1 (Dean of College of Engineering), Samani1, White1 (Emeritus); Associate Professors Bandini1, Bawazir, Cortes, Papelis, Weldon, Xu; Assistant Professors Dehghan-Niri, Ray, Zhang1


1 Registered Professional Engineer

C E 109. Computer Drafting Fundamentals
3 Credits (2+2P)
Same as DRFT 109, E T 109, SUR 109.

C E 151. Introduction to Civil Engineering
3 Credits
Problem solving and use of computer software for civil engineering applications.
Prerequisite(s): ENGR 100.
Corequisite(s): MATH 190.

C E 198. Special Topics
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.
C E 355V. Technology and the Global Environment
3 Credits
A scientific basis for understanding changes in the global environment that result through the complex interactions of natural phenomena and the impacts of the activities of man.
Prerequisites: junior or senior standing, and the general education requirements for math and natural sciences.

C E 356. Fundamentals of Environmental Engineering
3 Credits
Introduction to water treatment and water pollution and the analysis and design of selected treatment processes.
Prerequisite(s): C E 256.

C E 357. Soil Mechanics
3 Credits (2+3P)
Engineering properties of soils, consolidation settlement, compaction, water flow through soils, geostatic stresses, soil shear strength, lateral earth pressure, and soil laboratory testing.
Prerequisite(s): C E 160 or GEOL 111G, and C E 301.

C E 365. Intermediate Structural Analysis
1 Credit
Classical analysis of indeterminate structure; introduction to matrix method of structural analysis.
Prerequisite(s): C E 301 and C E 315.

C E 382. Hydraulic and Hydrologic Engineering
3 Credits
Analysis and design of hydraulic systems, including pipe networks, open channels, regulating structures, and pumping systems. Surface water and groundwater hydrology, analysis and design. May be repeated up to 3 credits.
Prerequisite(s): C E 331 and C E 331 L.

C E 398. Special Topics
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

C E 430. Environmental Management Seminar II
1 Credit
Survey of practical and new developments in environmental management field, hazardous and radioactive, waste management, and related health issues, provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: CH E 430, E E 430, E S 430, E T 430, I E 430, M E 430 and WERC 430

C E 444. Elements of Steel Design
3 Credits
Analysis and design of tension members, beams, columns, and bolted and welded connections.
Prerequisite(s)/Corequisite(s): C E 311. Prerequisite(s): C E 315.

C E 445. Reinforced Concrete Design
3 Credits
Design and mechanics of structural reinforced concrete members.
Prerequisite(s)/Corequisite(s): C E 311. Prerequisite(s): C E 315.

C E 452. Geohydrology
3-4 Credits (3+1P)
Origin, occurrence, and movement of fluids in porous media and assessment of aquifer characteristics. Development and conservation of ground water resources, design of well fields. Crosslisted with: E S 452 and GEOL 452.
Prerequisite(s): Junior or Senior.
C E 481. Civil Engineering Capstone Design
3 Credits
Culminating multidisciplinary project-oriented capstone design. Ethics, professional development, global issues. 
Prerequisite(s)/Corequisite(s): C E 457, C E 471, C E 477. Prerequisite(s): C E 356, C E 382, and either C E 444 or C E 445.

C E 482. Hydraulic Structures
3 Credits
Engineering design of water-regulating structures. Capstone design course. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): C E 477. Prerequisite(s): C E 382.

C E 483. Surface Water Hydrology
3 Credits
Hydrologic cycle and relationships between rainfall and surface water runoff.
Prerequisite: C E 331 or consent of instructor.

C E 485. Design of Earth Dams
3 Credits
Engineering design applied to site selection, foundation inspection and treatment, hydrology and hydraulics, stability, and seepage analysis.
Economic and environmental factors.
Prerequisite(s): C E 357.

C E 498. Special Topics
1-3 Credits
May be repeated for a maximum of 9 credits.
Prerequisite: consent of department head.

C E 501. Advanced Mechanics of Materials
3 Credits
Study of stress and strain in two and three dimensions, theories of failure, stress concentrations, unsymmetrical bending, curved beams, beams on elastic foundations, column theories, torsion, thick-wall cylinders. Same as M E 501.
Prerequisites: C E 301, MATH 392.

C E 502. Advanced Mechanics of Steel Structures
3 Credits
Advanced structural mechanics applicable to steel structures. Includes inelastic behavior, plastic analysis, column and frame stability and torsion.
Prerequisite: C E 444.

C E 503. Special Design and Analysis Program
3-6 Credits
Design and analysis covering subject matter of an approved 450 undergraduate departmental course plus an additional report or project. Course may be subtitled in the Schedule of Classes. May be repeated once for a total of 6 credits.
Prerequisite: consent of instructor/committee.

C E 504. Advanced Engineering Design
3 Credits
Advanced engineering design covering subject matter of a selected capstone undergraduate design course plus an additional report or project. May be subtitled.
Prerequisite: consent of instructor/committee.

C E 505. Advanced Mechanics of Concrete
3 Credits
Advanced structural mechanics applicable to concrete structures. Topics include: nonlinear-inelastic modeling and analysis of reinforced concrete structures, seismic behavior of reinforced concrete structures, and deformation of members under various loads. To be taught along with C E 605.
Prerequisite(s): C E 445.

C E 506. Advanced Soil Mechanics
3 Credits
Stress and strain analyses in soil, stress paths; drained and undrained shear strengths of granular soils and clays, consolidation, liquefaction, soil improvement.
Prerequisite: C E 457 or consent of instructor.

C E 507. Design of Earth Retaining Structures
3 Credits
Lateral earth pressure theory, soil-reinforcement interaction, and analysis and design of rigid and flexible earth retaining structures for support of fills and excavations, including retaining walls, mechanically stabilized earth (MSE) walls, sheet pile walls, anchored walls, tiebacks and soil nailing. Pre/
Prerequisite(s): C E 357.
Corequisite(s): C E 457.

C E 508. Advanced Soil Behavior
3 Credits
The course covers particle-scale phenomena that govern the macro-scale behavior of soils. Topics covered in the class include classical concepts as well as contemporary advances in soil mechanics. The students will develop a fundamental understanding of soil-water interaction, theories of contact level deformation, and mass and energy transport through granular media. Consent of Instructor required.
Prerequisite(s): C E 357 or Instructor Consent.

C E 509. Deep Foundations
3 Credits
Behavior, analysis and design of pile and pier foundations subjected to axial and lateral loads.
Prerequisite: C E 457 or consent of instructor.

C E 515. Finite Element Methods
3 Credits
Introduces the finite element method. Topics may include beam, frame, plane stress, plane strain, axisymmetric, and 3-D stress elements. Includes static and dynamic analysis. Uses readily available finite-element software.
Prerequisite: graduate standing or consent of instructor.

C E 530. Environmental Management Seminar I
1 Credit
Survey of practical and new developments in hazardous and radioactive waste management provided through a series of guest lectures and reports of ongoing research.

C E 531. Open Channel Hydraulics
3 Credits
Theoretical and applied hydraulics of open channels, with emphasis on nonuniform flow, rapidly varied flow, and wave formation.
Prerequisite: C E 382 or consent of instructor.
C E 543. Advances in Concrete Technology
3 Credits
Advanced topics related to concrete materials, including mixture proportioning with nontraditional admixtures, roles and side effects of concrete admixtures, durability of concrete, nondestructive testing of concrete, creep, and shrinkage.
Prerequisites: C E 311 and C E 445.

C E 544. Advanced Design of Steel Structures
3 Credits
Connection design; beam, column, and beam-column stability and design; and seismic frame design.
Prerequisites: C E 444 and C E 468.

C E 545. Advanced Concrete Design
3 Credits
Prestressed concrete, ultimate strength theory, design of shell structures.
Prerequisites: C E 445 and C E 468.

C E 547. Bridge Engineering
3 Credits
Topics related to prestressed concrete, reinforced concrete and steel bridge design according to the AASHTO specifications; bridge analysis and evaluation. May be repeated for a maximum of 6 credits.
Prerequisite: C E 469 or consent of instructor.

C E 550. Environmental Management Seminar II
1 Credit
Survey of practical and new developments in hazardous and radioactive waste management provided through a series of guest lectures and reports of ongoing research.

C E 554. Wood Design
3 Credits
Theory and design of wood structural members and systems subjected to gravity and lateral loads. Design project required. Taught every other year, alternates with C E 555 - Masonry Design.

C E 555. Masonry Design
3 Credits
Theory and design of masonry structural members and systems subject to gravity and lateral loads. Design project required. Taught every other year, alternates with C E 554 - Wood Design.

C E 557. Water Resources Development
3 Credits
Students function as members of a consulting panel and prepare reports on major water resources development problems. Political, financial, and social aspects of water resources development are considered as well as scientific and technical details. Background: C E 450.
Corequisite: C E 483, or C E 482.

C E 571. Structural Dynamics
3 Credits
Response of elastic structure to dynamic loading. Moving load, earthquake and blast loading.
Prerequisite: C E 468 or consent of instructor.

C E 572. Earthquake Engineering
3 Credits
Earthquake characteristics; seismic loads; elastic and inelastic response; analysis and design of buildings for earthquakes.
Prerequisites: graduate standing and consent of instructor.

C E 573. Transportation Analysis
3 Credits
Transportation analysis of land-based transportation modes. Crosslisted with: C E 473.
Prerequisite(s): C E 471.

C E 577. Advanced Pavement Analysis
3 Credits
Review of advanced constitutive models for pavement materials and their implementation in finite element analysis.
Prerequisite(s): C E 479 and C E 515 or consent of instructor.

C E 579. Ground Improvement
3 Credits
The objective of this course is to introduce common ground improvement techniques, including mechanical (compaction, soil reinforcement, preloading and accelerated consolidation) and chemical (cementing, ion-replacement, polymer bonding) stabilization methods, as well as seepage and dewatering. Emphasis will be placed on developing an understanding of the underlying physical and chemical processes involved in each case.
Prerequisite(s): C E 357.

C E 581. Ground Water Hydrology
3 Credits
Mathematical treatment of water flow in porous media. Emphasis on hydraulics of water movement, including pumping and recharge wells, drainage, and water quality.
Prerequisites: MATH 392, G EN 452, and C E 382, or consent of instructor.

C E 582. Statistical Hydrology
3 Credits
Application of statistical techniques to hydrologic data, including distributions, hypothesis testing, linear models, non-parametrics, and time-series and stochastic models.

C E 585. Slope Stability Analysis and Design
3 Credits
Design of earth slopes, causes of instability, limit equilibrium methods, slope reinforcement (geosynthetics soil nailing, tiebacks), seismic analysis, rock slope stability. Consent of instructor required.

C E 586. Geotechnical Earthquake Engineering
3 Credits
Earthquake origin and geology; wave propagation; dynamic soil properties; ground response analysis; local site effects; design ground motion; liquefaction assessment. Consent of Instructor required.
Prerequisite(s): C E 506 or consent of instructor.

C E 596. Special Topics
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

C E 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. May be subtitled. Maximum of 3 credits per semester.

C E 599. Master's Thesis
15 Credits
Thesis.

C E 600. Doctoral Research
1-15 Credits
Research.
Agricultural Engineering - Undergraduate Minor

**Civil Engineering - Bachelor of Science in Civil Engineering Requirements (127 Credits)**

In addition to the university requirements for graduation, all students including transfers must satisfy the requirements contained in the academic policies for the NMSU College of Engineering. Students must have a 2.0 grade-point average in all departmental courses and all prerequisites and co-requisites must be taken as required. If a student takes a class and a co-requisite for that class at the same time and does not achieve a grade of C- or better in the co-requisite, the student may take no further classes for which the course or the co-requisite are prerequisite. A student who completes a class three times without achieving a grade of C- or better will be dismissed from the Civil Engineering program, and not allowed to take any Civil Engineering courses from the department.

**General Education**

State of New Mexico Common Core

Area I: Communications

- ENGL 111G  Rhetoric and Composition  4
- Written Communications Elective (ENGL 218 strongly recommended)  3
- Oral Communications Elective (COMM 265 strongly recommended)  3

Area II: Mathematics

- MATH 191G  Calculus and Analytic Geometry I  4

Area III: Natural Science

- CHEM 111G  General Chemistry I  4
- PHYS 215G  Engineering Physics I  3
- PHYS 215GL  Engineering Physics I Laboratory  1

Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts

Select 15 total credits from Area IV and V, with at least 6 credits from each area:

Area IV: Social and Behavioral Sciences:
Select 6-9 credits from Economics, Political Science, Psychology, Sociology and Anthropology electives

Area V: Humanities and Fine Arts:
Select 6-9 credits from History, Philosophy, Literature, Art, Music, Dance, or Theater electives

Institution Specific General Education

Viewing a Wider World electives\(^2\) 6

Program Specific Requirements

Mathematics
MATH 192G Calculus and Analytic Geometry II 4
MATH 291G Calculus and Analytic Geometry III 3
MATH 392 Introduction to Ordinary Differential Equations 3
STAT 371 Statistics for Engineers and Scientists I 3

Natural Science
GEOL 111G Introductory to Geology 4
PHYS 216G Engineering Physics II 3
PHYS 216GL Engineering Physics II Laboratory 1

Technical
ENGR 100 Introduction to Engineering 3
SUR 222 Plane Surveying 3

Civil Engineering
C E 151 Introduction to Civil Engineering 3
C E 233 Mechanics-Statics 3
C E 234 Mechanics-Dynamics 3
or M E 234 Mechanics-Dynamics 3
C E 256 Environmental Engineering and Science 3
C E 256 L Environmental Science Laboratory 1
C E 301 Mechanics of Materials 3
C E 311 Civil Engineering Materials 3
C E 315 Structural Analysis 4
C E 331 Fluid Mechanics and Hydraulics 3
C E 331 L Fluid Mechanics and Hydraulics Laboratory 1
C E 356 Fundamentals of Environmental Engineering 3
C E 357 Soil Mechanics 3
C E 382 Hydraulic and Hydrologic Engineering 3
C E 445 Reinforced Concrete Design 3
C E 457 Foundation Design 3
C E 471 Transportation Engineering 3
C E 477 Engineering Economics and Construction Management 3

Civil Engineering Option Electives 6

Capstone Course 3
Select one from the following:
C E 469 Structural Systems
C E 482 Hydraulic Structures
C E 485 Design of Earth Dams
ENVE 456 Environmental Engineering Design

Concentrations
Select from the following concentrations:
Environmental

General
Geotechnical
Structural
Water Resources

Total Credits 127

1. See the required courses (p. 47) section of the catalog for a full list of courses.
2. Students must complete 15 total credits from Area IV and V, with at least six credits from each area, including ECON 251G Principles of Macroeconomics or ECON 252G Principles of Microeconomics as an Area IV course. In addition, students must complete 6 total credits of Viewing a Wider World (VWW) electives. See the required courses (p. 47) section of the catalog for a full list of courses.
3. Students are required to take three credits of capstone design. The required capstone design course depends on the area of concentration as follows: C E 469 Structural Systems (structural); C E 482 Hydraulic Structures (water resources); C E 485 Design of Earth Dams (geotechnical); and ENVE 456 Environmental Engineering Design (environmental). For the general option, students may take any one of the four capstone design courses.

Concentration: Environmental (9 credits)

Required Elective Courses
Select two from the following: 6
ENVE 450 Aquatic Chemistry
ENVE 451 Unit Processes/Operation of Water Treatment
ENVE 452 Unit Processes/Operation of Wastewater Treatment
ENVE 458 Urban Water-Energy-Environment Systems
ENVE 487 Air Pollution Control Systems Design

Required Capstone Design
ENVE 456 Environmental Engineering Design 3

Total Credits 9

Concentration: General (9 credits)

Required Elective Courses
Design electives selected from Environmental, Structural, Water Resources, or Geotechnical Options (other Civil Engineering electives may be taken under General Option with approval of department head) 6

Required Capstone Design
Capstone design selected from Environmental, Structural, Water Resources, or Geotechnical Options 3

Total Credits 9

Concentration: Geotechnical (9 credits)

Required Elective Courses
Select two from the following: 6
C E 452 Geohydrology
C E 470 Design of Municipal and Hazardous Waste Landfills
C E 479 Pavement Analysis and Design

Required Capstone Design
Civil Engineering - Master of Science in Civil Engineering

In support of the mission and vision statements for the graduate program, the Civil Engineering Department adopts the following goals for the Master of Science (MS) degree:

1. Prepare students to fulfill the academic prerequisites specified by the Americans Society of Civil Engineers (ASCE) for Licensure and Professional Practice in Civil Engineering.

2. Prepare students to attain the Body of Knowledge specified by ASCE necessary for entry into the practice of civil engineering at the professional level.

3. Prepare students in conducting applied research in areas relevant to the practice of civil engineering.

4. Prepare students for advanced graduate studies towards a terminal degree.

Students may choose from the geotechnical, structural, or water resources engineering options, requirements of which are specified below. Exceptions to these requirements must be approved by the head of the department. Further information related to the MS degree may be found under the Academic Programs of Study (p. 53) section of the catalog.

Option: Geotechnical Engineering

Thesis Option

Background Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 357</td>
<td>Soil Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>C E 457</td>
<td>Foundation Design</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 111G</td>
<td>Introductory to Geology (or higher-level courses)</td>
<td>3</td>
</tr>
<tr>
<td>C E 445</td>
<td>Reinforced Concrete Design (or higher-level courses based on ACI)</td>
<td>3</td>
</tr>
</tbody>
</table>

Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 506</td>
<td>Advanced Soil Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>C E 509</td>
<td>Deep Foundations</td>
<td>3</td>
</tr>
<tr>
<td>C E 585</td>
<td>Slope Stability Analysis and Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Optional Courses

Select two from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 485</td>
<td>Design of Earth Dams</td>
<td>3</td>
</tr>
<tr>
<td>C E 577</td>
<td>Advanced Pavement Analysis</td>
<td>3</td>
</tr>
<tr>
<td>C E 581</td>
<td>Ground Water Hydrology</td>
<td>3</td>
</tr>
</tbody>
</table>

Select two from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 479</td>
<td>Pavement Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>C E 515</td>
<td>Finite Element Methods (or similar course)</td>
<td>3</td>
</tr>
<tr>
<td>C E 577</td>
<td>Advanced Pavement Analysis</td>
<td>3</td>
</tr>
<tr>
<td>C E 586</td>
<td>Geotechnical Earthquake Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 3 credits from courses outside the area or department

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ST 505</td>
<td>Statistical Inference I (or similar statistics course)</td>
<td>3</td>
</tr>
<tr>
<td>C E 543</td>
<td>Advances in Concrete Technology</td>
<td>3</td>
</tr>
<tr>
<td>C E 545</td>
<td>Advanced Concrete Design</td>
<td>3</td>
</tr>
<tr>
<td>C E 596</td>
<td>Special Topics</td>
<td>3</td>
</tr>
<tr>
<td>C E 503</td>
<td>Special Design and Analysis Program</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 3 credits from mathematics, numerical methods, or programming (450 or higher)

Research Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 599</td>
<td>Master's Thesis</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits

30
Can be taken as C E 503 Special Design and Analysis Program. A maximum of 6 credits of C E 503 Special Design and Analysis Program are counted toward the Masters Degree program.

Geological Sciences or Geophysics course (For example: GEOL 470 Structural Geology).

A maximum of 6 credits are counted toward the Masters Degree program.

Notes:
1. The optional courses outside the area or department should be previously approved by the academic advisor or student’s Graduate Committee.
2. International students must be registered at least 9 credits per semester.
3. International students may be required to take English language courses to show proficiency in English.

Total credits needed are 24 credits of coursework and 6 credits of Master’s Thesis research.

Option: Structural Engineering
Thesis Option

**Background Courses**
- C E 315 Structural Analysis
- C E 444 Elements of Steel Design (based on AISC)
- C E 445 Reinforced Concrete Design (based on ACI)

**Core Courses**
- C E 501 Advanced Mechanics of Materials
- C E 515 Finite Element Methods
- C E 544 Advanced Design of Steel Structures
- C E 545 Advanced Concrete Design
- C E 571 Structural Dynamics

**Optional Courses**
Select three from the following:
- C E 502 Advanced Mechanics of Steel Structures
- C E 504 Advanced Engineering Design
- C E 509 Deep Foundations
- C E 543 Advances in Concrete Technology
- C E 547 Bridge Engineering
- C E 554 Wood Design
- C E 555 Masonry Design
- C E 572 Earthquake Engineering
- C E 577 Advanced Pavement Analysis
- C E 615 Advanced Finite Element Methods
- C E 645 Prestressed Concrete

**Research Credits**
- C E 599 Master’s Thesis ¹

Total Credits: 30

¹ A maximum of 6 credits are counted toward the Master’s Degree program.

Total credits needed are 24 credits of coursework and 6 credits of Master’s Thesis research.

Option: Water Resources Engineering
Thesis Option

**Prerequisite Courses**

**Core courses**
- C E 531 Open Channel Hydraulics
- C E 557 Water Resources Development
- C E 581 Ground Water Hydrology
- C E 582 Statistical Hydrology

**Statistics**
- A ST 505 Statistical Inference I (or advanced statistics class if student is qualified)

Total Credits: 30

Non-Thesis Option

**Requirements**

**Core courses**
- C E 531 Open Channel Hydraulics
- C E 557 Water Resources Development
- C E 581 Ground Water Hydrology
- C E 582 Statistical Hydrology

**Statistics**
- A ST 505 Statistical Inference I (or advanced statistics class if student is qualified)

Total Credits: 30

Foundation Requirements

1. ABET-Accredited BS in Civil, Agricultural, Geological Engineering, or closely related field or equivalent (as per existing CAGE Department regulations)
2. One course in surface water hydrology
3. One course in hydrogeology or geohydrology
4. At least three semesters of hydraulic and hydraulic design

**Core Courses**

**Statistics**
- A ST 505 Statistical Inference I (or advanced statistics class if student is qualified)

Total Credits: 15

**Area of interest Courses (Flexible)**

**Agricultural/ Civil/ Environmental Engineering**
- A EN 459 Design of Water Wells/Pumping Systems
- A EN 475 Soil and Water Conservation
- A EN 478 Irrigation and Drainage Engineering
- C E 482 Hydraulic Structures
- C E 483 Surface Water Hydrology
- C E 485 Design of Earth Dams
- C E 503 Special Design and Analysis Program
- C E 504 Advanced Engineering Design
- C E 682 Topics in Hydrodynamics II
- ENVE 557 Surface Water Quality Modeling
- ENVE 630 Fate and Transport of Environmental Contaminants
- GEOG 581 System Design for Geographic Information Science and Technology (GIS & T)
- SOIL 652 Advanced Soil Physics
Environmental engineering at New Mexico State University provides unique educational and research opportunities at the graduate level in the fields of water quality, water treatment, water pollution control, wastewater treatment reclamation and reuse, industrial, hazardous and solid waste management, groundwater treatment, air pollution control, waste minimization and pollution prevention. Therefore, course offerings have been developed to emphasize basic engineering and scientific principles, as well as design and application of environmental engineering unit operations and processes. Special problem and thesis research are closely matched with faculty expertise and the programs and professional goals of the graduate students. Study and research programs are specifically designed for individual students, taking advantage of not only the program capabilities, but complementing activities of the university as a whole, the student’s professional experience and work environment.

Graduate students satisfy degree requirements in environmental engineering by completing specific core course work. Course work in the graduate program includes:

- water and wastewater treatment,
- solid and hazardous waste systems design,
- environmental chemistry,
- environmental microbiology,
- environmental contaminant analysis,
- industrial pollution control,
- fate and transport of pollutants in engineered and natural systems and water quality in surface water and groundwater systems.

Additional topics of interest to the students are covered through special topics classes and by courses taught outside of the College of Engineering.

The MS program requires either a thesis or a non-thesis practice oriented experience. The non-thesis option is designed for students that are working full time in engineering practice, but is also available to other students interested in pursuing a non-thesis option. The thesis option consists of a minimum of 30 semester credit hours, including 6 credit hours of thesis. Students who are working full time in engineering practice may apply for the non-thesis option. This option consists of 30 semester credit hours of which up to 3 credit hours can be awarded for a professional engineering design experience and up to 6 credit hours can be awarded for an engineering practicum (ENVE 598 Special Research Programs). Transfer credit for courses taken elsewhere is evaluated on an individual basis. Up to six semester hours of graduate level courses taken may be used to satisfy MS degree requirements provided that the credits were not used toward another degree.

### Required Curriculum

The graduate environmental engineering program of the Civil Engineering Department expects all MS and Ph.D. students to meet certain requirements in pursuit of an advanced degree. Some of these requirements are related to the quantity, level and quality of coursework. This Graduate Catalog details what is expected as a minimum for graduation, but it is up to the student and his/her advisor and graduate committee to determine the plan of study for the student. The student and his/her advisor will create this program of study in the first semester of graduate work.

Students desiring to work toward an advanced degree in environmental engineering must have completed undergraduate preparation similar
to that required for a Bachelor of Science degree in an ABET accredited engineering program or must have adequate background, as determined by the graduate faculty of the program. The program administrator will approve exceptions to these requirements.

The environmental engineering faculty will form a committee for every entering student. The faculty will evaluate the student’s record and determine which deficiencies and/or core courses, if any, are needed by the student. For all professional non-thesis programs, the department head will review the committee’s decision. In order to provide consistency among plans of study for graduate students and to set a minimum set of core or pertinent courses, it is the policy of the graduate environmental engineering program that each graduate student will fulfill the following course requirements (or equivalent).

**Required Background Courses**

The following courses may be required if the student did not take a similar course at the undergraduate level, as negotiated with the general faculty committee.

<table>
<thead>
<tr>
<th>Background Courses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 356 Fundamentals of Environmental Engineering</td>
<td></td>
</tr>
<tr>
<td>C E 382 Hydraulic and Hydrologic Engineering</td>
<td></td>
</tr>
<tr>
<td>ENVE 456 Environmental Engineering Design</td>
<td></td>
</tr>
</tbody>
</table>

**Core Courses**

<table>
<thead>
<tr>
<th>Core Courses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVE 550 Aquatic Chemistry</td>
<td></td>
</tr>
<tr>
<td>ENVE 551 Unit Processes/Operation of Water Treatment</td>
<td></td>
</tr>
<tr>
<td>ENVE 552 Unit Processes/Operation of Wastewater Treatment</td>
<td></td>
</tr>
<tr>
<td>ENVE 557 Surface Water Quality Modeling</td>
<td></td>
</tr>
</tbody>
</table>

**Thesis or Professional Experience for MS students**

- ENVE 598 Special Research Programs
- or ENVE 599 Master’s Thesis

**Dissertation, Research Tools for Ph.D. Students**

Select a minimum from two research tools (3 credits each)

<table>
<thead>
<tr>
<th>Total Credits</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

1. ENVE 598 Special Research Programs: practicum for students pursuing the non-thesis option. ENVE 599 Master’s Thesis: required for students pursuing the thesis option.

**Professional Development Electives for the Non-Thesis Option (Outside the College of Engineering)**

MS program: A minimum of six credits hours in graduate-level communications, management, economics and/or other relevant disciplines. These courses will be selected by the student and must be approved by the environmental engineering faculty (6 credits).

**Elective Courses**

Select one from the following:

- A EN 459 Design of Water Wells/Pumping Systems
- C E 557 Water Resources Development
- E S 462 Sampling and Analysis of Environmental Contaminants

**Elective Courses**

- ENVE 630 Fate and Transport of Environmental Contaminants

**Total Credits**

- 3

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**Electrical and Computer Engineering**

**Undergraduate Program Information**

The undergraduate program of the Klipsch School is accredited by the Engineering Accreditation Commission of ABET, Inc., and stresses the development of analytical tools and physical concepts required to prepare students for immediate employment or graduate study. The program is flexible, allowing students to choose elective coursework towards concentrations in microelectronics and computers, communications and signal processing, control and power, or electromagnetics and photonics.

**Graduate Program Information**

The Klipsch School of Electrical and Computer Engineering offers graduate work leading to the Master of Science and Doctor of Philosophy degrees. Areas of emphasis for masters and doctoral students are:

- communications,
- computer engineering,
- control systems,
- digital signal processing,
- electromagnetics,
- electric energy systems,
- photonics, and
- microelectronics/VLSI.

Research in the above areas currently being conducted by the faculty ensures that doctoral candidates will work on the frontier of knowledge in these areas. The graduate programs are intended to provide broad graduate-level training in electrical engineering. In addition, appropriate courses in computer science, industrial engineering, mathematics, physics and business management may be integrated into a graduate student’s program of study.

Students desiring to work toward an advanced degree in electrical engineering must have completed undergraduate preparation substantially equivalent to that required for the Bachelor of Science in Electrical Engineering degree at this institution. For students with undergraduate degrees in other disciplines, see below. For further information on the Klipsch School of Electrical and Computer Engineering, please consult the web page http://www.ece.nmsu.edu/.

**Research Facilities and Highlights**

The Center for Telemetry and Telemetering hosts the Manuel Lujan, Jr. Space Tele-Engineering Program and the Frank Carden Chair for Telemetry and Telemetering. Faculty and staff in the Center are involved in education and research programs focusing on:

- telecommunications,
- communication theory,
- coding and information theory,
- wireless networks,
- digital signal processing,
- optical and radio frequency communications, and
The Center has several major research sponsors including NASA, the Department of Defense, and the National Science Foundation. The director of the Center and the Frank Carden Chair is Professor Dr. Charles Creusere.

The Advanced Speech and Audio Processing Laboratory is used for both teaching and research in digital signal processing (DSP). Current research areas include

- speaker recognition,
- signal enhancement,
- low-bit rate coding,
- embedded DSP, and
- GPU-based pattern recognition for speech processing.

Research sponsors for the laboratory include Air Force Research Laboratories, Army Research Laboratory, National Geospatial Intelligence Agency, Freescale Semiconductor, IBM, Motorola, National Science Foundation, and Texas Instruments. The director of the laboratory is Dr. Phillip L. De Leon.

The Electromagnetics (EM) and Microwave Laboratory is used for both teaching and research in electromagnetic fields. Current research areas include

- propagation through dispersive media (soil, seawater, foliage, biological tissues),
- UWB radar and remote sensing system analysis and design,
- antenna analysis, synthesis, and design,
- bio-electromagnetics,
- brain mapping,
- computational physics,
- electromagnetic interference and compatibility,
- high performance computing, and
- nondestructive evaluation.

Research sponsors for the laboratory include American Heart Association, Department of Defense, Los Alamos National Laboratory, NASA, NSF, National Institutes of Health, Sandia National Laboratories, and White Sands Missile Range. The director of the laboratory is Dr. Kwong T. Ng.

New Mexico State University's program in Electric Utility Management (EUMP) is sponsored by a group of public and private electric utility companies and industrial organizations and hosts the PNM Chair for Utility Management and The Kersting Professorship. The Master of Utility Management and The Kersting Professorship. The Master of Science in Electrical Engineering degree program includes course work in public utilities regulation and is designed to prepare the student for a future engineering management position in the electric utility industry. An industry advisory committee provides the vital connecting link between the electric utility industry and the university, so that a coordinated effort may be achieved in realizing the following program objectives:

1. to provide a program of study at the graduate level in the planning, operation, and management of electric power generation, transmission, distribution, and utilization; and the integration of renewable energy and storage;
2. to supply the electric utility industry with the highest caliber of new engineering and management talent; and
3. to provide the university with the required financial and technical support to ensure a quality program.

In addition, faculty in EUMP work with M.S. an Ph.D. students to conduct funded research sponsored by Sandia National Laboratories, EPRI, NSF, DOE, CEC and the electrical utility industry. Much of the current research is focused on renewable energy integration, protection, advanced control and optimization, and customer driven microgrids. Laboratory facilities are available in the El Paso Electric Power Systems laboratory. The program works closely with the Institute for Energy and Environment (IEEE) and with Southwest Technology Development Institute (SWTDI) which host the solar energy experiment station. The director of the EUMP and PNM Chair for Utility Management is Dr. Satish Ranade.

Faculty and students in the VLSI Laboratory are involved in the design and analysis of analog and mixed-signal microelectronic circuits and systems. Current research areas include

- wireless bio-circuits and sensors;
- green computing;
- intelligent sensing, sigma-delta sensing;
- low-voltage, low-power circuits;
- high performance operational amplifiers and operational transconductance amplifiers;
- energy harvesting and power management circuits; and
- analog machine vision and image processing.

Research sponsors include the National Science Foundation, Los Alamos National Laboratories and Agilent technologies. The director of the VLSI Laboratory is IEEE Fellow Dr. Jaime Ramirez-Angulo.

The Photonics program at NMSU offers unique opportunities to undergraduate and graduate students interested in pursuing a career in electro-optics, applied optics, photonics, or optical engineering by combining the optics resources of the Klipsch School and the Physics Department. Most of the optics classes are cross-listed in the two departments. The Klipsch School’s Electro-Optics Research Laboratory (EORL) provides a variety of research opportunities in areas such as

- multispectral and polarimetric imaging,
- free-space optical communications,
- adaptive optics,
- nanophotonics and
- integrated electro-optic sensors and systems.

Sponsors include the Air Force Office of Scientific Research, Sandia National Laboratories, Air Force Research Laboratory, Army Research Laboratory, NASA, National Geospatial-Intelligence Agency and the National Science Foundation. SPIE Fellow Dr. David G. Voelz is the director of the EORL and NMSU’s Photonics program.

The Computer Networking Lab (CNL) supports teaching and research in Internet and wireless sensor networks. The mission of CNL is to provide
students with the opportunity to do cutting-edge research that has high practical relevance. Currently, research projects in CNL include secure data dissemination in wireless sensor networks, solar-powered sensor networks, and RFID sensor networks. The major research sponsors of CNL include US Army, DHS, Intel, Los Alamos National Lab, and Sandia National Lab. CNL is directed by Dr. Hong Huang.

Students and faculty associated with the Performance Evaluation and Architecture Research Laboratory (PEARL) conduct research in the areas of

- performance modeling and simulation techniques,
- micro-architecture power optimization,
- performance analysis and optimization of large-scale scientific applications, and
- heterogeneous HPC computing for field-deployable systems.

PEARL sponsors include the Army Research Labs (ARL), High Performance Computing Research Center (AHPCRC), Sandia National Laboratories, and Los Alamos National Laboratories. The laboratory's director is Dr. Hameed Badawy.

The Rio Grande Institute for Soft Computing (RioSoft) is committed to serving private-sector and U.S. government needs in researching and developing intelligent decision-support systems and tools that aid in many aspects of strategic decision-making. Soft computing which includes fuzzy logic, neural networks and evolutionary computation are used for modeling, analysis and control of complex dynamical processes in various software-hardware integrated architectures. In addition RioRoboLab, a NASA Ames funded laboratory, provides facilities for research and development of intelligent autonomous and semi-autonomous systems focusing on advanced concepts of energy harvesting and energy scavenging from ambient energy sources. Research sponsors include the Defense Threat Reduction Agency, Defense Advanced Research Projects Agency, Los Alamos National Laboratory and NASA. The director of RioSoft and RioRob Lab is Dr. Nadipuram (Ram) Prasad.

Support for Graduate Students

A number of teaching assistantships, research assistantships and fellowships are available. Teaching assistants are recommended by individual faculty for selection by the ECE Department's Graduate Studies Committee. International students must pass university screening prior to being eligible for selection as a TA. Nominations for new TAs are made by the advisor after a student is admitted. Research assistants are hired directly by the faculty member who has received a contract or grant for research.

The College of Engineering awards graduate scholarships and fellowships on behalf of Electrical and Computer Engineering. These include:

- the MIT/Lincoln Laboratory Fellowship,
- the Paul and Valerie Klipsch Grad Scholarship,
- the Admiral Paul Arthur Grad Scholarship, and
- the Barry Neil Rappaport Grad Scholarship.

Applications can be completed on-line at https://scholarships.nmsu.edu/. The priority deadline for the Scholar Dollar$ is March 1st. The Electrical Utility Management Program has a limited number of fellowships for students interested in pursuing master's degrees in electrical energy systems.

Admission

Prospective graduate students for the Master of Science or Doctor of Philosophy in Electrical Engineering must first meet the entrance requirements of the Graduate School. The prospective US graduate student should make formal application to the Graduate Student Services office (http://gradschool.nmsu.edu). International graduate students must start with the Admissions Office (http://international.nmsu.edu/admissions.html). Official transcripts from all undergraduate and graduate institutions must be sent directly to the Graduate School.

In addition, the student must arrange to have an official copy of the GRE (Graduate Record Examination) General Test scores sent to the Graduate School. International students must also submit their TOEFL (Test of English as a Foreign Language) scores. If the applicant meets the Graduate School's minimum requirements, the application is sent to the Klipsch School's Graduate Studies Committee for review. U.S. residents are given every chance of being successful in the pursuit of a graduate degree. If they do not meet the requirements of the Klipsch School, they can enter the Graduate School as "undeclared" where they must demonstrate competence in two or more graduate-level E E courses before they re-apply.

Requirements for Students Without BSEE Degree or Equivalent

Students without a BSEE degree or equivalent preparation will be expected to take classes covering the core knowledge required in our BSEE program. This includes mathematics through differential equations and basic engineering physics. The student’s graduate advisor will prepare an individualized deficiency schedule, based on the student’s academic background and work experience.

The following course from our undergraduate program will be considered deficiencies for students without a BSEE

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E E 100</td>
<td>Introduction to Electrical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>E E 112</td>
<td>Embedded Systems</td>
<td>4</td>
</tr>
<tr>
<td>E E 200</td>
<td>Linear Algebra, Probability and Statistics Applications</td>
<td>4</td>
</tr>
<tr>
<td>E E 212</td>
<td>Introduction to Computer Architecture and Organization</td>
<td>4</td>
</tr>
<tr>
<td>E E 230</td>
<td>AC Circuit Analysis and Introduction to Power Systems</td>
<td>4</td>
</tr>
<tr>
<td>E E 240</td>
<td>Multivariate and Vector Calculus Applications</td>
<td>3</td>
</tr>
<tr>
<td>E E 312</td>
<td>Signals and Systems I</td>
<td>3</td>
</tr>
<tr>
<td>E E 314</td>
<td>Signals and Systems II</td>
<td>4</td>
</tr>
<tr>
<td>E E 351</td>
<td>Fields and Waves</td>
<td>4</td>
</tr>
<tr>
<td>E E 380</td>
<td>Semiconductor Devices and Electronics</td>
<td>4</td>
</tr>
</tbody>
</table>

Degrees for the Department

Electrical Engineering - Bachelor of Science in Electrical Engineering (p. 559)

Electrical Engineering - Master of Science in Electrical Engineering (p. 562)

Engineering - Doctor of Philosophy (p. 561)

Minors for the Department

Computer Engineering - Undergraduate Minor (p. 559)
Electrical Engineering - Undergraduate Minor (p. 563)

The Klipsch School of Electrical and Computer Engineering

Professor, Satish Ranade, Department Head

Associate Professor, Paul Furth, Associate Department Head

Professor, Steve Stochaj, Associate Department Head

Professors Borah, Creusere, DeLeon, Ng, Ramirez-Angulo, Ranade, Stochaj, Voelz; Associate Professors Boucheron, Brahma, Cho, Dawood, Furth, Huang, Petersen, Prasad; Assistant Professors Badawy, Mitchell, Tang; College Assistant Professors Boehmer; Emeritus Professors Carden, Giles, Sheila Horan, Stephen Horan, Johnson, Jordan, Kersting, Ludeman, Merrill, Reinfelds, Smolleck, Steelman, Taylor

Registered Professional Engineer (NM)

E E 100. Introduction to Electrical Engineering
4 Credits (3+3P)
Introduction to analog (DC) and digital electronics. Including electric component descriptions and equations, Ohm's law, Kirchhoff's voltage and current laws, ideal op-amp circuits, Boolean algebra, design of combinational and sequential logic circuits and VHDL or VERILOG. 
Prerequisite(s): C- or better in MATH 190.

E E 109. The Engineering of How Things Work
4 Credits (3+3P)
This class provides Integrated Learning Community students with an introduction to various aspects of engineering.

E E 112. Embedded Systems
4 Credits (3+3P)
Introduction to programming through microcontroller-based projects. Extensive practice in writing computer programs to solve engineering problems with microcontrollers, sensors, and other peripheral devices. 
Prerequisite(s): C- or better in E E 100.

E E 161. Computer Aided Problem Solving
4 Credits (3+3P)
Introduction to scientific programming. Extensive practice in writing programs to solve engineering problems. Items covered will include: loops, input and output, functions, decision statements, and pointers. Pre/ Corequisite(s): MATH 190G.

E E 162. Digital Circuit Design
4 Credits (3+3P)
Design of combinational logic circuits based on Boolean algebra. Introduction to state machine design. Implementation of digital projects with hardware description language. 
Prerequisite(s): C or better in E E 161 and MATH 190G.

E E 200. Linear Algebra, Probability and Statistics Applications
4 Credits (3+3P)
The theory of linear algebra (vectors and matrices) and probability (random variables and random processes) with application to electrical engineering. Computer programming to solve problems in linear algebra and probability. 
Prerequisite(s): C- or better in E E 112 and MATH 192G.

E E 201. Electric Circuit Analysis
3 Credits
Electric component descriptions and equations. Kirchhoff's voltage and current laws, formulation and solution of RLC network equations using time domain concepts. For nonmajors only. Minimum 2.0 GPA. 
Prerequisite(s): C or better in MATH 192G.

E E 212. Introduction to Computer Architecture and Organization
4 Credits (3+3P)
Introduction to computer architecture and performance analysis techniques. Design and optimization of systems such as personal mobile devices and cloud computing systems. 
Prerequisite(s): C- or better in E E 112 and MATH 190G.

E E 230. AC Circuit Analysis and Introduction to Power Systems
4 Credits (3+3P)
Electric component descriptions and equations; complete solutions of RLC circuits; steady-state analysis of AC circuits; introduction to frequency response techniques; introduction to power systems in the steady-state. May be repeated up to 4 credits. Restricted to: E E majors. 
Prerequisite(s): C- or better in E E 100, PHYS 215G and MATH 192G.

E E 240. Multivariate and Vector Calculus Applications
3 Credits
Vector algebra, cylindrical and spherical coordinates, partial derivatives, multiple integrals. Calculus of vector functions through electrostatic applications. Divergence, gradient, curl, divergence theorem, Stokes's theorem, Coulomb's Law, Gauss's Law, electric field, electric potential. Applications in Matlab.
Prerequisite(s): C- or better in MATH 192G and E E 112.

E E 260. Embedded Systems
4 Credits (3+3P)
Applications of microcontrollers, FPGAs, interfaces and sensors. Introduction to Assembly language programming.
Prerequisite(s): C or better in E E 162.

E E 280. DC and AC Circuits
4 Credits (3+3P)
Electric component descriptions and equations; Kirchhoff's voltage and current laws; formulation and solution of network equations for dc circuits; ideal op-amp circuits. Complete solutions of RLC circuits; steady-state analysis of ac circuits; ac power; introduction to frequency response techniques. 
Prerequisite(s): C or better in MATH 192G and PHYS 216G.

E E 300. Cornerstone Design
2 Credits
Application and realization of engineering principles to a guided team-based design project. Formulation and implementation of test procedures, evaluation of alternate solutions and oral and written communication of the design and test results. May be repeated up to 6 credits. Restricted to: E E majors. Restricted to Las Cruces campus only. 
Prerequisite(s): C- or better in E E 212 and E E 230.

E E 310. Engineering Analysis II
3 Credits
Prerequisite(s): C- or better in E E 210 and MATH 291G.
E E 312. Signals and Systems I
3 Credits
Continuous and discrete time signals and systems. Linear, time-invariant systems. Fourier series, continuous and discrete time Fourier transforms. Time and frequency characterization of signals and systems. May be repeated up to 3 credits. 
Prerequisite(s)/Corequisite(s): MATH 392. Prerequisite(s): C- or better in E E 210 and E E 280.

E E 314. Signals and Systems II  
4 Credits (3+3P) 
Introduction to communication systems including amplitude, frequency, and pulse-amplitude modulation. Introduction to control systems including linear feedback systems, root-locus analysis, Nyquist criterion. Introduction to digital signal processing including sampling, digital filtering, and spectral analysis. May be repeated up to 4 credits. 
Prerequisite(s): C- or better in E E 312 and MATH 392.

E E 330. Environmental Management Seminar I  
1 Credit  
Survey of practical and new developments in hazardous and radio-active waste management provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: C E 330, G EN 330, I E 330, M E 330, WERC 330, A EN 330 and CH E 330

E E 351. Fields and Waves  
4 Credits (3+3P)  
Prerequisite(s): C or better in E E 310.

E E 353. Computer Systems Architecture  
4 Credits (3+3P)  
Concepts of modern computer architecture. Processor micro-architectures, hardwired vs. micro-programmed control, pipelining and pipeline hazards, memory hierarchies, bus-based system architecture and memory mapping, hardware-software interface, and operating system concepts. Comparison of architectures to illustrate concepts of computer organization; relationships between architectural and software features. 
Prerequisite(s): C or better in C S 273 or E E 260.

E E 380. Semiconductor Devices and Electronics  
4 Credits (3+3P)  
Prerequisite(s): C- or better in E E 230.

E E 391. Introduction to Electric Power Engineering  
4 Credits (3+3P)  
Introduction to the principles, concepts, and analysis of the major components of an electric power system. Basic electromechanics, energy conversion and source conversion, transformers, transmission lines, rectifiers, regulators, and system analysis. 
Prerequisite(s): C or better in E E 280.

E E 395. Introduction to Digital Signal Processing  
3 Credits  
Undergraduate treatment of sampling/reconstruction, quantization, discrete-time systems, digital filtering, Z-transforms, transfer functions, digital filter realizations, discrete Fourier transform (DFT) and fast Fourier transform (FFT), finite impulse response (FIR) and infinite impulse response (IIR) filter design, and digital signal processing (DSP) applications. 
Prerequisite(s): C or better in E E 314.

E E 400. Undergraduate Research  
1-3 Credits  
Directed undergraduate research. May be repeated for a maximum of 9 credits. 
Prerequisite: consent of the department head.

E E 402. Capstone Design  
3 Credits (2+3P)  
Application and realization of engineering principles to a significant team-based design project with significant student management and autonomy. Determination of performance requirements, including safety, economics, ethics and manufacturability; extensive communication of design choices and test results to broad audiences; and interfacing of design with other hardware and software. May be repeated up to 3 credits. Restricted to: E E majors. 
Prerequisite(s): C- or better in E E 300, E E 314, E E 351, and E E 380.

E E 418. Capstone Design I  
3 Credits (1+6P)  
Application of engineering principles to a significant design project. Includes teamwork, written and oral communications, and realistic technical, economic, and public safety requirements. 
Prerequisite(s)/Corequisite(s): E E 461. Prerequisite(s): C or better in E E 260, E E 314, E E 351, E E 380, and E E 391.

E E 419. Capstone Design II  
3 Credits (1+6P)  
Realization of design project from E E 418 within time and budget constraints. 
Prerequisite(s)/Corequisite(s): E E 461. Prerequisite(s): C- or better in E E 260, E E 314, E E 351, E E 380, and E E 391 OR (C or better in E E 418).

E E 425. Introduction to Semiconductor Devices  
3 Credits  
Energy bands, carriers in semiconductors, junctions, transistors, and optoelectronic devices, including light-emitting diodes, laser diodes, photodetectors, and solar cells. Taught with E E 525. 
Prerequisite(s): C or better in E E 380 and E E 351.

E E 426. Introduction to Smart Grid  
3 Credits  
The course will serve as an introduction to the technologies and design strategies associated with the Smart Grid. The emphasis will be on the development of communications, energy delivery, coordination mechanisms, and management tools to monitor transmission and distribution networks. Taught with E E 546. Crosslisted with: C S 494. 
Prerequisite(s): C- or better in E E 280.

E E 431. Power Systems II  
3 Credits  
Analysis of a power system in the steady-state. Includes the development of models and analysis procedures for major power system components and for power networks. 
Prerequisites: C or better in E E 391.
E E 432. Power Electronics
3 Credits (2+3P)
Basic principles of power electronics and its applications to power supplies, electric machine control, and power systems.
Prerequisite(s): C or better in E E 380 and E E 391.
Corequisite(s): E E 312 and E E 314.

E E 438. Mobile Application Development
3 Credits
Introduction to mobile application development. Students will develop applications for iOS devices including iPhone and iPad. Topics include object-oriented programming using the Objective-C language, model-view-controller (MVC) pattern, memory management, view controllers, graphical user interface design, callbacks, and web services.
Corequisite(s): E E 161 or C S 172 or C S 271 or C S 450 or C S 451 or C S 452.

E E 443. Mobile Application Development
3 Credits
Introduction to mobile application development. Students will develop applications for iOS devices including iPhone and iPad. Topics include object-oriented programming using Swift, model-view-controller (MVC) pattern, view controllers including tables and navigation, graphical user interface (GUI) design, data persistence, GPS and mapping, camera, and cloud and web services. May be repeated up to 3 credits.
Prerequisite(s): C- or better in C S 172 or C S 177 or C S 187 or C S 271 or C S 451 or C S 452.

E E 446. Digital Image Processing
3 Credits
Two-dimensional transform theory, color images, image enhancement, restoration, segmentation, compression and understanding. Taught with E E 596. Prerequisite(s): E E 395.

E E 447. Neural Signal Processing
3 Credits
Cross-disciplinary course focused on the acquisition and processing of neural signals. Students in this class will learn about basic brain structure, different brain signal acquisition techniques (fMRI, EEG, MEG, etc.), neural modeling, and EEG signal processing. To perform EEG signal processing, students will learn and use Matlab along with an EEG analysis package that sits on top of Matlab. Taught with E E 597.
Prerequisite(s): C- or better in E E 314.

E E 449. Smart Antennas
3 Credits
Smart antenna and adaptive array concepts and fundamentals, uniform and planar arrays, optimum array processing. Adaptive beamforming algorithms and architectures: gradient-based algorithms, sample matrix inversion, least mean square, recursive mean square, sidlobes cancellers, direction of arrival estimations, effects of mutual coupling and its mitigation. Taught with E E 549.
Prerequisite(s): C or better in E E 314 and E E 351.

E E 452. Introduction to Radar
3 Credits
Basic concepts of radar. Radar equation; detection theory. AM, FM, and CW radars. Analysis of tracking, search, MTI, and imaging radar. Taught with E E 548. Restricted to undergraduate students. Pre/Prerequisite(s): C or better in E E 210 and E E 351.
Corequisite(s): E E 496.

E E 453. Microwave Engineering
3 Credits
Techniques for microwave measurements and communication system design, including transmissions lines, waveguides, and components. Microwave network analysis and active device design. Taught with E E 521. Restricted to undergraduate students. Restricted to: Main campus only.
Prerequisite(s): C or better in E E 351.

E E 454. Antennas and Radiation
3 Credits
Basic antenna analysis and design. Fundamental antenna concepts and radiation integrals. Study of wire antennas, aperture antennas, arrays, reflectors, and broadband antennas. Taught with E E 541. Restricted to undergraduate students. Restricted to: Main campus only.
Prerequisite(s): C or better in E E 351.

E E 460. Space System Mission Design and Analysis
3 Credits
Satellite system design, including development, fabrication, launch, and operations. A systems engineering approach to concepts, methodologies, models, and tools for space systems.
Prerequisite: junior standing.

E E 461. Systems Engineering and Program Management
3 Credits
Modern technical management of complex systems using satellites as models. Team projects demonstrate systems engineering disciplines required to configure satellite components.
Prerequisite(s): Junior standing.

E E 469. Communications Networks
3 Credits (2+3P)
Introduction to the design and performance analysis of communications networks with major emphasis on the Internet and different types of wireless networks. Covers network architectures, protocols, standards and technologies; design and implementation of networks; networks applications for data, audio and video; performance analysis. Taught with E E 569.
Prerequisite(s): C or better in E E 162 and (E E 210 or STAT 371).

E E 473. Introduction to Optics
3 Credits
The nature of light, geometrical optics, basic optical instruments, wave optics, aberrations, polarization, and diffraction. Elements of optical radiometry, lasers and fiber optics. Crosslisted with: PHYS 473
Prerequisite(s): PHYS 216G or PHYS 217.

E E 475. Automatic Control Systems
3 Credits
Design and synthesis of control systems using state variable and frequency domain techniques. Compensation, optimization, multi-variable system design techniques.
Prerequisite(s): C or better in E E 314.

E E 476. Computer Control Systems
3 Credits
Representation, analysis and design of discrete-time systems using time-domain and z-domain techniques. Microprocessor control systems.
Prerequisite: C or better in E E 314.
E E 478. Fundamentals of Photonics
4 Credits (3+3P)
Prerequisite(s): PHYS 216G or PHYS 217.

E E 479. Lasers and Applications
4 Credits (3+3P)
Laser operating principles, characteristics, construction and applications. Beam propagation in free space and fibers. Laser diode construction and characteristics. Hands-on laboratory. Taught with E E 529. Crosslisted with: PHYS 479
Prerequisite(s): C or better in E E 351 or PHYS 461.

E E 480. Introduction to Analog and Digital VLSI
4 Credits (3+3P)
Introduction to analog and digital VLSI circuits implemented in CMOS technology. Design of differential amplifiers, opamps, CMOS logic, flip-flops, and adders. Introduction to VLSI fabrication and CAD tools. Crosslisted with: E E 510.
Prerequisite(s): C or better in E E 260 and E E 380.

E E 482. Electronics II
3 Credits
Feedback analysis, application of operational amplifiers, introduction to data converters, analog filters, oscillator circuits.
Prerequisite: C or better in E E 380.

E E 485. Analog VLSI Design
3 Credits (2+3P)
Analysis, design, simulation, layout and verification of CMOS analog building blocks, including references, opamps, switches and comparators. Teams implement a complex analog IC. Taught with E E 523. Restricted to undergraduate students. Restricted to: Main campus only.
Prerequisite(s): C or better in E E 312 and E E 480.

E E 486. Digital VLSI Design
3 Credits
An introduction to VLSI layers. Static and dynamic logic design, memory circuits, arithmetic operators, and digital phase-locked loops. Taught with E E 524. Restricted to undergraduate students.
Prerequisite(s): C or better in E E 260 and E E 380.

E E 486 L. Digital VLSI Design Laboratory
1 Credit
Simulation, schematic capture, layout, and verification using software tools of material presented in E E 486. An introduction to measurement of digital VLSI circuits. Taught with E E 524L. Pre/
Prerequisite(s): C or better in E E 260 and E E 380.
Corequisite(s): E E 486.

E E 490. Selected Topics
1-3 Credits
May be repeated for a maximum of 9 credits. Graduate students may not use credits of E E 490 toward an M.S. or Ph.D. in electrical engineering.
Prerequisite: consent of instructor.

E E 493. Power Systems III
3 Credits
Analysis of a power system under abnormal operating conditions. Topics include symmetrical three-phase faults, theory of symmetrical components, unsymmetrical faults, system protection, and power system stability. Taught with E E 543. Restricted to undergraduate students. Pre/
Prerequisite(s): C or better in E E 391.
Corequisite(s): E E 431.

E E 496. Introduction to Communication Systems
4 Credits (3+3P)
Introduction to the analysis of signals in the frequency and time domains. A study of baseband digital transmission systems and digital/analog RF transmission systems. Introduction to telecom systems as well as satellite systems.
Prerequisite(s): C or better in E E 314.

E E 497. Digital Communication Systems I
3 Credits
Techniques for transmitting digital data over commercial networks. Topics include baseband and bandpass data transmission and synchronization techniques. Taught with E E 581. Recommended foundation: E E 496.
Prerequisite(s): E E 210 and E E 314.

E E 501. Research Topics in Electrical and Computer Engineering
1 Credit
Ethics and methods of engineering research; contemporary research topics in electrical and computer engineering.

E E 5010. Introduction to Analog and Digital VLSI
4 Credits (3+3P)
Introduction to analog and digital VLSI circuits implemented in CMOS technology. Design of differential amplifiers, opamps, CMOS logic, flip-flops, and adders. Introduction to VLSI fabrication and CAD tools. Recommended preparation is E E 260 and E E 380 or equivalent. Taught with E E 480 with differentiated assignments for graduate students.
Crosslisted with: E E 480.

E E 512. ASIC Design
3 Credits (2+3P)
This course provides students with experiential knowledge of modern application specific integrated circuits. Topics include ASIC packaging and testing, I/O pads and ESD, Verilog programming and simulation, FPGA verification, Register-transfer level synthesis, timing and area optimization, floorplanning and routing, digital interfaces, full custom and standard cell design, post-layout simulation, and PCB schematics and layout.
Prerequisite(s): E E 486 or E E 524.

E E 514. Biosensor Electronics
3 Credits
Course provides students with knowledge of basic integrated analog and RF blocks and how to combine these circuits into sensory systems for biomedical applications. Target areas are in physiology, brain-machine interfaces, neural recording and stimulation. Lecture includes details on amplifiers, current-mode circuits, A/D converters, low-power radio transmitters and receivers, and simulation and layout of VLSI circuits. Lectures are in the form of recent paper reviews and discussion. Includes teamwork, written and oral communication, and realistic technical requirements. Pre/
Prerequisite(s): E E 486 OR E E 524.
Corequisite(s): E E 485 OR E E 523.
E E 515. Electromagnetic Theory I
3 Credits
Electromagnetic theory of time-harmonic fields in rectangular, cylindrical and spherical coordinates with applications to guided waves and radiated waves. Induction and equivalence theorems, perturbational and variational principles applied to engineering problems in electromagnetics. Recommended preparation is E E 351 or equivalent. Restricted to: Main campus only.

E E 516. Electromagnetic Theory II
3 Credits
Continuation of E E 515.

E E 518. Integrated Power Management Circuits
3 Credits
Design and analysis of power management integrated circuits, including linear voltage regulators, voltage references, buck, boost, and buck-boost DC-DC converters, and charge pumps. Extensive use of CAD tools are used to simulate these circuits. Pre/
Prerequisite(s): E E 486 or E E 524.
Corequisite(s): E E 485 or E E 523.

E E 519. RF Microelectronics
3 Credits
Prerequisite(s): E E 485 or E E 523.

E E 520. A/D and D/A Converter Design
3 Credits
Practical design of integrated data converters in CMOS/BJT technologies, OP-AMPS, comparators, sample and holds, MOS switches, element mismatches. Nyquist rate converter architectures: flash, successive approximation, charge redistribution, algorithmic, two step, folding, interpolating, pipelined, delta-sigma converters. Restricted to: Main campus only.
Prerequisite(s): E E 523.

E E 521. Microwave Engineering
3 Credits
Techniques for microwave measurements and communication system design, including transmission lines, waveguides, and components. Microwave network analysis and active device design. Recommended preparation is E E 351 or equivalent. Taught with E E 453 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 522. Advanced Analog VLSI Design
3 Credits
Design of high-performance operational amplifiers; class-AB, rail-to-rail, low-voltage, high-bandwidth, fully-differential. Design of linear operational transconductance amplifiers, high-frequency integrated filters, four-quadrant multipliers, and switched-capacitor circuits.
Prerequisite(s): E E 523.

E E 523. Analog VLSI Design
3 Credits (2+3P)
Analysis, design, simulation, layout and verification of CMOS analog building blocks, including references, opamps, switches and comparators. Teams implement a complex analog IC. Recommended preparation is E E 312 and E E 480 or equivalent. Taught with E E 485 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 524. Digital VLSI Design
3 Credits
An introduction to VLSI layers. Static and dynamic logic design, memory circuits, arithmetic operators, and digital phase-locked loops. Taught with E E 486 with differentiated assignments for graduate students. Recommended foundation: E E 260 and E E 380.

E E 524 L. Digital VLSI Design Laboratory
1 Credit
Simulation, schematic capture, layout, and verification using software tools of material presented in E E 524. An introduction to measurement of digital VLSI circuits. Taught with E E 486L with differentiated assignments for graduate students.

E E 525. Introduction to Semiconductor Devices
3 Credits
Energy bands, carriers in semiconductors, junctions, transistors, and optoelectronic devices, including light-emitting diodes, laser diodes, photodetectors, and solar cells. Recommended preparation is E E 380 and E E 351. Taught with: E E 425 with differentiated assignments for graduate students.

E E 528. Fundamentals of Photonics
4 Credits (3+3P)
Ray, wave and guided optics, lasers and thermal sources, radiometry, photon detection and signal-to-noise ratio. Elements of photonic crystals, polarization, acousto-optics, electro-optics, and optical nanostructures. Taught with E E 478 with differentiated assignments for graduate students. Recommended foundation: (PHYS 216 or PHYS 217) and E E/PHYS 473. Crosslisted with: PHYS 528.

E E 529. Lasers and Applications
4 Credits (3+3P)
Laser operating principles, characteristics, construction and applications. Beam propagation in free space and fibers. Laser diode construction and characteristics. Hands-on laboratory. Recommended foundation: E E 351 or PHYS 461. Taught with: E E 479 with differentiated assignments for graduate students. Crosslisted with: PHYS 529

E E 530. Environmental Management Seminar I
1 Credit
Same as CH E 530, C E 530, I E 530.

E E 531. Power System Modeling and Computational Methods
3 Credits
Development and analysis of fast computational methods for efficient solution of large scale power-system problems. Algorithms for constructing the bus impedance matrix; sparse matrix techniques; partial-inverse methods; compensation of mutual coupling. Pre/
Restrict to: Main campus only.
Corequisite(s): E E 543.

E E 532. Dynamics of Power Systems
3 Credits
Transient and dynamic stability of power systems; synchronous machine modeling and dynamics; prediction and stabilization of system oscillations. Recommended preparation is E E 493 or equivalent. Restricted to: Main campus only.

E E 533. Power System Operation
3 Credits
AGC, economic dispatch, unit commitment, operations planning, power flow analysis and network control, system control centers. Recommended preparation is E E 493 or equivalent. Restricted to: Main campus only.
E E 534. Power System Relaying
3 Credits
Fundamental relay operating principles and characteristics. Current, voltage, directional, differential relays; distance relays; pilot relaying schemes. Standard protective schemes for system protection. Operating principles and overview of digital relays. Recommended preparation is E E 493 or equivalent.

E E 537. Power Electronics
3 Credits (2+3P)
Basic principles of power electronics and its applications to power supplies, electric machine control, and power systems. Recommended preparation is E E 314, E E 380, and E E 391. Taught with E E 432 with differentiated assignments for graduate students.

E E 541. Antennas and Radiation
3 Credits
Basic antenna analysis and design. Fundamental antenna concepts and radiation integrals. Study of wire antennas, aperture antennas, arrays, reflectors, and broadband antennas. Recommended preparation is E E 351 or equivalent. Taught with E E 454 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 542. Power Systems II
3 Credits
Analysis of a power system in the steady-state. Includes the development of models and analysis procedures for major power system components and for power networks. Recommended preparation is E E 493 or equivalent. Taught with E E 431 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 543. Power Systems III
3 Credits
Analysis of a power system under abnormal operating conditions. Topics include symmetrical three-phase faults, theory of symmetrical components, unsymmetrical faults, system protection, and power system stability. Recommended preparation is E E 431 or equivalent. Taught with E E 493 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 544. Distribution Systems
3 Credits
Concepts and techniques associated with the design and operation of electrical distribution systems. Recommended preparation is E E 542 and E E 543. Taught with E E 494 with differentiated assignments for graduate students.

E E 545. Digital Signal Processing II
3 Credits
Non-ideal sampling and reconstruction, oversampling and noise shaping in A/D and D/A, finite word length effects, random signals, spectral analysis, multirate filter banks and wavelets, and applications. Recommended preparation is E E 395 or equivalent. Restricted to: Main campus only.

E E 546. Introduction to Smart Grid
3 Credits
The course will serve as an introduction to the technologies and design strategies associated with the Smart Grid. The emphasis will be on the development of communications, energy delivery, coordination mechanisms, and management tools to monitor transmission and distribution networks. Taught with E E 426. Crosslisted with: C S 514.

E E 548. Introduction to Radar
3 Credits
Basic concepts of radar. Radar equation; detection theory, AM, FM, and CW radars. Analysis of tracking, search, MTI, and image radar. Recommended preparation is E E 310, E E 351, and E E 496 or equivalent. Taught with E E 452 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 549. Smart Antennas
3 Credits
Smart antenna and adaptive array concepts and fundamentals, uniform and planar arrays, optimum array processing. Adaptive beamforming algorithms and architectures: gradient-based algorithms, sample matrix inversion, least mean square, recursive least mean square, sidelobes cancellers, direction of arrival estimations, effects of mutual coupling and its mitigation. Taught with E E 449. Recommended foundation is E E 314 and E E 351.

E E 551. Control System Synthesis I
3 Credits
An advanced perspective of linear modern control system analysis and design, including the essential algebraic, structural, and numerical properties of linear dynamical systems.

E E 552. Control System Synthesis II
3 Credits
An overview of optimal controls for linear dynamical systems, analysis and design of control systems using Lyapunov techniques, control system design using semidefinite programming. An introduction to stochastic filtering and control.

E E 555. Advanced Linear Systems
3 Credits
Advanced level study of linear systems and associated mathematical tools including linear equations, spectral theory, normal matrices, projections, quadratic forms, discrete and continuous time dynamical systems. Recommended preparation is MATH 480 or equivalent. Restricted to: Main campus only.

E E 563. Computer Performance Analysis I
3 Credits
Issues involved and techniques used to analyze performance of a computer system. Topics covered include computer system workloads; statistical analysis techniques such as principal component analysis, confidence interval, and linear regression; design and analysis of experiments; queuing system analysis; computer system simulation; and random number generation. Recommended foundation: E E 210 and E E 363.

E E 564. Advanced Computer Architecture I
3 Credits
Multiprocessor and distributed computer architectures; models of parallel computation; processing element and interconnection network structures, and nontraditional architectures. Recommended preparation is E E 363 or equivalent. Crosslisted with: C S 573.

E E 565. Pattern Recognition and Machine Learning
3 Credits
Statistical pattern classification, supervised and unsupervised learning, feature selection and extraction, clustering, image classification and syntactical pattern recognition. Recommended preparation is E E 210 or equivalent probability and statistics and linear algebra courses.
E E 567. ARM SOC Design
3 Credits
The course aims to produce students who are capable of developing ARM-based SoCs from high level functional specifications to design, implementation and testing on real FPGA hardware using standard hardware description and software programming languages.
Prerequisite(s): C+ or higher in E E 512.

E E 569. Communications Network
3 Credits (2+3P)
Introduction to the design and performance analysis of communications networks with major emphasis on the Internet and different types of wireless networks. Covers network architectures, protocols, standards and technologies; design and implementation of networks; networks applications for data, audio and video; performance analysis. Taught with E E 469. Recommended foundation is E E 162 and (E E 210 or STAT 371).

E E 571. Random Signal Analysis
3 Credits
Application of probability and random variables to problems in communication systems, analysis of random signal and noise in linear and nonlinear systems.

E E 572. Modern Coding Theory
3 Credits
Error control techniques for digital transmission and storage systems. Introduction to basic coding bounds, linear and cyclic block codes, Reed-Solomon codes, convolutional codes, maximum likelihood decoding, maximum a posteriori probability decoding, factor graphs, low density parity check codes, turbo codes, iterative decoding. Applications to data networks, space and satellite transmission, and data modems. Recommended foundation is E E 210 and E E 496.

E E 573. Signal Compression
3 Credits
Fundamentals of information source encoding and decoding. Includes information theory bounds on source coding, lossless coding algorithms, scalar quantizing and vector quantizing.
Prerequisite: E E 571.

E E 574. Fourier Methods in Electro-Optics
3 Credits
Linear systems theory, convolution and Fourier transformation are applied to one-dimensional and two dimensional signals encountered in electro-optical systems. Applications in diffraction, coherent and incoherent imaging, and optical signal processing. Recommended foundation: E E 312 and E E 528. Crosslisted with: PHYS 577

E E 578. Optical System Design
3 Credits
Optical design software is used to study optical systems involving lenses, mirrors, windows and relay optics. Systems considered include camera lenses, microscopes and telescopes. Recommended foundation: E E/PHYS 473, E E/PHYS 528 and E E/PHYS 577. Crosslisted with: PHYS 578.

E E 581. Digital Communication Systems I
3 Credits
Techniques for transmitting digital data over commercial networks. Topics include baseband and bandpass data transmission and synchronization techniques. Recommended foundation is E E 210, E E 314, and E E 496. Taught with E E 497.

E E 583. Wireless Communication
3 Credits
Cellular networks, wireless channels and channel models, modulation and demodulation, MIMO, diversity and multiplexing, OFDM, wireless standards including LTE and WiMAX. Recommended foundation: E E 571 or equivalent.
Prerequisite(s): E E 314 or E E 571.

E E 584. Mathematical Methods for Communications and Signal Processing
3 Credits
Applications of mathematical techniques from estimation theory, optimization principles and numerical analysis to the problems in communications and signal processing.
Prerequisites: E E 571 and E E 555 or knowledge of linear algebra.

E E 585. Telemetering Systems
3 Credits
Covers the integration of components into a command and telemetry system. Topics include analog and digital modulation formats, synchronization, link effects, and applicable standards. Recommended preparation is E E 395, E E 496, and E E 497, or equivalent. Restricted to Main campus only.

E E 586. Information Theory
3 Credits
This class is a study of Shannon’s measure of information and discusses mutual information, entropy, and channel capacity, the noiseless source coding theorem, the noisy channel coding theorem, channel coding and random coding bounds, rate-distortion theory, and data compression. Restricted to Main campus only. Crosslisted with: MATH 509
Prerequisite(s): E E 571 or STAT 515.

E E 590. Selected Topics
1-9 Credits
May be repeated for a maximum of 18 credits.

E E 593. Mobile Application Development
3 Credits
Introduction to mobile application development. Students will develop applications for iOS devices including iPhone and iPad. Topics include object-oriented programming using Swift, model-view-controller (MVC) pattern, view controllers including tables and navigation, graphical user interface (GUI) design, data persistence, GPS and mapping, camera, and cloud and web services. Taught with E E 443 with differentiated assignments for graduate students. Recommended foundation is C++ or Java programming course. May be repeated up to 3 credits.

E E 596. Digital Image Processing
3 Credits
Two-dimensional transform theory, color images, image enhancement, restoration, registration, segmentation, compression and understanding. Recommended foundation is E E 571. Taught with E E 446.

E E 597. Neural Signal Processing
3 Credits
Cross-disciplinary course focused on the acquisition and processing of neural signals. Students in this class will be learn about basic brain structure, different brain signal acquisition techniques (fMRI, EEG, MEG, etc.), neural modeling, and EEG signal processing. To perform EEG signal processing, students will learn and use Matlab along with an EEG analysis package that sits on top of Matlab. Taught with E E 447.
E E 598. Master's Technical Report
9 Credits
Individual investigation, either analytical or experimental, culminating in a technical report. May be repeated for a maximum of 18 credits. Graded PR/S/U.

E E 599. Master's Thesis
15 Credits
Thesis.

E E 600. Doctoral Research
1-15 Credits
Research.

E E 615. Computational Electromagnetics
3 Credits
The numerical solution of electromagnetics problems. Topics include differential equation techniques, integral equation methods, hybrid techniques, algorithm development and implementation, and error analysis. Particular algorithms, including FEM, finite differences, direct solvers, and iterative solvers, are studied.

E E 690. Selected Topics
1-9 Credits
May be repeated for a maximum of 9 credits.

E E 700. Doctoral Dissertation
15 Credits
Dissertation.

Name: The Klipsch School of Electrical and Computer Engineering

Office Location: Thomas and Brown Hall, Rm 106
1125 Frenger Mall
Las Cruces, NM 88003

Phone: (575) 646-3115

Website: http://ece.nmsu.edu/

Computer Engineering - Undergraduate Minor
(26-27 Credits)
Prerequisites (All may be transferred)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
</tbody>
</table>

Lower Division (all may be transferred)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>E E 100</td>
<td>Introduction to Electrical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>E E 112</td>
<td>Embedded Systems</td>
<td>4</td>
</tr>
<tr>
<td>or C S 172</td>
<td>Computer Science I</td>
<td></td>
</tr>
<tr>
<td>E E 212</td>
<td>Introduction to Computer Architecture and Organization</td>
<td>4</td>
</tr>
<tr>
<td>or C S 273</td>
<td>Machine Programming and Organization</td>
<td></td>
</tr>
<tr>
<td>C S 271</td>
<td>Object Oriented Programming</td>
<td>4</td>
</tr>
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</table>

Upper Division (no transfer credits accepted)

<table>
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<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>E E 363</td>
<td>Computer Systems Architecture (EE 363 is 4 credits)</td>
<td>3</td>
</tr>
<tr>
<td>or C S 473</td>
<td>Architectural Concepts I</td>
<td></td>
</tr>
<tr>
<td>C S 371</td>
<td>Software Development</td>
<td>4</td>
</tr>
</tbody>
</table>

C S 484  | Computer Networks I                 | 3       |

Total Credits 26

Electrical Engineering - Bachelor of Science in Electrical Engineering

Electrical Engineering Program Educational Objectives

The Klipsch School is dedicated to providing a quality, hands-on, educational experience for our students. Below are the program educational objectives (PEOs) that describe the expected accomplishments of graduate during their first few years after graduation.

1. Our graduates will obtain relevant, productive employment in the private sector, government and/or pursue an advanced degree.
2. Our graduates will be using their engineering foundation to innovate solutions to the problems of the real world.

Requirements (120 credits)

General Education

State of New Mexico Common Core

Area I: Communications

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
</tbody>
</table>

Written Communications Elective 1

Oral Communications Elective 1

Area II: Mathematics

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
</tbody>
</table>

Area III: Natural Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 215G</td>
<td>Engineering Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 215GL</td>
<td>Engineering Physics I Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts

Select 15 total credits from Area IV and V, with at least 6 credits from each area. 1

Area IV: Social and Behavioral Sciences:

Select 6-9 credits from Economics, Political Science, Psychology, Sociology, and Anthropology electives 1

Area V: Humanities and Fine Arts:

Select 6-9 credits from History, Philosophy, Literature, Art, Music, Dance, Theater, or Foreign Language electives 1

Institution Specific General Education

Viewing a Wider World Electives (PHIL 323V strongly recommended) 1

Program Specific Requirements

Mathematics and Natural Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 392</td>
<td>Introduction to Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 216G</td>
<td>Engineering Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 216GL</td>
<td>Engineering Physics II Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>
Concentration Course List

Communications and Signal Processing (11 credits)

Required:
- E E 395 Introduction to Digital Signal Processing 3
- E E 496 Introduction to Communication Systems 4

Choose two:
- E E 446 Digital Image Processing
- E E 447 Neural Signal Processing
- E E 460 Space System Mission Design and Analysis
- E E 469 Communications Networks
- E E 497 Digital Communication Systems I

Computers and Microelectronics (11 credits)

Required:
- E E 363 Computer Systems Architecture 4
- E E 480 Introduction to Analog and Digital VLSI 4

Choose one:
- E E 425 Introduction to Semiconductor Devices
- E E 443 Mobile Application Development
- E E 469 Communications Networks
- E E 482 Electronics II
- E E 485 Analog VLSI Design
- E E 486 Digital VLSI Design

Control and Power (11 credits)

Required:
- E E 431 Power Systems II 3
- E E 475 Automatic Control Systems 3

Choose two:
- E E 426 Introduction to Smart Grid
- E E 432 Power Electronics
- E E 476 Computer Control Systems
- E E 493 Power Systems III

Electromagnetics and Photonics (11 credits)

Required:
- E E 454 Antennas and Radiation 3
- E E 473 Introduction to Optics 3

Choose two:
- E E 425 Introduction to Semiconductor Devices
- E E 449 Smart Antennas
- E E 452 Introduction to Radar
- E E 453 Microwave Engineering
- E E 478 Fundamentals of Photonics
- E E 479 Lasers and Applications

The Freshman Year

Incoming freshmen are expected to be eligible for MATH 191G Calculus and Analytic Geometry I. A typical first year of study for E E students includes the following 30 credits:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E E 100</td>
<td>Introduction to Electrical Engineering</td>
<td>4</td>
</tr>
</tbody>
</table>
ENGR 100 Introduction to Engineering 3
ENGL 111G Rhetoric and Composition 4
MATH 191G Calculus and Analytic Geometry I 4

Credits 15

Spring
CHEM 111G General Chemistry I 4
E E 112 Embedded Systems 4
MATH 192G Calculus and Analytic Geometry II 4
General Education Requirement from either Area I or IV 3

Credits 15
Total Credits 30

1 Eligibility for MATH 191G Calculus and Analytic Geometry I must be established with AP Calculus credit or by taking the Math Placement Exam, administered by the Math Learning Center.

Related Areas of Study
Electrical and computer engineering students wishing to broaden their educational experience may elect to earn additional bachelor's degrees in:

- Engineering Physics or Physics
- Mathematics
- Computer Science

Klipsch School students may also choose to earn a minor in one or more of the following fields:

- Computer Engineering
- Physics
- Mathematics
- Computer Science

Students must consult with an academic advisor in the offering department for specific requirements related to additional degrees and minors.

Dual Degree (BS/MS) Program
This program option is designed to provide a means for ECE undergraduates to obtain both a BSEE and a MSEE degree with 144 credit hours of coursework (normally: BSEE = 120 hours, MSEE = 30 hours; total =150 hours). Students electing this option will follow the existing undergraduate curriculum for the first six semesters. In the final undergraduate year, two graduate courses (>500 level) will be taken in lieu of two E E concentration courses. The student receives a BSEE degree at this point. A MSEE program can be completed with 24 additional credit hours. Students must obtain prior approval of the department before starting this program option.

Transfer Credit
Credit earned at other institutions is generally accepted; however the following restrictions apply to transfer credits:

- Engineering credit must be earned at an ABET accredited school.
- Physics must be calculus based.
- If the NMSU requirement includes a lab, the transfer credit must include a lab.
- A grade of C-, or better, must have been earned.

- E E Concentration Courses, Cornerstone and Capstone courses may not be transferred.
- Upper division E E core classes can only receive transfer credit after review and approval of the course area faculty.

Electrical Engineering - Doctor of Philosophy
Requirements for Ph.D. Degree
The Program Educational Objectives for the Doctorate in Electrical Engineering are:

1. That graduates obtain relevant, productive employment performing research in academia, government or industry, and/or are teaching at institutions of higher education.
2. That graduates obtain relevant, productive employment with the private sector or in government and/or pursue additional advanced degrees.

The Ph.D. program is open to students with a master's degree. Exceptionally well qualified students may petition for direct entry to the Ph.D. program without first obtaining a master’s degree.

Option 1 - Ph.D. with Completed MS Degree
1. Complete undergraduate deficiency coursework, if the student admitted has both master's and bachelor's degrees in fields other than electrical engineering. Complete graduate deficiency coursework, which consists of three graduate core courses from three different areas of emphasis, if the student has a master’s degree in a field other than electrical engineering.
2. Complete a minimum of 18 credits beyond the master’s of graduate course work with the following restrictions:
   a. E E courses must be numbered 500 or higher. Non-E E courses must be 450 or higher.
   b. At least half of the 18 credits must be taken in the Klipsch School (E E).
   c. At most 6 credits may be research, for example, E E 600 Doctoral Research, and E E 590 Selected Topics courses that are not listed as regular courses in the schedule.
   e. If the MS degree is not E E, exclude credits from graduate deficiency coursework.

Option 2 - Direct Ph.D. with BSEE or Equivalent, but no MS Degree
1. Complete three graduate core courses.
2. Complete a minimum of 42 credits of graduate coursework, including the three graduate core courses with the following restrictions:
   a. At least half of the 42 credits must be numbered 500 or higher.
   b. At least half of the 42 credits must be taken in the Klipsch School (E E).
   c. At most 9 credits may be research, for example, E E 600 Doctoral Research, and E E 590 Selected Topics courses that are not listed as regular courses in the schedule.
   e. Courses excluded from the MSEE are also excluded from the Ph.D. program.
f. At least half of the credits must be taken with other than a single professor.

**Common Requirements for all Ph.D. Candidates**

1. Participate in one semester of research seminars (E E 501 Research Topics in Electrical and Computer Engineering, 1 credit)
2. Take and pass the Ph.D. qualifying exam.
3. Pass a comprehensive examination. The examination must be part written and part oral. The specific format of the exam is at the discretion of the examination committee. It may cover course work, include a proposal for dissertation research, and may be preceded by a written exam.
5. Submit evidence for a minimum of two publications related to the dissertation research, one of which is submitted to an internationally-recognized journal, such as IEEE Transactions, and the second of which may be with a professional conference, such as an IEEE conference. Submissions must be completed prior to the final oral exam.¹
6. Pass a final oral exam which defends the dissertation.

Other limitations and requirements that apply to all Ph.D. degrees are described elsewhere in this catalog.

**Ph.D. Qualifying Exam**

The Ph.D. Qualifying Exam is typically offered on the Monday just prior to the beginning of each semester. The format is one half day written exam. The examination indicates a readiness for research at the graduate level. Students answer a total of six questions with two coming from each of three areas of emphasis. Taking three graduate core courses (listed in the MSEE program) prepares students for the Ph.D. qualifying exam.

PhD candidates in the College of Engineering, who have successfully completed their PhD Qualifier Examination after January 1, 2018, must satisfy a publication requirement which requires two papers:

Paper #1: An archival paper accepted or published in any journal listed in the source publication list for the Web of Science, or a refereed Journal or Conference Proceeding approved by the student’s doctoral committee and the cognizant Department Head(s), before the Doctorate of Philosophy final examination. The candidate should be listed as the lead author in Paper #1.

Paper #2: An additional archival paper submitted, accepted, or published in any journal listed in the source publication list for the Web of Science. Alternatively, one conference paper accepted or published in a national or international conference proceedings.

**Graduate Core Courses and Breadth Electives**

The MSEE program requires students to participate in one semester of research seminars (E E 501 Research Topics in Electrical and Computer Engineering, 1 credit) and take two graduate core courses from two different areas of emphasis. In addition, either a third graduate core course or one graduate breadth course must be taken from a third area of emphasis. If a student wishes to pursue a Ph.D., the third class should come from the core class list as preparation for the Ph.D. qualifying exam. The graduate core courses, specialty areas and credits are listed below for the Graduate Core Courses and the Graduate Breadth Electives.

**Graduate Core Courses**

<table>
<thead>
<tr>
<th>Electromagnetics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E E 515 Electromagnetic Theory I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Microelectronics/VLSI**

<table>
<thead>
<tr>
<th>Analog VLSI Design</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>E E 523</td>
<td></td>
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</table>

**Photonics**

<table>
<thead>
<tr>
<th>Fundamentals of Photonics</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>E E 528 or E E 529 Lasers and Applications</td>
<td></td>
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</tbody>
</table>

**Electric Energy Systems**

<table>
<thead>
<tr>
<th>Power Systems III</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>E E 543</td>
<td></td>
</tr>
</tbody>
</table>

**Digital Signal Processing**

<table>
<thead>
<tr>
<th>Digital Signal Processing II</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>E E 545</td>
<td></td>
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</tbody>
</table>

**Control Systems**

<table>
<thead>
<tr>
<th>Control System Synthesis I</th>
<th>3</th>
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<tbody>
<tr>
<td>E E 551</td>
<td></td>
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</tbody>
</table>

**Computer Engineering**

<table>
<thead>
<tr>
<th>Computer Performance Analysis I</th>
<th>3</th>
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<tbody>
<tr>
<td>E E 563 or E E 564 Advanced Computer Architecture I</td>
<td></td>
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</tbody>
</table>

**Communications**

<table>
<thead>
<tr>
<th>Random Signal Analysis</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>E E 571</td>
<td></td>
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</tbody>
</table>

**Total Credits**

| 25 |

**Graduate Breadth Electives**

**Microelectronics/VLSI**

<table>
<thead>
<tr>
<th>ASIC Design</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>E E 512</td>
<td></td>
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</tbody>
</table>

**Electric Energy Systems**

<table>
<thead>
<tr>
<th>Power Electronics</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>E E 537</td>
<td></td>
</tr>
</tbody>
</table>
Electromagnetics
E E 541 Antennas and Radiation 3

Control Systems and Digital Signal Processing
E E 555 Advanced Linear Systems 3

Communications
E E 581 Digital Communication Systems I 3

Excluded Courses
Credits from the following courses do not count toward a E E degree:
C S 450 C Programming 3
C S 451 C++ Programming 3
C S 452 Java Programming 3
C S 453 PYTHON PROGRAMMING I 3
C S 455 Internet Programming I 3
C S 458 R Programming I 3
C S 460 Computer Science I Transition 3
C S 462 Object Oriented Programming Transition 3
C S 463 Introduction to Data Structures Transition 3
C S 464 Machine Programming and Organization Transition 3
C S 465 Discrete Math for Computer Science Transition 3
C S 466 Compilers and Automata Transition 3
C S 468 Software Development Transition 3
C S 469 Data Structure and Algorithms Transition 3
COMM 485 International Teaching Assistant Development 3
E E 490 Selected Topics 1-3
SPCD 458 Advanced Speaking and Listening for International Graduate Students 3
SPCD 470 Scholarly Writing for International Graduate Students 3

Credits of E E 590 Selected Topics, are limited to a total of 9, of which at most 6 may be credits for courses that don’t appear as regular classes in the printed schedule. Each area of specialization may have additional requirements for students in those areas. Other limitations and requirements that apply to all master’s degrees are described elsewhere in this catalog.

Electrical Engineering - Undergraduate Minor
(27 Credits)
The Electrical Engineering minor is not available to students majoring in Electrical Engineering.

Prerequisites (all may be transferred)
CHEM 111G General Chemistry I 4
MATH 191G Calculus and Analytic Geometry I 4
MATH 192G Calculus and Analytic Geometry II 4
MATH 392 Introduction to Ordinary Differential Equations 3

PHYS 215G Engineering Physics I 3
PHYS 216G Engineering Physics II 3

Lower Division (all may be transferred)
E E 100 Introduction to Electrical Engineering 4
E E 112 Embedded Systems 4
E E 200 Linear Algebra, Probability and Statistics Applications 4
E E 230 AC Circuit Analysis and Introduction to Power Systems 4

Upper Division (no transfer credit accepted)
E E 312 Signals and Systems I 3
E E 380 Semiconductor Devices and Electronics 4
E E Elective 1 4

Total Credits 27

1 List of approved electives can be found at the ECE website (http://ece.nmsu.edu). Certain electives may require additional pre-requisites.

Engineering Physics
Undergraduate Program Information
The Engineering Physics program is offered jointly by the Department of Physics and the College of Engineering. The faculty is drawn from the Departments of Physics, Chemical and Materials Engineering, Electrical and Computer Engineering, and Mechanical & Aerospace Engineering.

Degrees for the Department
Engineering Physics - Bachelor of Science in Engineering Physics (p. 568)

Professor, Stefan Zollner, Department Head

Professor, Heinz Nakotte, Engineering Physics Program Head

PHYS 110G. The Great Ideas of Physics
4 Credits (3+3P)
Conceptual, quantitative, and laboratory treatments of the great ideas and discoveries that have influenced lives and changed perceptions of nature, from Johannes Kepler’s laws of planetary motion and Isaac Newton’s and Albert Einstein’s laws of motion and gravity to the modern concepts of the quantal structure of nature and the big bang universe.

PHYS 120G. Introduction to Acoustics
4 Credits (3+2P)
Lecture, demonstration, and laboratory treatment of the general properties of waves, the production, transmission, and reception of sound waves, including musical and vocal sounds, and characteristics of the human ear and several kinds of sources.

PHYS 150. Elementary Computational Physics
3 Credits (2+2P)
Introduction to computational techniques for the solution of physics-related problems.

Prerequisite: a C- or better in MATH 121G.
PHYS 203. Supplemental Instruction to PHYS 213
0.5-1 Credits (.5-1)
Optional workshop as a supplement to PHYS 213. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.
Corequisite(s): PHYS 213.

PHYS 204. Supplemental Instruction to PHYS 214
0.5-1 Credits (.5-1)
Optional workshop as a supplement to PHYS 214. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.
Corequisite(s): PHYS 214.

PHYS 205. Supplemental Instruction to PHYS 215G
0.5-1 Credits (.5-1)
Optional workshop as a supplement to PHYS 215G. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.
Corequisite(s): PHYS 215G.

PHYS 206. Supplemental Instruction to PHYS 216G
0.5-1 Credits (.5-1)
Optional workshop as a supplement to PHYS 216G. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.
Corequisite(s): PHYS 216G.

PHYS 211G. General Physics I
3 Credits
Non-calculus treatment of mechanics, waves, sound, and heat. Knowledge of simple algebra and trigonometry is required.

PHYS 211GL. General Physics I Laboratory
1 Credit
Laboratory experiments in topics associated with material presented in PHYS 211G.
Prerequisite(s)/Corequisite(s): PHYS 211G.

PHYS 212G. General Physics II
3 Credits
Non-calculus treatment of electricity, magnetism, and light.
Prerequisite(s): PHYS 211G or PHYS 221G.

PHYS 212GL. General Physics II Laboratory
1 Credit
Laboratory experiments in topics associated with material presented in PHYS 212G.
Prerequisite(s)/Corequisite(s): PHYS 212G.

PHYS 213. Mechanics
3 Credits
Newtonian mechanics. Pre/
Corequisite(s): MATH 191G.

PHYS 213 L. Experimental Mechanics
1 Credit
Laboratory experiments associated with the material presented in PHYS 213. Science majors. Pre/
Corequisite(s): PHYS 213.

PHYS 214. Electricity and Magnetism
3 Credits
Charges and matter, the electric field, Gauss law, the electric potential, the magnetic field, Ampère's law, Faraday's law, electric circuits, alternating currents, Maxwell's equations, and electromagnetic waves. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 192G. Prerequisite(s): a C- or better in PHYS 213 or PHYS 215G.

PHYS 214 L. Electricity and Magnetism Laboratory
1 Credit
Laboratory experiments associated with the material presented in PHYS 214.
Prerequisite(s)/Corequisite(s): PHYS 214. Prerequisite(s): a C- or better in PHYS 213L or PHYS 215GL.

PHYS 215G. Engineering Physics I
3 Credits
Calculus-level treatment of kinematics, work and energy, particle dynamics, conservation principles, simple harmonic motion. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in MATH 191G.

PHYS 215GL. Engineering Physics I Laboratory
1 Credit
Laboratory experiments associated with the material presented in PHYS 215G. Students wishing to use the PHYS 215G-216G sequence to satisfy the basic natural science general education requirement must register for either PHYS 215GL or PHYS 216GL. Pre/
Corequisite(s): PHYS 215G.

PHYS 216G. Engineering Physics II
3 Credits
A calculus-level treatment of topics in electricity, magnetism, and optics. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in PHYS 213 or PHYS 215G and MATH 192G.

PHYS 216GL. Engineering Physics II Laboratory
1 Credit
Laboratory experiments associated with the material presented in PHYS 216G.
Prerequisite(s)/Corequisite(s): PHYS 216G. Prerequisite(s): A C- or better in PHYS 213L or PHYS 215GL.

PHYS 217. Heat, Light, and Sound
3 Credits
Calculus-level treatment of thermodynamics, geometrical and physical optics, and sound. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in PHYS 213 or PHYS 215G.

PHYS 217 L. Experimental Heat, Light and Sound
1 Credit
Laboratory experiments associated with the material presented in PHYS 217. Science majors.
Prerequisite(s)/Corequisite(s): PHYS 217. Prerequisite(s): a C- or better in PHYS 213L or PHYS 215GL.

PHYS 221G. General Physics for Life Sciences I
3 Credits
This algebra-based introduction to general physics covers mechanics, waves, sound, and heat. Special emphasis is given to applications in the life sciences. This course is recommended for students in the life sciences and those preparing for the physics part of the MCAT.
Prerequisites: a C or better in MATH 120 or higher.
PHYS 221GL. Laboratory to General Physics for Life Science I
1 Credit
Laboratory experiments in topics associated with material presented in PHYS 221G.
Prerequisite(s)/Corequisite(s): PHYS 221G. Restricted to Las Cruces campus only.

PHYS 222G. General Physics for Life Sciences II
3 Credits
This algebra-based course covers electricity, magnetism, light, atomic physics, and radioactivity. Special emphasis is given to applications in the life sciences. This course is recommended for students in the life sciences and those preparing for the physics part of the MCAT.
Prerequisite: PHYS 211G or PHYS 221G.

PHYS 222GL. Laboratory to General Physics for Life Sciences II
1 Credit
Laboratory experiments in topics associated with material presented in PHYS 222G.
Prerequisite(s)/Corequisite(s): PHYS 222G. Restricted to Las Cruces campus only.

PHYS 223. Supplemental Instruction to PHYS 221
1 Credit
This optional workshop supplements Physics for Life Sciences I. The tutorial sessions focus on reasoning and hands-on problem solving.
Corequisite(s): PHYS 221G.

PHYS 224. Supplemental Instruction to PHYS 222
1 Credit
This optional workshop is a supplement to Physics for Life Science II. The tutorial sessions focus on reasoning and hands-on problem solving.
Corequisite(s): PHYS 222G.

PHYS 280. Independent Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

PHYS 290. Special Topics
1-3 Credits
Topics to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

PHYS 303V. Energy and Society in the New Millennium
3 Credits
Traditional and alternative sources of energy. Contemporary areas of concern such as the state of depletion of fossil fuels; nuclear energy, solar energy, and other energy sources; environmental effects; nuclear weapons; and health effects of radiation. Discussion of physical principles and impact on society. Focus on scientific questions involved in making decisions in these areas. No physics background required.

PHYS 304. Forensic Physics
4 Credits (3+3P)
Theories, laboratory, and field techniques in the area of forensic physics.

PHYS 305V. The Search for Water in the Solar System
3 Credits
Examines the formation, abundance and ubiquity of water in our Solar System stemming from comets, Martian and Lunar poles, Earth's interior and into the outer reaches of the Solar System. Topics will include nuclear synthesis, Solar System formation, remote sensing, as well as past, present and future NASA missions for water.

PHYS 315. Modern Physics
3 Credits
An introduction to relativity and quantum mechanics, with applications to atoms, molecules, solids, nuclei, and elementary particles. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in MATH 291 and PHYS 214 or PHYS 216G.

PHYS 315 L. Experimental Modern Physics
3 Credits (1+6P)
Elementary laboratory in modern physics which supports the subject matter in PHYS 315. Required for physics majors. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): PHYS 315. Prerequisite(s): a C- or better in PHYS 214L or 216GL.

PHYS 350. Special Topics
1-3 Credits
Lectures, demonstrations, and discussions on such topics as lasers and holography, energy sources, clouds, and biophysics. May be repeated for a maximum of 12 credits under different subtitles.

PHYS 380. Individual Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

PHYS 395. Intermediate Mathematical Methods of Physics
3 Credits
Introduction to the mathematics used in intermediate-level physics courses. Topics include vector calculus, curvilinear coordinates, matrices, linear algebra, function spaces, partial differential equations, and special functions. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 392. Prerequisite(s): a C- or better in MATH 291G.

PHYS 400. Undergraduate Research
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

PHYS 420. Capstone Project I
3 Credits
Application of engineering physics principles to a significant design project. Includes teamwork, written and oral communication and realistic technical, economic and public safety requirements.

PHYS 421. Capstone Project II
3 Credits
Continuation of PHYS 420.

PHYS 450. Selected Topics
1-3 Credits
Readings, lectures or laboratory studies in selected areas of physics. May be repeated for a maximum of 12 credits.

PHYS 451. Intermediate Mechanics I
3 Credits
Vector calculus, Lagrangian and Hamiltonian formulations of Newtonian mechanics. Topics include central force motion, dynamics of rockets and space vehicles, rigid body motion, noninertial reference frames, oscillating systems, relativistic mechanics, classical scattering, and fluid mechanics. Pre/Prerequisite(s): PHYS 213 or PHYS 215G, and MATH 291G.
Corequisite(s): MATH 392.
PHYS 454. Intermediate Modern Physics I
3 Credits
Introduction to quantum mechanics, focusing on the role of angular momentum and symmetries, with application to many atomic and subatomic systems. Specific topics include intrinsic spin, matrix representation of wave functions and observables, time evolution, and motion in one dimension. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 392 and PHYS 395. Prerequisite(s): a C- or better in PHYS 315.

PHYS 455. Intermediate Modern Physics II
3 Credits
Continuation of subject matter of PHYS 454. Specific topics include rotation and translation in three dimensions, solution of central potential problems, perturbation theory, physics of identical particles, scattering theory, and the interaction between photons and atoms. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in PHYS 454.

PHYS 461. Intermediate Electricity and Magnetism I
3 Credits
The first part of a two-course sequence in classical electrodynamics. Covered topics include static electric and magnetic fields, Laplace's and Poisson's equations, electromagnetic work and energy, Lorentz force, Gauss's, Biot-Savart, and Ampere's laws, Maxwell's equations, as well as electric and magnetic fields in matter. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 392 and PHYS 395. Prerequisite(s): a C- or better in PHYS 214 or PHYS 216G or equivalent and a C- or better in MATH 291G.

PHYS 462. Intermediate Electricity and Magnetism II
3 Credits
Continuation of subject matter of PHYS 461. Covered topics include Maxwell's equations and their applications, electromagnetic waves, reflection, refraction, dispersion, radiating systems, interference and diffraction, as well as Lorentz transformations and relativistic electrodynamics. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in PHYS 461.

PHYS 467. Nanoscience and Nanotechnology
3 Credits
See CHME 467. Crosslisted with: CHME 467.
Prerequisite(s): CHEM 112 and (PHYS 211 or PHYS 215) and (EH&S Safety training to include the courses: (1) Employee & Hazard Communication Safety (HazCom); (2) Hazardous Waste Management; and (3) Laboratory Standard.

PHYS 468. Intermediate X-ray Diffraction
3 Credits
Introduction to x-ray diffraction and reflectivity spectra. Topics include X-ray sources and detectors, atomic spectra, characteristic x-rays, thermionic emission, synchrotron radiation, instrument components, and beam conditioners. Crosslisted with: CHME 488.
Prerequisite(s): a C- or better in PHYS 315 and PHYS 315L.

PHYS 471. Modern Experimental Optics
3 Credits (1+6P)
Advanced laboratory experiments in optics related to the material presented in PHYS 473.
Prerequisite(s): PHYS 315 and PHYS 315L.

PHYS 473. Introduction to Optics
3 Credits
The nature of light, Geometrical optics, basic optical instruments, wave optics, aberrations, polarization, and diffraction. Elements of optical radiometry, lasers and fiber optics. Crosslisted with: E E 473
Prerequisite(s): PHYS 216G or PHYS 217.

PHYS 475. Advanced Physics Laboratory
1-3 Credits (1+6P)
Advanced undergraduate laboratory involving experiments in atomic, molecular, nuclear, and condensed-matter physics. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in PHYS 315 and 315L.

PHYS 476. Computational Physics
3 Credits
An introduction to finite difference methods, Fourier expansions, Fourier integrals, solution of differential equations, Monte Carlo calculations, and application to advanced physics problems.
Prerequisite(s): PHYS 150 or equivalent and MATH 392.

PHYS 477. Fiber Optic Communication Systems
4 Credits (3+3P)
See E E 477 Crosslisted with: E E477.
Prerequisite(s): C- or better in E E 315 or PHYS 461.

PHYS 478. Fundamentals of Photonics
4 Credits (3+3P)
Prerequisite(s): PHYS 216G or PHYS 217.

PHYS 479. Lasers and Applications
4 Credits (3+3P)
See E E 479 Crosslisted with: E E479.
Prerequisite(s): C- or better in E E 315 or PHYS 461.

PHYS 480. Thermodynamics
3 Credits
Thermodynamics and statistical mechanics. Basic concepts of temperature, heat, entropy, equilibrium, reversible and irreversible processes. Applications to solids, liquids, and gases.
Prerequisite(s): PHYS 217, PHYS 315 and MATH 291G.

PHYS 485. Independent Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

PHYS 488. Introduction to Condensed Matter Physics
3 Credits
Crystal structure, X-ray diffraction, energy band theory, phonons, cohesive energy, conductivities, specific heats, p-n junctions, defects, surfaces, and magnetic, optical, and low-temperature properties.
Prerequisite(s): PHYS 315.

PHYS 489. Introduction to Modern Materials
3 Credits
Structure and mechanical, thermal, electric, and magnetic properties of materials. Modern experimental techniques for the study of material properties.
Prerequisite: PHYS 315.
PHYS 491. High Energy Physics I
3 Credits
Prerequisite(s): PHYS 455.

PHYS 493. Experimental Nuclear Physics
3 Credits (1+6P)
Selected experimental investigations in nuclear physics such as measurement of radioactivity, absorption of radiation, nuclear spectrometry.
Prerequisite(s): PHYS 315 and PHYS 315L.

PHYS 495. Mathematical Methods of Physics I
3 Credits
Applications of mathematics to experimental and theoretical physics. Topics selected from: complex variables; special functions; numerical analysis; Fourier series and transforms, Laplace transforms.
Prerequisite(s): MATH 392 and PHYS 395.

PHYS 497. Introduction to Space Plasma Physics
3 Credits
Properties of plasmas, especially those in the heliosphere such as the solar wind, planetary magnetospheres and ionospheres, cosmic rays, and the Sun. Topics include both independent-particle and fluid descriptions of plasmas such as magnetohydrodynamics, the solar cycle and solar flares, planetary magnetic substorms and aurorae, Van Allen radiation belts, shocks in the solar wind, and wave propagation in plasmas.
Prerequisite(s): (PHYS 461 or E E 351) and MATH 392.

PHYS 500. Special Topics Seminar
1-2 Credits
Treatment of topics not covered by regular courses. Graded S/U. May be repeated.

PHYS 511. Mathematical Methods of Physics I
3 Credits
Same as PHYS 495. Additional work required at a more advanced level.

PHYS 520. Selected Topics
1-3 Credits
Formal treatment of graduate-level topics not covered in regular courses. May be repeated for a maximum of 9 credits.
Prerequisites: graduate standing, consent of instructor, and selection of a specific topic prior to registration.

PHYS 521. Individual Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.
Prerequisites: graduate standing, consent of instructor, and selection of a specific topic prior to registration.

PHYS 527. Fiber Optic Communication Systems
4 Credits (3+3P)
Same as E E 527 Crosslisted with: E E 527

PHYS 528. Fundamentals of Photonics
4 Credits (3+3P)
Same as E E 528. Crosslisted with: E E 528.

PHYS 529. Lasers and Applications
4 Credits (3+3P)
Same as E E 529 Crosslisted with: E E 529

PHYS 551. Classical Mechanics
3 Credits
Lagrangian and Hamiltonian formulation of dynamics. Advanced treatments of most topics listed under PHYS 451, plus canonical transformations and Hamilton-Jacobi theory. PHYS 451 strongly recommended.

PHYS 554. Quantum Mechanics I
3 Credits

PHYS 555. Quantum Mechanics II
3 Credits
Continuation of topics in PHYS 554.
Prerequisites: PHYS 554 or consent of instructor.

PHYS 561. Electromagnetic Theory I
3 Credits
Detailed advanced treatments of most topics listed under PHYS 461, PHYS 462, plus multipole radiation, collisions of charged particles and bremsstrahlung, scattering, and radiation reaction. PHYS 461 and PHYS 462 strongly recommended.

PHYS 562. Electromagnetic Theory II
3 Credits
Continuation of topics in PHYS 561.
Prerequisites: PHYS 561 or consent of instructor.

PHYS 567. Nanoscience and Nanotechnology
3 Credits
See CHME 567. Crosslisted with: CHME 567.

PHYS 568. Elements of X-ray Diffraction
3 Credits
Same as PHYS 468, but additional work required. Crosslisted with: CHME 588.

PHYS 571. Advanced Experimental Optics
3 Credits
Taught with PHYS 471 with additional work required at the graduate level. Consent of Instructor required.
Prerequisite(s): PHYS 473 or PHYS 562.

PHYS 575. Advanced Physics Laboratory
1-3 Credits (1+6P)
Selected experiments in atomic, molecular, nuclear and condensed-matter physics.

PHYS 576. Advanced Computational Physics I
3 Credits
Advanced treatment of topics listed under PHYS 476, plus additional required work. Applications of numerical methods to complex physical systems. Recommended knowledge of Fortran or C, and MATH 377 or MATH 392. Same as PHYS 476, but additional work required.

PHYS 577. Fourier Methods in Electro-Optics
3 Credits
Same as E E 577 Crosslisted with: E E 577

PHYS 578. Optical System Design
3 Credits
See E E 578. Crosslisted with: E E 578
PHYS 584. Statistical Mechanics
3 Credits

PHYS 588. Condensed Matter Physics
3 Credits
Same as PHYS 488, but additional work required.
Prerequisite(s): PHYS 554 or consent of instructor.

PHYS 589. Modern Materials
3 Credits
Same as PHYS 489 with differentiated assignments for graduate students.
Prerequisite: PHYS 554 or consent of instructor.

PHYS 591. Advanced High-Energy Physics I
3 Credits
Taught with PHYS 491 with additional work required at the graduate level.
Prerequisite(s): PHYS 555 or consent of instructor.

PHYS 592. Advanced High-Energy Physics II
3 Credits
Continuation of topics in PHYS 591
Prerequisite(s): PHYS 591.

PHYS 593. Advanced Experimental Nuclear Physics
3 Credits (1+6P)
Advanced experimental investigation of topics such as measurement of radioactivity, absorption of radiation, and nuclear spectrometry.

PHYS 597. Space Plasma Physics
3 Credits
Same as PHYS 497 but with added requirements.

PHYS 599. Master's Thesis
15 Credits
Thesis.

PHYS 600. Research
1-15 Credits
Doctoral research. May be repeated.

PHYS 620. Advanced Topics in Physics
1-3 Credits
Advanced formal treatment of topics not covered in regular courses. May be repeated for a maximum of 9 credits.
Prerequisite: consent of instructor.

PHYS 650. General Relativity I
3 Credits
Basic foundations and principles of general relativity, derivation of the Einstein field equations and their consequences, the linearized theory, the Bel-Petrov classification of the curvature tensor, derivation of the Schwarzschild solution and the four basic tests of general relativity.
Prerequisite(s): PHYS 511 or PHYS 561 or consent of instructor.

PHYS 680. Independent Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.
Prerequisite: graduate standing or consent of instructor.

PHYS 688. Advanced Condensed Matter Physics
3 Credits
Continuation of the advanced condensed matter physics presented in PHYS 588. Topics include electronic structure methods, optical, magnetic, and transport properties of solids, semiconductors, crystalline defects, nanostructures, and noncrystalline solids. PHYS 588 strongly recommended.

PHYS 689. Advanced Modern Materials
3 Credits
Advanced topics in the physics of modern materials, such as crystalline, amorphous, polymeric, nanocrystalline, layered, and composite materials and their surfaces and interfaces.
Prerequisites: PHYS 555, PHYS 588, or consent of instructor.

PHYS 691. Quantum Field Theory I
3 Credits
Path integrals, gauge invariance, relativistic quantum mechanics, canonical quantization, relativistic quantum field theory, introduction to QED.
Prerequisites: PHYS 555 and PHYS 562, or consent of instructor.

PHYS 692. Quantum Field Theory II
3 Credits
QED, running coupling constant, QCD, electroweak theory, asymptotic freedom, deep inelastic scattering, basic QCD phenomenology, path integrals in quantum field theory, lattice QCD.
Prerequisite: PHYS 591 or consent of instructor.

PHYS 700. Doctoral Dissertation
15 Credits
Dissertation.

Name:

Office Location:

Phone: (575) 646-3831

Website: http://engineeringphysics.nmsu.edu/

Engineering Physics - Bachelor of Science in Engineering Physics

A strong grasp of underlying physical principles behind the development of new technologies is necessary to keep up with new developments in a high-tech world. The Bachelor of Science (BS) in Engineering Physics program is designed to provide quality education to students for immediate employment with technical jobs in private industries (especially high-tech industries), research laboratories and public sectors. The program trains students with a combination of engineering knowledge, physics principles, mathematical background, problem-solving strategies and effective communication skills. The BS in Engineering Physics also provides an excellent preparation for graduate studies in either physics or an engineering discipline.

The BS in Engineering Physics confers an engineering credential. Students in the program complete an engineering core curriculum, as well as a rigorous course of study in physics and mathematics. A strong laboratory component prepares students in experimental techniques and technology using state-of-the-art equipment.

The goals of the program are:
1. to give students a strong education in the fundamentals of physics, engineering, applied mathematics and computation;
2. to develop skill in real-world problem solving starting from fundamental physical principles;
3. to improve communication skills; and
4. to develop ability to work in a team.

The student must choose one of four concentrations in

- Aerospace Engineering,
- Chemical Engineering,
- Electrical Engineering, or
- Mechanical Engineering.

The requirements are listed below. Students must earn a C- or better in all required courses.

## Concentration: Aerospace

### General Education

**State of New Mexico Common Core**

<table>
<thead>
<tr>
<th>Area I: Communications</th>
<th></th>
</tr>
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<tbody>
<tr>
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### Area II: Mathematics

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<tbody>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
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</table>

### Area III: Natural Science

Select one of the following:

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<tr>
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<tbody>
<tr>
<td>PHYS 213 &amp; 213 L</td>
<td>Mechanics and Experimental Mechanics</td>
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</tr>
<tr>
<td>PHYS 215G &amp; 215GL</td>
<td>Engineering Physics I and Engineering Physics I Laboratory</td>
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</tr>
<tr>
<td>PHYS 216G &amp; 216GL</td>
<td>Engineering Physics II and Engineering Physics II Laboratory</td>
<td>4</td>
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</tbody>
</table>

### Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts

Select 15 total credits from Areas IV and V, with at least six credits from each area:

- **Area IV: Social and Behavioral Sciences:**
  - Select 6-9 credits from Economics, Political Science, Psychology, Sociology, and Anthropology electives
- **Area V: Humanities and Fine Arts:**
  - Select 6-9 credits from History, Philosophy, Literature, Art, Music, Dance, Theater, or Foreign Language electives

### Institution Specific General Education

Viewing a Wider World Electives | 3-6 |

### Program Specific Requirements

#### Mathematics

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<td>Calculus and Analytic Geometry III</td>
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</tr>
<tr>
<td>MATH 392</td>
<td>Introduction to Ordinary Differential Equations</td>
<td>3</td>
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</table>

### Natural Science

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>CHEM 111G or CHEM 115</td>
<td>General Chemistry I or Principles of Chemistry I</td>
<td>4</td>
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</table>

### Physics

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<tbody>
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<td>Heat, Light, and Sound and Experimental Heat, Light and Sound</td>
<td>4</td>
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<tr>
<td>PHYS 315</td>
<td>Modern Physics</td>
<td>3</td>
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<tr>
<td>PHYS 315 L</td>
<td>Experimental Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 395</td>
<td>Intermediate Mathematical Methods of Physics</td>
<td>3</td>
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<tr>
<td>PHYS 454</td>
<td>Intermediate Modern Physics I</td>
<td>3</td>
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<tr>
<td>PHYS 455</td>
<td>Intermediate Modern Physics II</td>
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<tr>
<td>PHYS 461</td>
<td>Intermediate Electricity and Magnetism I</td>
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</tr>
<tr>
<td>PHYS 462</td>
<td>Intermediate Electricity and Magnetism II</td>
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### Engineering

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<tbody>
<tr>
<td>A E 339</td>
<td>Aerodynamics I</td>
<td>3</td>
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<tr>
<td>A E 362</td>
<td>Orbital Mechanics</td>
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<tr>
<td>A E 363</td>
<td>Aerospace Structures</td>
<td>3</td>
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<tr>
<td>A E 364</td>
<td>Flight Dynamics and Controls</td>
<td>3</td>
</tr>
<tr>
<td>A E 419</td>
<td>Propulsion</td>
<td>3</td>
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<tr>
<td>A E 424</td>
<td>Aerospace Systems Engineering</td>
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<tr>
<td>A E 428</td>
<td>Aerospace Capstone Design</td>
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<tr>
<td>A E 439</td>
<td>Aerodynamics II</td>
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<tr>
<td>A E 447</td>
<td>Aerofluids Laboratory</td>
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<tr>
<td>C E 301</td>
<td>Mechanics of Materials</td>
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</tr>
<tr>
<td>ENGR 100</td>
<td>Introduction to Engineering</td>
<td>3</td>
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<tr>
<td>M E 236</td>
<td>Engineering Mechanics I</td>
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</tr>
<tr>
<td>M E 237</td>
<td>Engineering Mechanics II</td>
<td>3</td>
</tr>
<tr>
<td>M E 240</td>
<td>Thermodynamics</td>
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<tr>
<td>M E 261</td>
<td>Mechanical Engineering Problem Solving</td>
<td>3</td>
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<tr>
<td>M E 345</td>
<td>Experimental Methods I</td>
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</tbody>
</table>

**Total Credits: 127-130**

1. See the required courses (p. 47) section of the catalog for a full list of courses.
2. See the required courses (p. 47) section of the catalog for a full list of courses. See Alternatives for meeting VWW requirements (nine-credit rule).

## Concentration: Chemical

### General Education

**State of New Mexico Common Core**

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### Area III: Natural Science

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</table>
Engineering Physics - Bachelor of Science in Engineering Physics

**PHYS 215G & 215GL** Engineering Physics I and Engineering Physics I Laboratory

Select one of the following:

- PHYS 214 & 214 L Electricity and Magnetism and Electricity and Magnetism Laboratory
- PHYS 216G & 216GL Engineering Physics II and Engineering Physics II Laboratory

**Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts**

Select 15 total credits from Areas IV and V, with at least six credits from each area:

- **Area IV: Social and Behavioral Sciences:**
  - Select 6-9 credits from Economics, Political Science, Psychology, Sociology, and Anthropology electives

- **Area V: Humanities and Fine Arts:**
  - Select 6-9 credits from History, Philosophy, Literature, Art, Music, Dance, Theater, or Foreign Language electives

**Institution Specific General Education**

Viewing a Wider World Electives

**Program Specific Requirements**

**Mathematics**

- MATH 192G Calculus and Analytic Geometry II 4
- MATH 291G Calculus and Analytic Geometry III 3
- MATH 392 Introduction to Ordinary Differential Equations 3

**Natural Science**

- CHEM 115 Principles of Chemistry I 4
- CHEM 116 Principles of Chemistry II 4
- CHEM 313 Organic Chemistry I 3

**Electives**

- Technical Elective 3

**Physics**

- PHYS 217 & 217 L Heat, Light, and Sound and Experimental Heat, Light and Sound 4
- PHYS 315 Modern Physics 3
- PHYS 315 L Experimental Modern Physics 3
- PHYS 395 Intermediate Mathematical Methods of Physics 3
- PHYS 451 Intermediate Mechanics I 3
- PHYS 454 Intermediate Modern Physics I 3
- PHYS 455 Intermediate Modern Physics II 3
- PHYS 461 Intermediate Electricity and Magnetism I 3
- PHYS 462 Intermediate Electricity and Magnetism II 3
- PHYS 475 Advanced Physics Laboratory (must complete 3 credits) 3

**Engineering**

- CHME 101 Introduction to Chemical Engineering Calculations 2
- CHME 102 Material Balances 2
- CHME 201 Energy Balances & Basic Thermodynamics 3
- CHME 303 Chemical Engineering Thermodynamics 4
- CHME 305 Transport Operations I: Fluid Flow 3
- CHME 306 Transport Operations II: Heat and Mass Transfer 4
- CHME 307 Transport Operations III: Staged Operations 3
- CHME 352 L Simulation of Unit Operations 1
- CHME 361 Engineering Materials 3
- CHME 441 Chemical Kinetics and Reactor Engineering 3
- ENGR 100 Introduction to Engineering 3

Total Credits: 126-129

1 See the required courses (p. 47) section of the catalog for a full list of courses.
2 See the required courses (p. 47) section of the catalog for a full list of courses. See Alternatives for meeting VWW requirements (nine-credit rule).
3 A list of approved technical electives is available from Engineering Physics Advisors.

**Concentration: Electrical**

**General Education**

**State of New Mexico Common Core**

**Area I: Communications**

- ENGL 111G Rhetoric and Composition 4

**Area II: Mathematics**

- MATH 191G Calculus and Analytic Geometry I 4

**Area III: Natural Science**

Select one of the following:

- PHYS 213 & 213 L Mechanics and Experimental Mechanics
- PHYS 215G & 215GL Engineering Physics I and Engineering Physics I Laboratory

Select one of the following:

- PHYS 214 & 214 L Electricity and Magnetism and Electricity and Magnetism Laboratory
- PHYS 216G & 216GL Engineering Physics II and Engineering Physics II Laboratory

**Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts**

Select 15 total credits from Areas IV and V, with at least six credits from each area:

- **Area IV: Social and Behavioral Sciences:**
  - Select 6-9 credits from Economics, Political Science, Psychology, Sociology, and Anthropology electives

- **Area V: Humanities and Fine Arts:**
  - Select 6-9 credits from History, Philosophy, Literature, Art, Music, Dance, Theater, or Foreign Language electives

**Institution Specific General Education**

Viewing a Wider World Electives

**Program Specific Requirements**

**Mathematics**

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<tr>
<td>CHEM 111G</td>
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<tr>
<td>or CHEM 115</td>
<td>Principles of Chemistry I</td>
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**Electives**

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<td>PHYS 462</td>
<td>Intermediate Electricity and Magnetism II</td>
<td>3</td>
</tr>
<tr>
<td>E E 351</td>
<td>Fields and Waves</td>
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**Physics**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 217</td>
<td>Heat, Light, and Sound</td>
<td>4</td>
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<tr>
<td>&amp; 217 L</td>
<td>and Experimental Heat, Light and Sound</td>
<td></td>
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<tr>
<td>PHYS 315</td>
<td>Modern Physics</td>
<td>3</td>
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<tr>
<td>PHYS 315 L</td>
<td>Experimental Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 395</td>
<td>Intermediate Mathematical Methods of Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 451</td>
<td>Intermediate Mechanics I</td>
<td>3</td>
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<tr>
<td>PHYS 454</td>
<td>Intermediate Modern Physics I</td>
<td>3</td>
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<tr>
<td>PHYS 455</td>
<td>Intermediate Modern Physics II</td>
<td>3</td>
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<tr>
<td>PHYS 461</td>
<td>Intermediate Electricity and Magnetism I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 475</td>
<td>Advanced Physics Laboratory (must complete 3 credits)</td>
<td>3</td>
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<tr>
<td>PHYS 480</td>
<td>Thermodynamics</td>
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**Engineering**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>E E 100</td>
<td>Introduction to Electrical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>E E 112</td>
<td>Embedded Systems</td>
<td>4</td>
</tr>
<tr>
<td>E E 200</td>
<td>Linear Algebra, Probability and Statistics Applications</td>
<td>4</td>
</tr>
<tr>
<td>E E 212</td>
<td>Introduction to Computer Architecture and Organization</td>
<td>4</td>
</tr>
<tr>
<td>E E 230</td>
<td>AC Circuit Analysis and Introduction to Power Systems</td>
<td>4</td>
</tr>
<tr>
<td>E E 312</td>
<td>Signals and Systems I</td>
<td>3</td>
</tr>
<tr>
<td>E E 380</td>
<td>Semiconductor Devices and Electronics</td>
<td>4</td>
</tr>
<tr>
<td>E E 418</td>
<td>Capstone Design I</td>
<td>3</td>
</tr>
<tr>
<td>E E 419</td>
<td>Capstone Design II</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 100</td>
<td>Introduction to Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits** 127-131
Engineering Technology and Surveying Engineering

Undergraduate Program Information

Educational opportunities offered by the Department of Engineering Technology and Surveying Engineering (https://et.nmsu.edu) (ETSE) in the College of Engineering (https://engr.nmsu.edu) place an emphasis on the theory and practical hands-on application of engineering principles and methods, under the motto of “linking theory and application”. Many ETSE graduates go on to earn advanced degrees but most typically begin their careers upon graduation and can select from public or private employment opportunities in a wide variety of fields.

Four fully ABET accredited four-year Bachelor of Science (BS) degrees in Engineering Technology are offered by the department with majors in:

- Electronics and Computer Engineering Technology (p. 583) (ECET) - Visit the (ECET) web page
- Information Engineering Technology (p. 584) (IET) - Visit the (IET) web site
- Mechanical Engineering Technology (p. 585) (MET) - Visit the (MET) web site or, Want to know more? (https://et.nmsu.edu/files/2016/10/MET-Intro.mp4)
- Civil Engineering Technology (p. 581) (CET) - Visit the (CET) web site or, Want to learn more? (https://et.nmsu.edu/files/2016/10/CET-Intro.pdf)

A non-ABET Bachelor’s degree is also offered via a two-year degree completion program which gives students having an Associate’s degree the option to complete an

- Geomatics or Surveying Engineering (p. 586) (SE) - Visit the (SE) web site

The Mission of the ETSE Department is to provide students with a quality engineering technology or surveying education that links theory and application, provides a rigorous fundamental education, and gives students enhanced career opportunities.

The department’s goals supporting this mission are:

- to provide educational and social environments that promote and facilitate student learning
- to have a highly respected and visible department
- to foster the development of the department and
- to graduate students who are competent and sought after by industry

View our Educational Objectives of our Engineering Technology Programs (https://et.nmsu.edu/accreditation-and-assessment/outcomes) page to see detailed information of what our students will gain upon graduating from an Engineering Technology and Surveying Engineering degree program.

Requirements Related to Transfer of Academic Credit

Students transferring to NMSU may receive transfer credit (https://engr.nmsu.edu/course-transfer-credit) depending on completed courses and source institutions. Articulation agreements (https://et.nmsu.edu/academics/transfer-student-information) exist for many New Mexico Community Colleges and represent a framework for transfer of academic credit. General degree requirements of the College of Engineering and NMSU also apply to ETSE department majors. The Engineering Transfer Policy (https://engr.nmsu.edu/engineering-transfer-policy) applies to any course in an ABET accredited major that is not to be completed on the NMSU main campus by a student already having official degree seeking status within the department.

- The department head must approve the course prior to enrollment and the course must be offered by an ABET accredited program (exceptions may be made when existing articulation agreements with NMSU are relevant). In all cases, a corresponding course syllabus and any other supporting documentation are to be submitted, together with the student’s completed online request, before the course will be considered for transfer credit approval.
- To qualify for approval, the technical content and rigor must also be substantially the same as the equivalent NMSU course and the student must have satisfied all relevant university prerequisite requirements. If program co- and prerequisite requirements are not met, transfer credit will not be approved.

ENGR 100 Introduction to Engineering 3
M E 159 Graphical Communication and Design 2
M E 236 Engineering Mechanics I 3
M E 237 Engineering Mechanics II 3
M E 240 Thermodynamics 3
M E 261 Mechanical Engineering Problem Solving 3
M E 326 Mechanical Design 3
M E 338 Fluid Mechanics 3
M E 341 Heat Transfer 3
M E 345 Experimental Methods I 3
M E 425 Design of Machine Elements 3
M E 426 Design Project Laboratory I 3
M E 427 Design Project Laboratory II 3

Total Credits 126-129

1 See the required courses (p. 47) section of the catalog for a full list of courses.
2 See the required courses (p. 47) section of the catalog for a full list of courses. See Alternatives for meeting VWW requirements (nine-credit rule).
• No credit for on-line courses of another institution may be substituted to meet departmental core curriculum requirements.

To formally request approval to transfer a core course from another institution, you must complete the Engineering Transfer Course Request Form. (https://engr.nmsu.edu/15466-2)

**Academic Performance Requirements**

In addition to University (p. 53) and College of Engineering specific requirements (p. 525), as outlined in the NMSU General Information and College of Engineering catalog sections, departmental majors are expected to maintain a status of academic good standing and to complete degree requirements in a timely manner.

Courses in engineering, technology, math and science (and their respective pre- and corequisites) must be completed with a minimum grade of C- to be counted toward the fulfillment of degree requirements. This also includes all courses in the NM General Education Common Core Areas I, II, and III. If a grade lower than C- is earned in one of the above noted courses, the student will be required to retake that course during the first subsequent semester in which it is offered.

An ETSE student may attempt to complete core curriculum courses no more than three times for outcomes involving D or F letter grades. After this specified number of attempts without a passing grade of C- or better, the student will be prohibited from enrolling in any course offered within the college of engineering for a minimum period of one year; after which they may appeal to the college and department for re-admission into the program. Any credit earned outside the college during a period of academic suspension will not qualify for subsequent transfer credit toward core course degree requirements. Refer to the section of the catalog for university academic probation policies (p. 53).

**Requirements for Graduation**

The completion of ETSE undergraduate degrees are contingent upon fulfillment of

1. University requirements (p. 71) as outlined in relevant sections of this catalog,
2. policy expectations as outlined under College General Requirements (p. 525), and
3. departmental requirements, as outlined above and within the individual program descriptions of this catalog.

**Degrees for the Department**

Information and Communication Technology (p. 588) - Bachelor of Information and Communication Technology

Engineering Technology - Civil (p. 581) - Bachelor of Science (BS) in Engineering Technology

Engineering Technology - Electronics and Computer - (p. 583) Bachelor of Science (BS) in Engineering Technology

Engineering Technology - Information (p. 584) - Bachelor of Science (BS) in Engineering Technology

Engineering Technology - Mechanical (p. 585) - Bachelor of Science (BS) in Engineering Technology

Geomatics (p. 586) - Bachelor of Science (BS)

**Minors for the Department**

Digital Electronic Applications (p. 581) - Undergraduate Minor
Digital Forensics (p. 581) - Undergraduate Minor
Manufacturing (p. 589) - Undergraduate Minor
Renewable Energy Technologies (p. 589) - Undergraduate Minor
Information Security Technology (p. 588) - Undergraduate Minor
Geomatics (Surveying Engineering) (p. 587) - Undergraduate Minor

**Professor Thomas Jenkins, Department Head**

Professor Lynn Kelly (https://myaccount.nmsu.edu/phonebook?txtFirstName=lynn&txtLastName=kelly&txtEmail=&chkEmployees=Employees), Associate Department Head

Assistant Professor Barbara Gamallo (https://myaccount.nmsu.edu/phonebook?txtFirstName=barbara&txtLastName=Gamallo&txtEmail=&chk Employees=Employees), Associate Department Head

Professors Beasley, Cooper1, Hyde, Jenkins, Jiang1, Kelly, Stevens1; Associate Professors Sassenfeld, Wurm2; Assistant Professors B. Gamillo, Morrell, Nogales; Emeritus Faculty Alexander, Burkholder1,2, Cameron, Rico, Reilly3.

Staff Administrative Assistant Carol Serna (https://myaccount.nmsu.edu/phonebook?txtFirstName=carol&txtLastName=serna&txtEmail=&chkEmployees=Employees) Engineer Eduardo Gamillo (https://myaccount.nmsu.edu/phonebook?txtFirstName=ed&txtLastName=gamillo&txtEmail=&chkEmployees=Employees)

1 Registered Professional Engineer (NM).
2 Licensed Professional Surveyor (NM).

E T 101. Introduction to Engineering Technology
1 Credit
The development of engineering technology, with an introduction to engineering technology, education, and practice. Graded S/U.

E T 104. Soldering Techniques
1 Credit
Fundamentals of soldering, desoldering, and quality inspection of printed circuit boards.

E T 106. Drafting Concepts/Computer Drafting Fundamentals I
4 Credits (2+4P)
Basic drafting skills, terminology, and visualization. Introduction to principles and fundamentals of computer-aided drafting. Community Colleges only. Same as DRFT 112.
Prequisite: OECS 125, OECS 207, or consent of instructor.

E T 109. Computer Drafting Fundamentals
3 Credits (3+2P)
Crosslisted with: DRFT 109, C E 109 and SUR 109

E T 110. Introduction to 3-D Modeling (Solid Works)
3 Credits
Introduction to SolidWorks, a 3-D modeling software. The foundation for designing mechanical parts and assemblies. May be repeated up to 3 credits.
ET 120. Computation Software
2-3 Credits (2-3)
The use of spreadsheet software in the field of engineering technology.

ET 125. Introduction to Renewable Energy
3 Credits
Renewable energy systems, including topics in thermal-solar photovoltaic, wind, geothermal systems, and other current topics. Theory, practical applications, safety considerations and the economics of alternative renewable energy systems compared to conventional systems.

ET 153. Introduction to Computer Networks
3 Credits
Introduction to basic computer network fundamentals including International Open Systems Interconnect (OSI), the seven-layer model, and various networking hardware devices. Community Colleges only.

ET 154. Construction Methods and Communications
3 Credits
Blueprint reading, specifications, and introduction to materials used in construction.

ET 155. Network Operating Systems I
3 Credits (3+1P)
Introduction to a computer network operating system. May not be used as part of an ET degree program on main campus. Restricted to: Community Colleges only.
Prerequisite(s): E T 120 or E T 122.

ET 156. Basic Computer Operating Systems
3 Credits
Basics of the most commonly used computer operating systems, command line interface, file systems, file virtualization.

ET 182. Digital Logic
3 Credits
The use of truth tables, Boolean equations, and diagrams to define, simplify, and implement logic-valued functions.

ET 183. Applied DC Circuits
3 Credits (2+2P)
Application of Ohm's law, Kirchhoff's laws, Thevenin's, and Norton's theorems to the analysis of DC passive circuits. Embedded Lab. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 121G.

ET 183 L. Applied DC Circuits Lab
1 Credit
DC applied circuits lab. May be repeated up to 1 credits.
Corequisite(s): E T 183.

ET 184. Applied AC Circuits
3 Credits (2+2P)
Application of circuit laws and theorems to analysis of AC passive circuits. Resonant circuit, polyphase circuit and magnetic circuit topics are introduced. Embedded Lab. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 190G. E T 183.

ET 184 L. Applied AC Circuits Lab
1 Credit
AC applied circuits lab May be repeated up to 1 credits.
Corequisite(s): E T 184.

ET 190. Applied Circuits
4 Credits (3+2P)
Application of Ohm's law, Kirchhoff's laws, and Thevenin's theorems to the analysis of AC and DC passive circuits. Electronic circuit topics are introduced. Embedded lab.
Prerequisite(s)/Corequisite(s): MATH 190G.

ET 191. Applied Circuits Laboratory
1 Credit
Applied Circuits Lab May be repeated up to 1 credits.

ET 200. Special Topics
1-3 Credits
Directed study or project. May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

ET 203. Computational Foundations
3 Credits
Fundamental concepts of various proof techniques. These concepts will be applied to the use of computer algorithms, programming languages and other engineering and technology applications. May be repeated up to 3 credits.
Prerequisite(s): MATH 190G and E T 262.

ET 210. Intermediate 3-D Modeling (Solid Works)
3 Credits (2+2P)
Intermediate 3-D modeling. Applied modeling of techniques to prepare for SolidWorks certification (CSWA). May be repeated up to 3 credits.
Prerequisite(s): E T 110.

ET 217. Manufacturing Processes
3 Credits
Introduction to manufacturing and processing, including: casting, forming, and machining. Emphasis on creating products with the appropriate techniques. May be repeated up to 3 credits. Crosslisted with: I E 217.
Prerequisite(s)/Corequisite(s): E T 217L. Prerequisite(s): E T 110 and MATH 121G.

ET 217 L. Manufacturing Processes Lab
1 Credit
Hands-on laboratory in machine shop to apply topics from E T 217, including: casting, forming, and machining. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): E T 217.

ET 220. Internship
1-6 Credits
Internship requiring an approved number of hours of varied and progressive experience in the field of study. The scope and other requirements of the internship are stated in an individualized syllabus and through a memorandum of understanding between the faculty mentor and the industry partner. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): E T 283.

ET 230. Introduction to Servo Systems
1 Credit
Introduction to Servo Systems. Topics include uses of servos in the industry, servo types, lop gains and frequency response, software control systems, damping, feedback, encoders, synchros and resolvers. Restricted to Community Colleges campuses only.
Prerequisite(s): E T 246.
E T 240. Applied Statics  
3 Credits  
Fundamental topics of applied statics, including force system analysis, equilibrium, free body diagrams, methods of joints and sections, distributed loads, friction, centroids, area moments, and shear and moment diagrams. May be repeated up to 3 credits.  
Prerequisite(s)/Corequisite(s): MATH 235G or MATH 191G.  
Prerequisite(s): PHYS 211G or PHYS 215G.

E T 241. Applied Dynamics  
3 Credits  
The foundation for understanding particles and bodies in motion and the forces involved, including projectile motion, Newton’s Laws of Motion, conservation of energy, and impulse and momentum. May be repeated up to 3 credits.  
Prerequisite(s): E T 240, (MATH 235 or MATH 191G).

E T 245. Computer Hardware Fundamentals  
3 Credits (2+2P)  
Computer hardware fundamentals including architecture, interfacing, peripherals, troubleshooting, system upgrades, and maintenance. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

E T 246. Electronic Devices I  
4 Credits (3+3P)  
Solid-state devices including diodes, bipolar-transistors, and field effect transistors. Use of these devices in rectifier circuits, small signal and power amplifiers. May be repeated up to 4 credits.  
Prerequisite(s): E T 190 or E T 184.

E T 253. Networking Operating Systems II  
3 Credits (3+1P)  
Introduction to a computer network operating system. May not be used as part of an E T degree program on main campus. Restricted to Community Colleges campuses only.  
Prerequisite(s): E T 190 or E T 184.

E T 254. Concrete Technology  
3 Credits (2+2P)  
Fundamentals of aggregates, Portland cement, and asphalt used in design and construction.

E T 255. Linux System Administration  
3 Credits  
Introduction to Linux system administration.  
Prerequisite(s)/Corequisite(s): E T 160.

E T 256. Networking Operating Systems III  
3 Credits (3+1P)  
Introduction to a computer network operating system. May not be used as part of an E T degree program on main campus. Restricted to Community Colleges campuses only.  
Prerequisite(s): E T 253.

E T 252. Software Technology I  
3 Credits (2+2P)  
An introduction to computer programming concepts as applied to engineering technology. Includes basic logic design, algorithm development, debugging and documentation. History and use of computers and their impact on society. May be repeated up to 3 credits.  
Prerequisite(s)/Corequisite(s): E T 182 or MATH 190G.

E T 272. Electronic Devices II  
4 Credits (3+3P)  
Operational amplifiers, positive and negative feedback, computer aided circuit analysis. In addition circuits include integrator, differentiators and phase shift networks. May be repeated up to 4 credits.  
Prerequisite(s)/Corequisite(s): MATH 235G or MATH 191G.  
Prerequisite(s): E T 246.

E T 273. Fundamentals of Networking Communications I  
4 Credits (2+4P)  
Introduction to networking basics, including computer hardware and software, electricity, networking terminology, protocols, LANs, WANs, OSI model, IP addressing, and design and documentation of basic network and structure cabling. Community Colleges only. May be repeated up to 4 credits. Restricted to Community Colleges campuses only.  
Prerequisite(s): E T 153.

E T 276. Electronic Communications  
3 Credits (2+2P)  
Antennas, transmission devices, A-M and F-M transmission and detection, pulse systems, microwave systems.  
Prerequisite(s): E T 246.

E T 277. Computer Networking I for IET  
3 Credits (2+2P)  
Computer network design and applications for LAN to WAN, protocols, switches, bridges, routers, NT server, TCP/IP networks, network diagnostics, voice over IP, wireless networks, and the OSI layers from physical to transport. May be repeated up to 3 credits.  
Prerequisite(s): E T 182.

E T 280. Introduction to Multimedia  
3 Credits  
Introduction to video, audio and other digital presentation methods.  
Prerequisite(s): E T 255.

E T 282. Digital Electronics  
4 Credits (3+3P)  
Applications of digital integrated circuits, multiplexers, counters, arithmetic circuits, and microprocessors. May be repeated up to 4 credits.  
Prerequisite(s)/Corequisite(s): (E T 190 or E T 184). Prerequisite(s): E T 182.

E T 283. Hardware PC Maintenance  
3 Credits (3+1P)  
Installing, configuring, troubleshooting, and maintaining personal computer hardware components.  
Prerequisite(s): E T 120 or E T 122.

E T 284. Software PC Maintenance  
3 Credits (3+1P)  
Installing, configuring, troubleshooting, and maintaining personal computer operating systems.  
Prerequisite(s): E T 120 or E T 122.

E T 285. Principles of Security  
3 Credits  
Examines the field of information security within a real-world context of issues faced by today’s IT professionals.  
Prerequisite(s): E T 283 or consent of instructor.

E T 286. Fundamentals of Security  
3 Credits  
An overview of general security concepts for information technology systems.  
Prerequisite(s): E T 283 or consent of instructor.
E T 287. PC Disaster and Data Recovery
3 Credits
This course provides an overview of the various causes of personal computer data failure and methods to mitigate the loss of your personal computer data. The focus is on restoring your personal computer to full PC functionality and recovering lost and damaged files after one of these unforeseen problems. In addition, the course provides a means to lessen the impact of these inevitable events with the preparation of a disaster recovery plan.
Prerequisite(s): E T 120 or E T 122.

E T 290. Networking Wireless Communication
3 Credits (3+1P)
This course provides an introduction to wireless networking and communications. Some of the topics covered are protocols, transmission methods, and IEEE 802.11 standards. Wireless LAN (WLAN) fundamentals, devices, and security, cellular telephony, broadband, and satellite communications.
Prerequisite: E T 273.

E T 291. PC Forensics and Investigation
3 Credits
Introduction to computer forensics and investigative fundamentals. Topics include understanding computer forensic and investigation law and requirements, processing crime and incident scenes, and the extraction, preservation, analysis and presentation of computer-related evidence.
Prerequisite(s): E T 120 or E T 122.

E T 300. Special Topics
1-3 Credits
Directed study or project. May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

E T 302. Manufacturing Data Analysis
3 Credits
Methods for analyzing data collected during manufacturing processes. Emphasis placed on production control utilizing results of statistical methods and design of experiments.
Prerequisite(s): MATH 235G or MATH 236G.

E T 305. Introduction to Product Design
3 Credits (2+3P)
The process of designing an innovative product for a real customer. Working through ideas, prototypes, 3-D models, concept validation, and entrepreneurship. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): E T 210, E T 217, and (COMM 265G or COMM 253G or AXED 201G or HOE 265G). Restricted to: ET U, ET M, ET C, ET E majors.

E T 306. Fundamental and Applied Thermodynamics
3 Credits
First and second laws, properties of substances, thermodynamic cycles including power generation and refrigeration. May be repeated up to 3 credits.
Prerequisite(s): CHEM 110G and E T 240 and (MATH 235G or MATH 191G) and (PHYS 212G or PHYS 216G) and (PHYS 212GL or PHYS 216GL).

E T 306 L. Thermodynamics Lab
1 Credit
Applications of thermodynamic theory to lab devices. Practice in testing, instrumentation, and data collection. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): E T 306 and ((E T 184 201440) or (E T 190 201640)).

E T 308. Fluid Technology
3 Credits
Application of basic principles of fluid mechanics to practical applied problems. May be repeated up to 3 credits.
Prerequisite(s): (MATH 235G or MATH 191G) and E T 240.

E T 308 L. Fluid Technology Lab
1 Credit
Measurements in fluid statics, dynamics, and hydraulic systems. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): E T 308. Prerequisite(s): (MATH 235 or MATH 191G), E T 240.

E T 309V. Manufacturing: History and Technology
3 Credits
The history of manufacturing, the technology on which it is based, and its impact on society.

E T 310. Applied Strength of Materials
3 Credits
Application of principles of strength of materials to practical design and analysis problems. May be repeated up to 3 credits.
Prerequisite(s): (MATH 235G or MATH 191G) and E T 240.

E T 310 L. Applied Strength of Materials Lab
1 Credit
Testing and analyzing the physical properties of materials. Cursory review of Excel, PowerPoint, FEA, Instron machine, and testing standards. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): E T 246 & MATH 190G.

E T 312. Emergency Response to Hazardous Material Incidents
2 Credits
Same as E S 312, WERC 312.

E T 314. Communications Systems I
3 Credits (3+2P)
Circuits and devices used for transmission, reception, and processing of RF signals.
Prerequisite(s): E T 246 & MATH 190G.

E T 317. Advanced 3-D Modeling and Design
3 Credits
Advanced 3-D modeling with current engineering design practices. Students will use SolidWorks add-ins such as CAMWorks, Product Data Management (PDM), and Model-Based Definition in conjunction with Geometric Dimensioning and Tolerancing (GD&T) practices. Students will have the opportunity to take the Certification SolidWorks Profesional Exam (CSWP). May be repeated up to 3 credits. Consent of instructor required. Restricted to: exclude ET U, ET M, ET C, ET E majors.

Prerequisite(s): E T 210.

E T 324. Signal Processing and Filtering
4 Credits (3+3P)
Application of digital and analog signal conversion models. Discrete time signals and systems. Time and frequency domain concepts. Presentation of Fourier and Z transforms. Application of analog and digital signal filtering with and without feedback. May be repeated up to 4 credits.
Prerequisite(s)/Corequisite(s): MATH 235G or MATH 191G) and (PHYS 212G or PHYS 216G) and (PHYS 212GL or PHYS 216GL).
Prerequisite(s): E T 272.
E T 328. Kinematics of Machines
3 Credits (2+3P)
Kinematic analysis of machine elements using linkages, cams, and gears. Applied design of mechanical systems using SolidWorks simulation and Excel modeling. May be repeated up to 3 credits.
Prerequisite(s): E T 210 and E T 241.

E T 332. Applied Design of Structures I
4 Credits (3+3P)
An introduction to structural analysis and design. Use of various building codes for development of allowable and factored loads on structures. Allowable stress and strength design concepts for structural components using concrete and steel. Required use of computer software such as spreadsheets, databases, and self-developed programs and design aids.
Prerequisite(s): E T 310.

E T 339. Introduction to Digital Forensics and Incident Response
3 Credits (2+3P)
Introduction to the skills required to perform digital forensics and incident response on Windows operating systems. Topics include: live response, evidence acquisition, Windows operating system artifacts, documentation and reporting. May be repeated up to 3 credits.
Prerequisite(s): E T 255.

E T 344. Microcomputer Systems
3 Credits (2+3P)
Microcomputer and/or microcontroller systems applications and architectures with a software emphasis using programming languages.
Prerequisite(s)/Corequisite(s): E T 362. Prerequisite(s): E T 182 and MATH 190.

E T 354. Soil and Foundation Technology
4 Credits (3+3P)
Fundamentals of investigation of soil properties and their importance in design, construction, and testing as related to buildings, roads, dams, and other structures. Design of foundations considering slope stability, bearing capacity and settlement. May be repeated up to 4 credits.
Prerequisite(s)/Corequisite(s): E T 310. Prerequisite(s): E T 254.
Restricted to: ET U, ET E, ET M, CE, ET C majors.

E T 355. Site/Land Development and Layout
3 Credits
Techniques, methods, and takeoffs for infrastructure layout, site plan design, grading, earthwork, utilities, road construction. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): DRFT 143 or DRFT 153.

E T 360V. Technology in Business and Society
3 Credits (2+2P)
Examination of how technology affects business and society with specific attention to understanding the role of technical personnel and their interaction with nontechnical personnel.

E T 362. Software Technology II
3 Credits
A continuation of topics from E T 262 that are directed toward more advanced software development. Topics include problem analysis, object oriented, structured logic, and development concepts. May be repeated up to 3 credits.
Prerequisite(s): E T 262 and MATH 190G.

E T 365. Building Utilities
3 Credits (2+3P)
Basic design and code applications in plumbing and electrical systems for buildings.
Prerequisites: junior standing in E T.

E T 377. Computer Networking I
3 Credits (2+2P)
Computer network design and applications for LAN to WAN, protocols, switches, bridges, routers, TCP/IP networks, network diagnostics, voice over IP, wireless networks, and the OSI layers from physical to transport. May be repeated up to 3 credits.
Prerequisite(s): E T 182 and MATH 190G.

E T 381. Renewable Energy Technologies
3 Credits
Renewable energy systems, including topics in thermal-solar, photovoltaic, wind, geothermal systems, and other current topics.
Theory, practical applications, safety considerations and the economics of alternative renewable energy systems compared to conventional systems. Crosslisted with: WERC 381
Prerequisite(s): MATH 121G.

E T 382. Solar Energy Technologies
3 Credits (2+3P)
Solar energy technologies, including topics in passive, solar thermal, and photovoltaic systems. Theory, practical applications, safety considerations and the economics of solar renewable energy systems compared to conventional systems. Crosslisted with: WERC 382
Prerequisite(s): MATH 121G.

E T 384. Wind and Water Energy Technologies
3 Credits
Wind and Water energy technologies, including topics in small and large scale systems. Theory, practical applications, safety considerations and the economics of wind and water renewable energy systems compared to conventional systems. Crosslisted with: WERC 384
Prerequisite(s): MATH 121G.

E T 386. Sustainable Construction and Green Building Design
3 Credits
Sustainable Building materials, methods, and techniques including green architecture and design, codes, standards and specifications.
Prerequisite: MATH 121G.

E T 396. Heat Transfer and Applications
3 Credits (2+3P)
Fundamentals of conduction, convection, and radiation heat transfer. Application of heat transfer, thermodynamics, and fluid mechanics principles to thermal system analysis and design. May be repeated up to 3 credits.
Prerequisite(s): E T 306 and E T 308 and PHYS 212G.

E T 398. Digital Systems
3 Credits (2+3P)
Advanced analysis and design of digital systems using state machine logic, programming of logic devices, implementation and testing. Pre/
Prerequisite(s): E T 282 and MATH 190G.
Corequisite(s): E T 362.

E T 400. Special Topics
1-3 Credits
Directed study or project. May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

E T 401. Heating and Air-Conditioning Systems
3 Credits
HVAC system design including heating and cooling load calculations, psychrometrics, piping, duct layout, and system control. Same as M E 401.
Prerequisite: E T 306.
Corequisite: E T 396.
E T 402. Instrumentation
3 Credits (2+3P)
Sensors/transducers, signal conditioning and transmission for measurement and control systems. Student project in an area of instrumentation and/or control is required. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): E T 396 or E T 398.

E T 410. Senior Seminar
1 Credit
Transition from academics to business and industry. Graded S/U.
Prerequisite: senior standing in E T.

E T 412. Highway Technology
3 Credits
Road-vehicle performance, geometric alignment, traffic analysis, highway materials, pavement design, and plan and profile development. May be repeated up to 3 credits.
Prerequisite(s): E T 354.

E T 415. Manufacturing Management and Productivity
3 Credits
Projects incorporating concurrent engineering, total quality management, design for manufacturability/assembly, and other contemporary topics in manufacturing.
Prerequisites: senior standing in E T.

E T 418. Applied Hydraulics
3 Credits
Introduction to hydrology, hydraulic equations, hydraulic cross-sections, control structures, and collection and distribution of water, wastewater, and storm runoff using closed conduit and open channel flow.
Prerequisite(s): E T 308.

E T 420. Senior Internship
1-6 Credits
Internship requiring an approved number of hours of varied and progressive experience in the field of study. The scope and other requirements of the internship are stated in an individualized syllabus and through a memorandum of understanding between the faculty mentor and the industry partner. Taken in the senior year of program.
Prerequisites: Senior standing in E T.

E T 421. Senior Project
3 Credits
Project in an area of civil engineering technology conducted under the direction of civil engineering technology faculty member. Project must be one that can be completed within a semester and of sufficient complexity for 3 credits. Taken last semester of program.

E T 426. Analysis and Design of Machine Elements
3 Credits (2+3P)
Analysis and design of power transmission components, including: gears, sprockets, belts, chains, bearings, and shafts. Experiential design project using SolidWorks and Excel modeling. May be repeated up to 3 credits.
Prerequisite(s): E T 210, E T 241, and E T 310.

E T 432. Applied Design of Structures II
4 Credits (3+3P)
Continuation of E T 332. Design of structural systems and study of their responses. Wood and masonry systems included. May be repeated up to 4 credits.
Prerequisite(s): E T 332.

E T 435. Senior Project
3 Credits (2+3P)
Capstone course. Practical application of student’s cumulative knowledge to an assigned design projects. Design principles, teamwork, and project management skills are stressed. Demonstration of written and oral communication skills via project documentation and presentation of results. Must be graduating senior. May be repeated up to 3 credits. Consent of Instructor required.

E T 439. Advanced Digital Forensics and Incident Response
3 Credits
Advanced topics in digital forensics and incident response on Windows, Linux and Mac OS X and mobile devices. Topics include: Memory analysis, registry analysis, timeline analysis, malware analysis, Linux and Mac artifacts, mobile device forensics. May be repeated up to 3 credits.
Prerequisite(s): E T 339 and E T 377.

E T 440. Senior Design
2 Credits (1+2P)
Team design of a system, mechanism, or model that will be fabricated or simulated during the following semester in E T 441. Pre/
Prerequisite(s)/Corequisite(s): E T 444 and E T 402. Restricted to: ET C,ET E,ET M,ET U majors.

E T 441. Senior Project
2 Credits (1+2P)
Team fabrication or simulation, testing, and debugging of a system, mechanism or model designed in E T 440.
Prerequisite(s): E T 440.

E T 444. Hardware and Software Senior Design
3 Credits (2+3P)
The design, development, implementation, documentation and formal demonstration of a microprocessor-based application to solve an engineering problem. Emphasis on microprocessor architectural concepts and software interfacing. A student project is required
Prerequisite(s): E T 344 and E T 398.

E T 454. Advanced Construction Technology
3 Credits
Contractor design and construction methods concerning formwork, special foundations, shoring, excavations, pilings, steel erection, and various material handling components.
Prerequisite: E T 354 and E T 355.

E T 455. Cost Estimating and Scheduling
3 Credits
Methods and techniques in construction estimating including final bid preparation, construction planning and scheduling using various network methods and other techniques.
Prerequisite: junior or senior standing in E T.

E T 456. Applied Power Technologies
4 Credits (3+3P)
Basic elements of modern power systems, energy sources, substation configuration, load cycles, and three-phase circuits. Students will gain experience in power factor correction, transmission line configurations and impedance, voltage regulation of transformers, and the per-unit system. Study of load flow, fault analysis, and economic operations is included May be repeated up to 4 credits.
Prerequisite(s): (MATH 235 or MATH 191G) and E T 272 and ((PHYS 212G or PHYS 216G) and (PHYS 212GL or PHYS 216GL)).
E T 457. Information Security
3 Credits
Introduction to information security concepts including penetration testing and ethical hacking.
Prerequisite(s): E T 362 and E T 339.

E T 458. Database Technology for Engineering
3 Credits
Prerequisite(s): E T 362 and E T 160.

E T 462. Web Technologies and Multimedia
3 Credits
Introduction to web technologies and multimedia. May be repeated up to 3 credits.
Prerequisite(s): E T 160.

E T 463. Advanced Linux and Python Scripting
3 Credits
Advanced Linux includes installation and maintenance of Unix/Linux/Windows versions of Python. Use of Python to solve numerous engineering problems including video and audio. Image manipulation. Using PostScript for image and typesetting development. Integration of C programming with Python.
Prerequisite(s): E T 255 and E T 362.

E T 464. Advanced Windows Server Administration
3 Credits
Learn about configuration and maintenance of Microsoft Windows Server and related services such as DHCP, DNS, Failover Clusters, Active Directory, Group Policy, File Sharing, Microsoft SQL server, Microsoft Exchange Server, IIS, Network Load Balancing, Backups, Remote Administration, Powershell scripting and more. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): E T 339. Prerequisite(s): E T 362.

E T 472. Intelligent Transportation Systems (ITS)
3 Credits
Traffic flow theory, telecommunication and information technology application in transportation, system architecture and standards, transportation management, incident and emergency management, corridor management, dynamic route guidance, in-vehicle systems, and traffic signal timing. Consent of instructor required.

E T 477. Computer Networking II
3 Credits
Advanced concepts in computer network design and applications including managing the campus network, virtual LANs (VLAN), network security, wireless networks, high-speed optical networks, and voice over IP. May be repeated up to 3 credits.
Prerequisite(s): E T 277 or E T 377.

E T 480. Innovation and Product Development
3 Credits
Experiential product design and development. Students will learn about different types of innovation, business models, and methods for developing products. Students will apply the scientific method to develop a product idea of their own. Students will propose ideas, develop hypotheses, test hypotheses, and iterate until they have validated their product idea or identified a need to pivot. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s)/Corequisite(s): (COMM 265G or COMM 253G or AXED 201G or HON 265G).

E T 482. Advanced Manufacturing
3 Credits (2+2P)
Fundamentals of computer aided manufacturing (CAM) and computer numerical control (CNC) machining. Students will learn how to program several variants of CNC machines, using both G/M code programming and computer aided manufacturing software. Emphasis will be on the effective design of parts to be made on CNC machines along with a hands-on lab to give students experience on CNC machines. Students will individually design, manufacture, and keep items such as keychains, bottle openers, LED clocks, ergonomic handles, and license plates. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): E T 210 and E T 217.

E T 490. Selected Topics
1-3 Credits
Selected topics in engineering technology and related areas.
Prerequisite: consent of instructor.

SUR 101. Introduction to Surveying Engineering
1 Credit
Review and discussion of career paths open to surveying engineers. Restricted to: Main campus only.

SUR 201. GPS and Spatial Data Applications
3 Credits
Overview of spatial data applications based on GPS observations. Emphasis on positioning and navigation using code-phase techniques with handheld receivers. Use of coordinate systems. Students encouraged to have their own GPS handheld unit.

SUR 222. Plane Surveying
3 Credits (2+3P)
Theory and practice of geomatics as applied to plane surveying in the areas of linear measurements, angle measurements, area determination, differential and trigonometric leveling, and topographic mapping. May be repeated up to 3 credits. Crosslisted with: DRFT 222.
Prerequisite(s): MATH 190G.

SUR 264. Introduction to LIS
3 Credits (2+3P)
Introduction to land information systems. Land tenure systems, coordinate systems, computer methods. Pre/Corequisite(s): DRFT 109.

SUR 285. Precise Digital Mapping
3 Credits
Perform basic photogrammetric mapping, and create digital terrain models. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): SUR 222 or DRFT 222.
SUR 292. Public Land Survey System Boundaries  
3 Credits (2+3P)  
Detailed study of the U.S. Public Land Survey System Instructions with special emphasis on New Mexico. Sectionalized land subdivision, corner restoration, and field surveys. Field trips required.  
Prerequisite: SUR 222.

SUR 312. Legal Principles and Boundary Law I  
3 Credits  
Legal principles of property boundary retracement, and rights-of-way. Systems of law and legal research. Principles of the U.S. Public Land Survey System and manual of Instructions May be repeated up to 3 credits.  
Prerequisite(s): SUR 222 or DRFT 222.

SUR 322. Laser Scanning Mapping Technologies  
3 Credits (2+2P)  
Perform basic terrestrial & airborne LiDAR scan, LiDAR Technologies and Applications will include ranging technologies such as LiDAR, SAR, and Bathymetry, point cloud data management & extraction, scan registration and processing  
Prerequisite(s): SUR 285.

SUR 328. Construction Surveying & Automation Technologies  
3 Credits (2+3P)  
Construction Surveying Principles: conventional and machine controlled. Layout alignments, grades, various infrastructure, buildings. Understand error identification, common quality control checks and blunder identification. May be repeated up to 3 credits.  
Prerequisite(s): (SUR 222 or DRFT 222) and (MATH 191G or MATH 235).

SUR 330. Computer Applications of Surveying  
3 Credits (2+3P)  
Advanced application of concepts and tools used in the manipulation of geospatial data in a computer environment. Topics include the use of surveying-specific software applications for problem solving, analysis and generation of spatial data products. Advanced programming skills in a high level language are presented and applied.  
Prerequisite(s): DRFT 109 AND SUR 222, and ( MATH 191G or MATH 235) and (C S 187 or E T 262 or E E 161).

SUR 351. Introductory Spatial Data Adjustment I  
3 Credits  
Theory of observations/measurements, random error theory, applications of statistical data analysis in surveying, confidence intervals and statistical testing, propagation of random errors. May be repeated up to 3 credits.  
Prerequisite(s): (SUR 222 or DRFT 222) and (MATH 191G or MATH 235) and (A ST 311G or STAT 251G).

SUR 361. Introduction to Geodesy/Geodetic Control Surveying  
3 Credits (2+2P)  
Horizontal and vertical control network design and consideration. May be repeated up to 3 credits.  
Prerequisite(s): (SUR 222 or DRFT 222) and (MATH 191G or MATH 235).

SUR 370. Control Surveying  
3 Credits (2+3P)  
Prerequisite(s): SUR 222 and (MATH 191G or MATH 235G).

SUR 384. Surveying Practicum  
1-3 Credits  
Surveying practice under the direction of a licensed, professional land surveyor requiring 45 hours per credit as per a plan worked out between the student and the surveyor and approved by the Surveying Engineering faculty. Work must be certified by the licensed, professional land surveyor. Requires a written report by the student.  
Prerequisites: SUR 222 and junior standing.

SUR 401. Ethics and Professionalism in Surveying and Mapping  
3 Credits  
Ethics as applied to the surveying profession. Includes case studies and problems.  
Prerequisites: SUR 312, SUR 328, and senior standing.

SUR 412. Advanced Topics in Boundary Surveying  
3 Credits (2+3P)  
Advanced land boundary topics including water boundaries, mineral claims, Spanish and Mexican land grants, state and national boundaries.  
Prerequisite: SUR 312.

SUR 450. Senior Project  
1 Credit  
Research project prepared by student. Includes class presentation. Students will learn how to research after the end of their formal education.  
Prerequisite(s): Senior Standing.

SUR 451. Advanced Survey Measurements, Analysis, and Adjustments  
3 Credits  
Rigorous analysis of the theory of observations as applied to spatial data, application of least squares adjustments, ability to perform statistical analysis to determine accuracy of final product, constrained/free geospatial data integration, error ellipses, and pre-analysis of spatial data acquisition procedures. May be repeated up to 3 credits.  
Prerequisite(s): SUR 351, (MATH 280 or MATH 480).

SUR 452. Spatial Data Integration and Analysis  
3 Credits (2+2P)  
Methodologies of geospatial data acquisition and integration, knowledge of applications the source data is intended for, accuracies of acquired spatial data, types and analysis of coordinate transformation models. Integrating datasets for routing analysis, location study analysis, land management and long range plans as well as existing needs related to connectivity and safety. May be repeated up to 3 credits.  
Prerequisite(s): SUR 451.

SUR 461. GNSS Positioning  
3 Credits (2+3P)  
Logistics of GNSS data collection, the GPS signal, codes and biases, error sources, differences between relative and autonomous GNSS positioning, code phase carrier phase, DGPS static and RTK surveys. Geodetic and GPS standards and specifications GNSS data processing, network adjustments, and evaluation of spatial data accuracy practical applications of GNSS May be repeated up to 3 credits.  
Prerequisite(s): SUR 361.

SUR 464. Legal Principles and Boundary Law II  
3 Credits  
Concepts of real property, land tenure and ethics, and land registration systems; the function and design of multipurpose cadastre and land information systems. May be repeated up to 3 credits. Consent of Instructor required.  
Prerequisite(s): SUR 312.
SUR 498. Emerging Technology in Geomatics
3 Credits
Hydrographic/Bathymetric, Altimetry, Space borne Imaging Systems, Mobile Mapping Systems, Mining and Agriculture Surveying Principles, and advanced ranging data acquisition systems. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructior and senior standing.
Name: Engineering Technology and Surveying Engineering (ETSE)

Physical Address:
Ed and Harold Foreman Engineering Complex III
1060 Frenger Mall - Room 130
Las Cruces, NM 88003-1230
Map to ETSE [https://maps.nmsu.edu/?id=419&type=building]

Mailing Address:
Engineering Technology and Surveying Engineering
New Mexico State University
P.O. Box 30001, MSC 3566
Las Cruces, NM 88003-8001
Phone: (575) 646-2236
Website: [https://et.nmsu.edu/](https://et.nmsu.edu/)

Digital Electronic Applications - Undergraduate Minor
A grade of C- (or better) is required in each course (may not be taken S/U). All prerequisites must be met before enrolling in a class. Engineering Technology students can meet most of the requirements for this minor by judicious selection of their technical electives.

For non-ECET majors
Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E T 182</td>
<td>Digital Logic</td>
<td>3</td>
</tr>
<tr>
<td>E T 282</td>
<td>Digital Electronics</td>
<td>4</td>
</tr>
<tr>
<td>E T 362</td>
<td>Software Technology II</td>
<td>3</td>
</tr>
<tr>
<td>E T 344</td>
<td>Microcomputer Systems</td>
<td>3</td>
</tr>
<tr>
<td>E T 398</td>
<td>Digital Systems</td>
<td>3</td>
</tr>
<tr>
<td>E T 444</td>
<td>Hardware and Software Senior Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 19

Digital Forensics - Undergraduate Minor
A grade of C- (or better) is required in each class. No courses may be taken S/U. All prerequisites must be met before enrolling in a class. Engineering Technology students can meet most of the requirements for this minor by judicious selection of their electives.

For non-IET majors
Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E T 255</td>
<td>Linux System Administration</td>
<td></td>
</tr>
<tr>
<td>E T 339</td>
<td>Introduction to Digital Forensics and Incident Response</td>
<td></td>
</tr>
<tr>
<td>E T 439</td>
<td>Advanced Digital Forensics and Incident Response</td>
<td></td>
</tr>
<tr>
<td>ICT 450</td>
<td>Ethical Hacking</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 12

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Engineering Technology - Civil - Bachelor of Science in Engineering Technology
CET ([https://et.nmsu.edu/academics/civil-engineering-technology-cet](https://et.nmsu.edu/academics/civil-engineering-technology-cet)) students learn to implement current civil engineering practices in design, construction, and project management. They may assist with design and/or supervise the construction of roads, buildings, airports, dams, bridges; and water supply and sewage systems. They take courses in properties of construction materials, blueprint reading, surveying, applied structural design, highway technology, land development, and hydraulics.


Requirements (123 credits)

General Education

State of New Mexico Common Core

<table>
<thead>
<tr>
<th>Area I: Communications</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111G Rhetoric and Composition</td>
</tr>
<tr>
<td>Written Communications Elective (ENGL 218G Recommended)</td>
</tr>
<tr>
<td>Oral Communications Elective (COMM 265G Recommended)</td>
</tr>
</tbody>
</table>

Area II: Mathematics - see below

Area III: Laboratory Science

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 110G</td>
<td>Principles and Applications of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 215G</td>
<td>Engineering Physics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 211GL</td>
<td>General Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>or PHYS 215GL</td>
<td>Engineering Physics I Laboratory</td>
<td></td>
</tr>
</tbody>
</table>

Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts

Select 15 total credits from Area IV and V, with at least 6 credits from each area: 1

Area IV: Social and Behavioral Sciences:

Select 6-9 credits from Anthropology, Economics, Political Science, Psychology, and Sociology electives 1

Area V: Humanities and Fine Arts:

Select 6-9 credits from History, Philosophy, Literature, Art, Music, Dance, Theater, and Religion electives 1

Institution Specific General Education
Viewing a Wider World Electives (must be taken from two different colleges) \(^1\)

**Program Specific Requirements**

**Mathematics**
- MATH 235 Calculus for the Technical Student I \(3\)
- or MATH 191G Calculus and Analytic Geometry I \(3\)
- MATH 236 Calculus for the Technical Student II \(3\)
- or MATH 192G Calculus and Analytic Geometry II \(3\)

Select one course (3-4 credits) from the following: \(3\)
- PHYS 212G General Physics II
- or PHYS 216G Engineering Physics II
- E T 190 Applied Circuits
- E E 201 Electric Circuit Analysis

**Technical**
- A ST 311 Statistical Applications \(3\)
- ENGR 100 Introduction to Engineering \(3\)
- I E 451 Engineering Economy \(3\)
- DRFT 109 Computer Drafting Fundamentals \(3\)
- DRFT 143 Civil Drafting Fundamentals \(3\)
- SUR 222 Plane Surveying \(3\)
- or DRFT 222 Surveying Fundamentals \(3\)

Geomatics/Surveying Elective - must come from pre-approved list (see advisor) \(3\)

Technical Electives - must come from pre-approved list (see advisor or list in ET office) \(9\)

**Engineering Technology**
- E T 154 Construction Methods and Communications \(3\)
- E T 240 Applied Statics \(3\)
- E T 241 Applied Dynamics \(3\)
- E T 254 Concrete Technology \(3\)
- E T 308 Fluid Technology \(3\)
- E T 308 L Fluid Technology Lab \(1\)
- E T 310 Applied Strength of Materials \(3\)
- E T 310 L Applied Strength of Materials Lab \(1\)
- E T 332 Applied Design of Structures I \(4\)
- E T 354 Soil and Foundation Technology \(4\)
- E T 355 Site/Land Development and Layout \(3\)
- E T 410 Senior Seminar \(1\)
- E T 412 Highway Technology \(3\)
- E T 418 Applied Hydraulics \(3\)
- E T 420 Senior Internship \(3\)
- or E T 421 Senior Project \(3\)
- E T 432 Applied Design of Structures II \(4\)

**Concentrations** - students "may" choose to focus on a particular CET concentration (optional) \(^2\)

The following optional concentrations are available:
- Construction Technology
- Geomatics (Surveying Engineering)
- Renewable Energy Technologies
- Transportation Technology

<table>
<thead>
<tr>
<th>Water/Wastewater Technology</th>
<th>Total Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>123</td>
</tr>
</tbody>
</table>

\(1\) See the required courses (p. 47) section of the catalog for a full list of courses
\(2\) Concentrations are "optional" educational sequences that students may chose to focus on particular areas related to CET. Concentrations may often be done without additional credits by judicious use of electives and other optional course requirements.

**Concentration: Construction Technology**

**Technical and Surveying Elective Requirements**
- E T 454 Advanced Construction Technology \(3\)
- E T 455 Cost Estimating and Scheduling \(3\)
- SUR 328 Construction Surveying & Automation Technologies \(3\)

Select one from the following: \(3\)
- MGT 453 Leadership and Motivation
- MGT 454 Work Teams in Organizations
- MGT 461 New Venture Creation

**Total Credits** \(12\)

**Concentration: Renewable Energy Technologies**

**Technical and Survey Elective Requirements**
- E T 381 Renewable Energy Technologies \(3\)
- E T 382 Solar Energy Technologies \(3\)
- E T 384 Wind and Water Energy Technologies \(3\)
- E T 386 Sustainable Construction and Green Building Design \(3\)
- SUR 328 Construction Surveying & Automation Technologies \(3\)

**Total Credits** \(12\)

**Concentration: Transportation Technology**

**Technical and Survey Elective Requirements**
- C E 479 Pavement Analysis and Design \(3\)
- E T 455 Cost Estimating and Scheduling \(3\)
- E T 472 Intelligent Transportation Systems (ITS) \(3\)
- SUR 328 Construction Surveying & Automation Technologies \(3\)

**Total Credits** \(12\)

**Concentration: Water/Wastewater Technology**

**Technical and Survey Elective Requirements**
- C E 256 Environmental Engineering and Science \(3\)
- C E 356 Fundamentals of Environmental Engineering \(3\)
- SUR 328 Construction Surveying & Automation Technologies \(3\)
- ENVE 456 Environmental Engineering Design \(3\)

**Total Credits** \(12\)

**Concentration: Geomatics (Surveying Engineering)**

**Technical and Survey Elective Requirements**
### Engineering Technology - Electronics and Computer - Bachelor of Science in Engineering Technology

Electronics and Computer Engineering Technology (https://et.nmsu.edu/academics/electronics-and-computer-engineering-technology-ecet) (ECET) curriculum include design, building and testing a wide range of electronic and computer systems including digital and analog system, microprocessor systems, machine or micro-controllers, communications devices, applied power systems, digital signal processing, instrumentation, computer networking. Our program includes a diverse exposure to programming languages such as Java and C as well as the electronic design language of HDL.


### Requirements (121 Total Credits)

#### General Education

**State of New Mexico Common Core**

**Area I: Communications**

| ENGL 111G | Rhetoric and Composition | 4 |
| Written Communications Elective (ENGL 218G Recommended) | 3 |

**Area II: Mathematics - see below**

**Area III: Laboratory Science**

| PHYS 211G or PHYS 215G | General Physics I | 3 |
| PHYS 211GL or PHYS 215GL | General Physics I Laboratory | 1 |
| PHYS 212G or PHYS 216G | General Physics II | 3 |
| PHYS 212GL or PHYS 216GL | General Physics II Laboratory | 1 |

**Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts**

Select 15 total credits from Area IV and V, with at least 6 credits from each area:

- **Area IV:** Social and Behavioral Sciences: 1
- **Area V:** Humanities and Fine Arts: 1

**Technical Electives Upper Division - see advisor or pre-approved list**

- E T 182 Digital Logic: 3
- E T 190 Applied Circuits: 4
- E T 246 Electronic Devices I: 4
- E T 262 Software Technology I: 3
- E T 272 Electronic Devices II: 4
- E T 282 Digital Electronics: 4
- E T 314 Communications Systems I: 3
- E T 324 Signal Processing and Filtering: 4
- E T 344 Microcomputer Systems: 3
- E T 362 Software Technology II: 3
- E T 377 Computer Networking I: 3
- E T 381 Renewable Energy Technologies: 3
- E T 398 Digital Systems: 3
- E T 402 Instrumentation: 3
- E T 410 Senior Seminar: 1
- E T 435 Senior Project: 3
- E T 444 Hardware and Software Senior Design: 3
- E T 456 Applied Power Technologies: 4

**Total Credits**: 121

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1. See the required courses (p. 47) section of the catalog for a full list of courses
2. Technical electives 300 level and above may come from a pre-approved list (https://et.nmsu.edu/academics/electronics-and-computer-engineering-technology-ecet) or see your advisor for other options.

Concentrations are “optional” educational sequences that permit students to focus on particular areas related to their major. Concentrations “may” often be done without additional credits by judicious use of electives and other optional course requirements.

### Concentration: Renewable-Energy Technologies

Students can fulfill the requirements for the Renewable Energy Technologies concentration within the ETEC majors by judicious selection of the three required technical electives. The selection of these electives may not require any additional credits beyond those of the major.

#### Requirements

**Institution Specific General Education**

- Viewing a Wider World Electives - must be from two different colleges: 6

**Program Specific Requirements**

**Mathematics**

- MATH 235 Calculus for the Technical Student I: 3
- or MATH 191G Calculus and Analytic Geometry I: 3
- MATH 236 Calculus for the Technical Student II: 3
- or MATH 192G Calculus and Analytic Geometry II: 3

**Technical**

- A ST 311 Statistical Applications: 3
- ENGR 100 Introduction to Engineering: 3
- I E 451 Engineering Economy: 3

**Technical Electives Upper Division - see advisor or pre-approved list**

- E T 182 Digital Logic: 3
- E T 190 Applied Circuits: 4
- E T 246 Electronic Devices I: 4
- E T 262 Software Technology I: 3
- E T 272 Electronic Devices II: 4
- E T 282 Digital Electronics: 4
- E T 314 Communications Systems I: 3
- E T 324 Signal Processing and Filtering: 4
- E T 344 Microcomputer Systems: 3
- E T 362 Software Technology II: 3
- E T 377 Computer Networking I: 3
- E T 381 Renewable Energy Technologies: 3
- E T 398 Digital Systems: 3
- E T 402 Instrumentation: 3
- E T 410 Senior Seminar: 1
- E T 435 Senior Project: 3
- E T 444 Hardware and Software Senior Design: 3
- E T 456 Applied Power Technologies: 4
Select four from the following: 12

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>E T 365</td>
<td>Building Utilities</td>
</tr>
<tr>
<td>WERC 300</td>
<td>Introduction to Pollution Prevention and Its Application</td>
</tr>
<tr>
<td>WERC 466</td>
<td>Fuel Cell and Hydrogen Technology</td>
</tr>
<tr>
<td>E T 382</td>
<td>Solar Energy Technologies</td>
</tr>
<tr>
<td>E T 384</td>
<td>Wind and Water Energy Technologies</td>
</tr>
<tr>
<td>E T 401</td>
<td>Heating and Air-Conditioning Systems</td>
</tr>
<tr>
<td>or M E 401</td>
<td>Heating/Air-Conditioning System</td>
</tr>
<tr>
<td>E T 420</td>
<td>Senior Internship</td>
</tr>
<tr>
<td>or E T 435</td>
<td>Senior Project</td>
</tr>
</tbody>
</table>

Total Credits 12

2 E T 420 Senior Internship must be carried out within a renewable energy field. E T 435 Senior Project must be related to a renewable energy application.

Concentration: Digital Forensics
Students can fulfill the Digital Forensics Concentration requirements by completing the following four courses.

Technical Requirements
ICT 450 Ethical Hacking 3
E T 255 Linux System Administration 3
E T 339 Introduction to Digital Forensics and Incident Response 3
E T 439 Advanced Digital Forensics and Incident Response 3

Total Credits 12

Concentration: Information Security Technology
Students can fulfill the Information Security Technology Concentration requirements by completing the following four courses.

Technical Requirements
C S 478 Computer Security 3
BCIS 482 Management of Information Security 3
ICT 450 Ethical Hacking 3
ICT 457 Introduction to Information Security Technology 3

Total Credits 12

Engineering Technology - Information - Bachelor of Science in Engineering Technology
Information Engineering Technology (IET) (https://et.nmsu.edu/academics/information-engineering-technology-iet) focusing on the study related to “information engineering” – its principles, technologies, networks, and applications. It is a vibrant discipline that has a tremendous impact on the economy as well as society. Information Engineering covers the following areas:

- Computer Programming and Coding,
- Database Technology,
- Telecommunications & Networking,
- Internet Technologies & Applications,
- Operating Systems Technology,
- Digital Forensics, and
- Information Security

The Information Engineering Technology program is accredited (https://et.nmsu.edu/accreditation-and-assessment/degree-accreditation-information) by the Engineering Technology Accreditation Commission (ETAC) of ABET, 111 Market Place, Suite 1050, Baltimore, MD21202-4012, telephone: (410) 347-7700. www.abet.org (http://www.abet.org)

Requirements (121 Total Credits)

General Education
State of New Mexico Common Core

<table>
<thead>
<tr>
<th>Area</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>ENGL 111G Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Written Communications Elective (ENGL 218G Recommended)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Oral Communications Elective (COMM 265 Recommended)</td>
<td>3</td>
</tr>
</tbody>
</table>

Area II: Mathematics - see below
Area III: Laboratory Science - courses must be 4cr. with a lab
Select 8 credits from Biology, Chemistry, or Physics (strongly recommended) electives (with Lab) 1

Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts: Select 15 total credits from Area IV and V, with at least 6 credits from each area: 1

Institution Specific General Education
Viewing a Wider World Electives 1

Program Specific Requirements

Mathematics
MATH 235 Calculus for the Technical Student I 3
or MATH 191G Calculus and Analytic Geometry I
MATH 236 Calculus for the Technical Student II 3
or MATH 192G Calculus and Analytic Geometry II

Technical
ENGR 100 Introduction to Engineering 3
A ST 311 Statistical Applications 3
BCIS 350 Information Systems Analysis and Design 3
BCIS 480 E-Commerce Security 3

Upper Division Business Elective (300 and above) 3

Technical Electives (200 or above) - see advisor or preapproved list 2

Technical Electives (300 or above) - see advisor or preapproved list 2

Engineering Technology
E T 182 Digital Logic 3
E T 160 Basic Computer Operating Systems 3
E T 203 Computational Foundations 3
E T 245 Computer Hardware Fundamentals 3
E T 255 Linux System Administration 3
E T 262 Software Technology I 3
E T 377 Computer Networking I 3
E T 339 Introduction to Digital Forensics and Incident Response 3
New Mexico State University

E T 344 Microcomputer Systems 3
E T 362 Software Technology II 3
E T 410 Senior Seminar 1
E T 435 Senior Project 3
E T 439 Advanced Digital Forensics and Incident Response 3
E T 458 Database Technology for Engineering 3
E T 462 Web Technologies and Multimedia 3
E T 463 Advanced Linux and Python Scripting 3
E T 464 Advanced Windows Server Administration 3
E T 477 Computer Networking II 3

Total Credits 121

1 See the required courses (p. 47) section of the catalog for a full list of courses.
2 Technical electives must be taken from a preapproved list which you can find in the ET office or online (https://et.nmsu.edu/academics/information-engineering-technology-iet). Other choices require advisor and/or department head approval.

Concentration: Information Security Technology
Concentrations are "optional" educational sequences that students may choose to focus on particular areas related to their major. Concentrations may often be done without additional credits by judicious use of electives and other optional course requirements.

Students can fulfill the Information Security Technology Concentration requirements by completing the following four courses.

Technical Requirements
CS 478 Computer Security 3
BCIS 482 Management of Information Security 3
ICT 450 Ethical Hacking 3
ICT 457 Introduction to Information Security Technology 3

Total Credits 12

Engineering Technology - Mechanical - Bachelor of Science in Engineering Technology

MET (https://et.nmsu.edu/academics/mechanical-engineering-technology-met) majors learn theory and applications in the fields of manufacturing, product design and development, power systems, machinery, and fluid technology. Our students take courses in mechanisms and machines, computer aided modeling, heat transfer, and instrumentation, to name a few. They find employment in the design and testing of tools, engines, machines, and other complex mechanical devices. MET represents one of the broadest engineering technology disciplines. Our MET students also learn by designing and racing mini-baja cars, designing and constructing machines to help our farmers, and even building systems in other countries.


Requirements (124 Total Credits)

General Education

State of New Mexico Common Core

Area I: Communications
ENGL 111G Rhetoric and Composition 4
Written Communications Elective (ENGL 218G Recommended) 3
Oral Communications Elective (COMM 265G Recommended) 1

Area II: Mathematics - see below

Area III: Laboratory Science
CHEM 110G Principles and Applications of Chemistry 4
PHYS 211G General Physics I or PHYS 215G Engineering Physics I
PHYS 211GL General Physics I Laboratory or PHYS 215GL Engineering Physics I Laboratory

Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts: Select 15 total credits from Area IV and V, with at least 6 credits from each area:

Area IV: Social and Behavioral Sciences:
ECON 251G Principles of Macroeconomics (Strongly Recommended) or ECON 252G Principles of Microeconomics

Area V: Humanities and Fine Arts:
Institution Specific General Education Viewing a Wider World Electives (must be from two different Colleges) 6

Strongly Recommended Courses:
Elective I: Select one Business Administration, Business Law, Finance or Management Elective
Elective II: Select one from the following:
AG E 337V Natural Resource Economics
EPWS 380V Science & Society
PHYS 303V Energy and Society in the New Millennium
PHIL 323V Engineering Ethics (strongly recommended)
HIST 302V Science in Modern Society

Program Specific Requirements

Mathematics
MATH 235 Calculus for the Technical Student I 3
MATH 236 Calculus for the Technical Student II 3

Natural Science
PHYS 212G General Physics II or PHYS 216G Engineering Physics II
PHYS 212GL General Physics II Laboratory or PHYS 216GL Engineering Physics II Laboratory

Technical
A ST 311 Statistical Applications 3
ENGR 100 Introduction to Engineering 3
I E 451 Engineering Economy 3
Concentration: Renewable Energy Technologies

Students can fulfill the requirements for the Renewable Energy Technologies concentration within the ET M majors by judicious selection of the three required technical electives. The selection of these electives will not require any additional credits beyond those of the major.

Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E T 381</td>
<td>Renewable Energy Technologies</td>
<td>3</td>
</tr>
<tr>
<td>E T 385</td>
<td>Building Utilities</td>
<td>3</td>
</tr>
<tr>
<td>WERC 466</td>
<td>Fuel Cell and Hydrogen Technology</td>
<td>4</td>
</tr>
<tr>
<td>E T 382</td>
<td>Solar Energy Technologies</td>
<td>3</td>
</tr>
<tr>
<td>E T 384</td>
<td>Wind and Water Energy Technologies</td>
<td>3</td>
</tr>
<tr>
<td>E T 401</td>
<td>Heating and Air-Conditioning Systems</td>
<td>3</td>
</tr>
<tr>
<td>or M E 401</td>
<td>Heating/Air-Conditioning System</td>
<td>3</td>
</tr>
<tr>
<td>E T 435</td>
<td>Senior Project</td>
<td>3</td>
</tr>
<tr>
<td>or E T 420</td>
<td>Senior Internship</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 12

* E T 420 Senior Internship must be completed within a field of renewable energy field and/or Capstone Design Project must be related to a renewable energy application.

Geomatics - Bachelor of Science in Geomatics

Geomatics (previously known as Surveying Engineering) in the College of Engineering at NMSU will emphasize the techniques and science of measuring the terrestrial and three-dimensional position of points on, above, and below the earth’s surface and the distance and angles between them at a high level of precision to aid in the design of infrastructure including roads, bridges and legal boundaries for ownership as well as to meet the educational requirements for employment in industry and registration as a Professional Land Surveyor in the State of New Mexico.

When performing this work, professionals must have an understanding of: the science of geomatics measurement and analysis; the legal principles of boundary location; the laws related to boundaries and land use; and applicable mathematical and computational theories and principles. Geomatics professionals may work for private surveying, construction, and engineering firms, for City, County, State or Federal Highway Departments, for State Lands Commissions, for the US Forest Service and for the US Bureau of Land Management as examples.

The mission of the Department of ETSE is to provide men and women with the rigorous, fundamental education needed to enter and succeed in the Geomatics and related professions. To accomplish this mission, the department will introduce students to the theory and application of recognized geomatics principles.

Requirements (120 Credits)

General Education

State of New Mexico Common Core

Area I: Communications

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td>Written Communications Elective (ENGL 218G)</td>
<td>3</td>
<td></td>
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</tbody>
</table>

Recommended Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 110G</td>
<td>Principles and Applications of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>E T 110</td>
<td>Introduction to 3-D Modeling (Solid Works)</td>
<td>3</td>
</tr>
<tr>
<td>E T 182</td>
<td>Digital Logic</td>
<td>3</td>
</tr>
<tr>
<td>E T 190</td>
<td>Applied Circuits</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td>E T 210</td>
<td>Intermediate 3-D Modeling (Solid Works)</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 100</td>
<td>Introduction to Engineering</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 211G</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 211GL</td>
<td>and General Physics I Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>Humanities &amp; Fine Arts Elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>E T 217</td>
<td>Manufacturing Processes</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 217 L</td>
<td>and Manufacturing Processes Lab</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits 35

1 See the required courses (p. 47) section of the catalog for a full list of courses.
2 Courses with built-in laboratory component.
3 See a MET advisor or the pre-approved list in the ETSE office.
Oral Communications Elective (COMM 265G Recommended)  

Area II: Mathematics

MATH 191G Calculus and Analytic Geometry I  

Laboratory Sciences

PHYS 215G Engineering Physics I  
or PHYS 211G General Physics I  

PHYS 215GL Engineering Physics I Laboratory  
or PHYS 211GL General Physics I Laboratory  

PHYS 216G Engineering Physics II  
or PHYS 212G General Physics II  

PHYS 216GL Engineering Physics II Laboratory  
or PHYS 212GL General Physics II Laboratory  

Choose from GEOL 111G, GEOL 212G, GEOG 111G, C S 171G, ASTR 110G, ASTR 105G

Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts: Select 15 total credits from Area IV and V, with at least 6 credits from each area:

Area IV: Social and Behavioral Sciences: (ECON 251G or 252G recommended)

Area V: Humanities and Fine Arts:

Two Viewing a Wider World (VWW) Electives (must be from two different colleges)  

PHIL 323V Engineering Ethics (required or equivalent Ethics course)

Program Specific Requirements

Mathematics

MATH 192G Calculus and Analytic Geometry II  

MATH 280 Introduction to Linear Algebra  
or MATH 480 Matrix Theory and Applied Linear Algebra  

STAT 371 Statistics for Engineers and Scientists I  
or A ST 311 Statistical Applications  

Technical

ENGR 100 Introduction to Engineering  

DRFT 109 Computer Drafting Fundamentals  
or DRFT 153 Survey Drafting Applications  

BLAW 325 Real Estate Principles and Law I  
or BLAW 316 Legal Environment of Business  

E T 262 Software Technology I  
or OECS 192 C++ Programming I  

Surveying Engineering

SUR 222 Plane Surveying  
or DRFT 222 Surveying Fundamentals  

SUR 264 Introduction to LIS  
or GEOG 381 Cartography and Geographic Information Systems  

SUR 285 Precise Digital Mapping  

SUR 312 Legal Principles and Boundary Law I  

SUR 328 Construction Surveying & Automation Technologies  

SUR 322 Laser Scanning Mapping Technologies  

SUR 351 Introductory Spatial Data Adjustment I  

E T 355 Site/Land Development and Layout  

SUR 361 Introduction to Geodesy/Geodetic Control Surveying  

SUR 451 Advanced Survey Measurements, Analysis, and Adjustments  

SUR 452 Spatial Data Integration and Analysis  

SUR 461 GNSS Positioning  

SUR 464 Legal Principles and Boundary Law II  

SUR 498 Emerging Technology in Geomatics  

GEOG 481 Fundamentals of Geographic Information Science and Technology (GIS & T)

I E 451 Engineering Economy  

E T 420 Senior Internship  

or E T 421 Senior Project

Total Credits

120

1 See the required courses (p. 47) section of the catalog for a full list of courses.

Geomatics - Undergraduate Minor

Geomatics involves the application of knowledge to the analysis, design and execution of mapping, geomatics, geospatial information systems, and surveying. When performing this work, professionals must have an understanding of: the science of geomatic measurement and analysis; the legal principles of boundary location; the laws related to boundaries and land use; and applicable mathematical and computational theories and principles. Geomatics is made up of positional accuracy, land planning and development concepts pertinent to subdivision science. Geomatics professionals work for private surveying or engineering firms, for City, County, State or Federal Highway Departments, for State Lands Commissions, for the US Forest Service and for the US Bureau of Land Management, among others.

The mission of the Department of ETSE is to provide men and women with the rigorous, fundamental education needed to enter and succeed in the Geomatics and related professions. To accomplish this mission, the department will introduce students to the theory and application of recognized geomatics principles.

Required 12 credits from:

SUR/DRFT 222 Plane Surveying  

SUR 285 Precise Digital Mapping  

SUR 312 Legal Principles and Boundary Law I  

SUR 328 Construction Surveying & Automation Technologies  

SUR 351 Introductory Spatial Data Adjustment I  

Select 6 credits from:

E T 355 Site/Land Development and Layout  

SUR 361 Introduction to Geodesy/Geodetic Control Surveying  

SUR 322 Laser Scanning Mapping Technologies  

SUR 461 GNSS Positioning  

GEOG 373 Introduction to Remote Sensing  

or GEOG 381 Cartography and Geographic Information Systems  

GEOG 381 Cartography and Geographic Information Systems

Total Credits

18
Information and Communication Technology - Bachelor of Information and Communication Technology

(120 credits)

Information and Communication Technology (ICT) (https://et.nmsu.edu/academics/information-and-communication-technology-ict) is a distance education degree completion program. The program focuses on the knowledge and experience that is required to design, implement and manage a variety of information systems. The curriculum includes the study of:

- networking and network security
- computer hardware,
- application and operating systems software,
- system integration,
- database design and management,

Graduates of the program can expect to enter the workforce with titles that include Information Technologist, Systems or Network Administrator, Project Manager, Database Administrator and Computer Support Specialist.

The ICT program is a distance education program and does not require any on-campus visits. Students who are successful in distance education programs typically are self-motivated, do not rely heavily on face-to-face instruction, work independently, and can remain on schedule. Students must have familiarity with, and access to:

- a high speed Internet connection,
- a sound card, 4G of RAM minimum,
- a microphone/Webcam
- Microsoft Operating System and Office ®.

This program was not designed to be an engineering or engineering technology program, although there is significant overlap with one of the engineering technology programs (IET) offered by the department. Thus, the ICT program differs from all other baccalaureate programs offered by departments in the College of Engineering in that it is not accredited by ABET Inc.; however, the ICT program is accredited under NMSU’s umbrella accreditation by the Higher Learning Commission (https://accreditiation.nmsu.edu) of the North Central Association of Colleges and Schools.

The program is designed to be a two-year degree completion educational path to a baccalaureate degree for graduates of computer and technology-related associate degree programs from community colleges or other two-year institutions. It is also a viable degree path for students who have completed the freshmen and sophomore years of computer or technology-related programs at four-year institutions including New Mexico State University.

General Education: State of New Mexico Common Core

**Area I: Communications**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition (for example ENGL 111G)</td>
<td>4</td>
</tr>
<tr>
<td>Written Communications Elective (for example ENGL 218G)</td>
<td>3</td>
</tr>
<tr>
<td>Oral Communications Elective (for example COMM 265G)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Area II: Mathematics - see College Algebra below**

**Area III: Laboratory Science**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT 320 Introduction to Internet Protocols</td>
<td>3</td>
</tr>
<tr>
<td>ICT 339 Introduction to Digital Forensics and Incident Response</td>
<td>3</td>
</tr>
<tr>
<td>ICT 360 Operating Systems for ICT</td>
<td>3</td>
</tr>
<tr>
<td>ICT 362 Software Technology II</td>
<td>3</td>
</tr>
<tr>
<td>ICT 364 Windows Server Administration</td>
<td>3</td>
</tr>
<tr>
<td>ICT 377 Computer Networking I</td>
<td>3</td>
</tr>
<tr>
<td>ICT 435 Senior Project</td>
<td>3</td>
</tr>
<tr>
<td>ICT 450 Ethical Hacking</td>
<td>3</td>
</tr>
<tr>
<td>ICT 457 Introduction to Information Security Technology</td>
<td>3</td>
</tr>
<tr>
<td>ICT 458 Database Design and Applications</td>
<td>3</td>
</tr>
<tr>
<td>ICT 460 Web Technologies and Multimedia</td>
<td>3</td>
</tr>
<tr>
<td>ICT 462 Remote Access Operating Systems with Linux</td>
<td>3</td>
</tr>
<tr>
<td>ICT 463 Computer Systems Administration</td>
<td>3</td>
</tr>
<tr>
<td>ICT 477 Computer Networking II</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits** 120

As a completion program, entering students are expected to have completed two years of college-level work and satisfied the following requirements: The General Education requirements (p. 47) as well as Viewing a Wider World (p. 49) courses.

Information Security Technology - Undergraduate Minor

A grade of C- or better is required in each course (no courses may be taken S/U). All prerequisites must be met before enrolling in a class. Engineering Technology students can meet most of the requirements for this minor by judicious selection of their electives.

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT 450 Ethical Hacking</td>
<td>3</td>
</tr>
<tr>
<td>ICT 457 Introduction to Information Security Technology</td>
<td>3</td>
</tr>
</tbody>
</table>
Renewable Energy Technologies - Undergraduate Minor

A grade of C- or better is required in each course (no courses may be taken S/U). All prerequisites must be met before enrolling in a class. Engineering Technology students can meet most of the requirements for this minor by judicious selection of their electives. Students may receive credit for only one special topic course (must be renewable content) or internship.

Required Courses

Select any three from the required list 9

- E T 381 Renewable Energy Technologies 3
- E T 382 Solar Energy Technologies
- E T 384 Wind and Water Energy Technologies
- E T 386 Sustainable Construction and Green Building Design

Select 6 credits from the following list: 6

- Any extra course from the required list
- C E 256 Environmental Engineering and Science
- C E 356 Fundamentals of Environmental Engineering
- CHME 486 Biofuels
- E T 365 Building Utilities
- E T 396 Heat Transfer and Applications
- E T 456 Applied Power Technologies 3
  or E E 230 AC Circuit Analysis and Introduction to Power Systems
- E T/M E 401 Heating and Air-Conditioning Systems
- WERC 300 Introduction to Pollution Prevention and Its Application
- E E 426 Introduction to Smart Grid
- WERC 466 Fuel Cell and Hydrogen Technology
- I E 490 Selected Topics 1
- C E 498 Special Topics 1
- E T 420 Senior Internship 1
- E T 435 Senior Project 1
- E T 440 Senior Design 1
- E T 441 Senior Project 1

Select 3 credits from the following: 3

- AEEC 590 Special Topics 1
- AG E 337V Natural Resource Economics
- AG E 420 Special Problems
- ECON 337V Natural Resource Economics
- E T 360V Technology in Business and Society
- ECON 384V Water Resource Economics
- EPWS 380V Science & Society
- HIST 302V Science in Modern Society
- HON 378V Technology and Policy
- PHYS 303V Energy and Society in the New Millennium

Total Credits 18
Industrial Engineering

Undergraduate Program Information

Industrial engineers design, develop, install and improve integrated systems. This could be for people, equipment, information, financial resources, software, materials or energy. Industrial engineers work in a variety of manufacturing, health care, utility, retail, government and research settings, therefore the tools and methods of the industrial engineer are both varied and broad. They use knowledge and skills in engineering, mathematics, and physical and social sciences. Industrial engineers also use principles and methods of engineering analysis and design to monitor and improve such systems. New Mexico State University’s undergraduate degree program in Industrial Engineering prepares students to join the work force or pursue graduate education while setting the foundation for life-long learning.

Specifically, graduates of the program will be:

- able to apply various industrial engineering techniques in an integrated fashion to solve real world problems in process design and/or improvement;
- able to obtain meaningful employment or enroll in a graduate program; and
- prepared for a long-term, successful career sustained by life-long learning experiences.

In addition, the Engineering Accreditation Commission of ABET, Inc. criteria in conjunction with the Institute of Industrial Engineers, requires that:

- baccalaureate degree graduates will be able to demonstrate the ability to design, develop, implement and improve integrated systems that include people, materials, information, equipment and energy;
- industrial engineering curriculums include in-depth instruction allowing students to accomplish the integration of systems using appropriate analytical, computational and experimental practices; and
- that faculty teaching in industrial engineering departments show evidence of understanding professional practice and maintain currency in their respective professional areas. Program faculty must have responsibility and sufficient authority to define, revise, implement and achieve program objectives.

Graduate Program Information

The Department of Industrial Engineering offers graduate work leading to the degrees of Master of Science in Industrial Engineering and Doctor of Philosophy with specialization in industrial engineering. Areas of emphasis include:

- computer modeling,
- operations research and systems engineering,
- manufacturing systems,
- quality and reliability engineering.

Departmental admission requirements in addition to those of the Graduate School must be considered on an individual basis because of the diversity of backgrounds of applicants in the program. An applicant should meet or correspond directly with the department as a first step in determining his or her specific admission status. Applicants should present mathematics preparation equivalent to 9 credits of calculus for engineers, 3 credits of differential equations, and 3 credits of calculus-based probability and statistics.

Minimum credit-hour requirements for the master’s degree may be met in any of the following ways:

1. 24 semester credits approved course work and 6 semester credits of thesis (I E 599 Master’s Thesis) for a total of 30 semester credits.
2. 27 semester credits approved course work and 3 semester credits of project (I E 598 Special Research Programs) for a total of 30 semester credits, or
3. 30 semester credits of approved course work.

Approved course work must meet all requirements of the Graduate School, represent a consistent master’s program in relation to a student’s graduate study goals as determined through consultation with the graduate program adviser, and be approved by a program committee of the graduate faculty of the department. Programs in the focus areas of engineering management, computer modeling, operations research or manufacturing engineering can be developed with the aid of a faculty advisor.

Departmental facilities and equipment are available to support research efforts of graduate students, including computer terminals and laboratories. In addition to departmental facilities, supporting facilities such as the Manufacturing Technology and Engineering Center and five interdisciplinary Research Clusters are available for research work.

The Ph.D. program is research oriented with the final product being the dissertation. The general information (p. 53) chapter in this catalog describes the Ph.D. The program in industrial engineering also includes the following additions:

- the course work must include at least 12 credits at the 500 level in a related field,
- 6 credits of 600-level research courses covering two areas, and
- 18 credits of 700-level courses following successful completion of the comprehensive examination.

The department does not have any foreign language or research tool requirements. Interested individuals should correspond directly with the department to determine eligibility for admission.

Degrees for the Department

Industrial Engineering - Bachelor of Science in Industrial Engineering (p. 594)

Industrial Engineering - Master of Science in Industrial Engineering (p. 595)

Engineering - Doctor of Philosophy (p. 594)

Minors for the Department

Entrepreneurship - Undergraduate Minor (p. 594)
Associate Professor, Edward Pines, Department Head

**Associate Professors** Mullen, Pines, Sohn, Valles-Rosales; **Assistant Professors** Kammerdiner, Razzaghi

E. Pines, Department Head, Ph.D. (Penn State) – quality and continuous improvement, technology policy; H. Sohn, Ph.D. (University of Iowa) – operations research, discrete optimization, network design; J. Mullen, Ph.D. (Iowa State) – stochastic processes, quality, improvement, production system design; D. J. Valles-Rosales, Ph.D. (New Mexico State) – manufacturing systems, soft computing technologies, computer integrated manufacturing; A. Kammerdiner, Ph.D. (University of Florida) – statistical analysis, data mining, network science and combinatorial optimization; T. Razzaghi, PhD (Central Florida) Data modeling, health care systems engineering

**I E 110. Industrial Engineering Orientation**
1 Credit
Introduction to Industrial Engineering Department, Facility Research and Resources. Overview of where industrial engineering fits into larger view of all of engineering. Introduction to university resources for industrial engineering students. Restricted to majors.

**I E 151. Computational Methods in Industrial Engineering**
3 Credits
History, social implications, and application of computers and an introduction to computer programming, word processing, and database management systems. Satisfies General Education computer science requirement.
Prerequisite: MATH 121G.

**I E 152. Introduction to Industrial Engineering**
2 Credits
Historical development of industrial engineering, present practice and trends.
Prerequisite: MATH 120.

**I E 200. Special Problems-Sophomore**
1-3 Credits
Directed individual projects. May be repeated for a total of 3 credits.
Prerequisite: consent of faculty member.

**I E 217. Manufacturing Processes**
2 Credits
Manufacturing methods and industrial processes which include casting, forming and machining. Crosslisted with: E T 217
Prerequisite(s): MATH 121G.
Corequisite(s): I E 217L.

**I E 217 L. Manufacturing Processes Laboratory**
1 Credit
Laboratory associated with I E 217.

**I E 300. Special Problems-Junior**
1-3 Credits
Directed individual projects. May be repeated for a total of 3 credits.
Prerequisite: consent of faculty member.

**I E 311. Engineering Data Analysis**
3 Credits
Methodology and techniques associated with identifying and analyzing industrial data. May be repeated up to 3 credits. C- or better in I E 151, C S 110, or equivalent.
Prerequisite(s): C- or better in MATH 192G.

**I E 316. Methods Engineering**
3 Credits (2+3P)
Methods analysis and design. Work measurement techniques. Job evaluation and wage incentive methods.
Prerequisite: I E 311.

**I E 330. Environmental Management Seminar I**
1 Credit
Survey of practical and new developments in hazardous and radioactive waste management provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: C E 330, CH E 330, E E 330, E S 330, E T 330, M E 330 and WERC 330

**I E 351. Applied Problem Solving in Industrial Engineering**
3 Credits
Application of computational techniques to engineering problems including the use of commercial programs in statistics and applied mathematics. Restricted to majors.
Corequisite: I E 311.

**I E 355. Quality Control**
3 Credits
Statistical analysis of quality in manufacturing. Acceptance sampling and control charts.
Prerequisite: I E 311 or equivalent.

**I E 375. Manufacturing Processes II**
3 Credits
Review of basic manufacturing processes. Advanced topics in casting, forming, machining and joining; major process parameters; economics of processes.
Prerequisite: I E 217 or E T 217.

**I E 381. Technology Ventures**
3 Credits
This course looks at how new technology ventures are formed at the individual entrepreneur and corporate levels. It covers the development of science and engineering based ventures from ideas through creating customer value. This is the first course in the Entrepreneurship Minor. The roles of science and engineering specialists in the creation of customer value are defined in preparation for development of technology-based enterprises.

**I E 382. Business for the Practicing Engineer**
3 Credits
Business tools and skills, including technology commercialization, patent applications, preparing a technology-oriented business plan, reading and constructing financial documents, modeling and understanding markets, e-commerce, QFD, concurrent engineering, engineer’s role in the global economy, and engineer’s impact on product design and cost.
Prerequisite: engineering major, junior level or above.

**I E 400. Undergraduate Research**
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of faculty member.
I E 411. Occupational Safety
3 Credits
Practical methods to improve safety in the workplace. Topics include
OSHA and other regulations, hazard recognition, assessment and control,
industry standards, risk assessment and safety management. Material
is applicable to a variety of workplace settings. This course is intended
for College of Engineering students who have completed their lower-
division requirements in mathematics, engineering, technology, and basic
science. Same as I E 561 with differential assignments. Prerequisite:
Junior standing

I E 413. Engineering Operations Research I
3 Credits
Deterministic operations research modeling including linear and integer
programming.
Prerequisite: MATH 192G.

I E 423. Engineering Operations Research II
3 Credits
Probabilistic operations research modeling, including queuing systems
and their optimization; Markov chains.
Prerequisite: I E 311.

I E 424. Manufacturing Systems
3 Credits
Organization and functions of manufacturing planning and control
systems including forecasting, MRP, capacity planning, JIT systems,
scheduling, and inventory control.
Prerequisite: I E 311.

I E 451. Engineering Economy
3 Credits
Discounted cash flows, economics of project, contract and specifications
as related to engineering design. Same as CH E 451.

I E 453. Leadership and Motivation
3 Credits
Theories of leadership and motivation. Motivational programs for
complex organizations. Relationships between organizational power,
authority, and management styles. Same as MGT 453.
Prerequisite: MGT 309 or consent of instructor.

I E 460. Evaluation of Engineering Data
3 Credits
Analysis of engineering systems possessing variability, employing
regression, analysis of variance, distribution theory, and experimental
design methods.
Prerequisite: I E 311 or equivalent.

I E 466. Reliability
3 Credits
Application of statistical theory to engineering reliability estimation,
reliability improvement, and the analysis of reliability test data.
Prerequisite: I E 311 or equivalent.

I E 467. Discrete-Event Simulation Modeling
4 Credits
Basic modeling concepts, organizations of simulations, input data
analysis, random variate generation, simulation design and analysis,
model validation, output analysis, and management of simulations.
Differentiated graduate assignments. Same as I E 567.
Prerequisite: I E 311 or equivalent.

I E 478. Facilities Planning and Design
3 Credits
Plant location methods, total process analysis, process integration,
materials handling analysis, and traditional and computerized plant
layout methodologies. Pre/
Prerequisite: I E 316.
Corequisite: I E 424.

I E 480. Senior Design
3 Credits (2+3P)
Multi-disciplinary team design project for external clients. Involves
semester long activities including major design report and presentation.
Prerequisites: senior standing, I E 467.

I E 490. Selected Topics
1-3 Credits
May be repeated for a maximum of 9 credits.
Prerequisite: consent of the head of the department.

I E 505. Directed Readings
1-3 Credits
May be repeated for a maximum total of 6 credits.
Prerequisite: consent of the head of the department.

I E 515. Stochastic Processes Modeling
3 Credits
Introduction to the use of stochastic processes in the modeling of
physical and natural systems. Use of generating functions, conditional
probability and expectation, Poisson processes, random walk models,
Markov chains, branching processes, Markov processes, and queuing
processes in an applied setting.
Prerequisites: I E 311 or equivalent; and MATH 392 or equivalent.

I E 522. Queuing Systems
3 Credits
Elements and classification of queuing systems, single server models,
multi-server models, cost analysis and applications.
Prerequisite: I E 311 or equivalent.

I E 523. Advanced Engineering Economy
3 Credits
Theoretical basis for engineering economy methods, problems of cost
estimation, replacement, nonmonetary factors, and feasibility studies.
Same as C E 523.

I E 524. Advanced Production and Inventory Control
3 Credits
Organization and functions of manufacturing planning and control
systems including forecasting, MRP, capacity planning, JIT systems,
scheduling and inventory control. Same as I E 424 with differentiated
assignments.

I E 525. Systems Synthesis and Design
3 Credits
Examination of the production management complex in terms of its
components and the synthesis of these components into an effective
operating unit. Development of input-output models representing the
basis structure of all production activities.

I E 530. Environmental Management Seminar
1 Credit
Same as C E 530, E E 530, CH E 530.
3 Credits
Key concepts, terminology, paradigms, and methods of operations research: Linear programming including assignment and transportation algorithms; stochastic analysis, including inventory control and queuing systems; general approaches, including goal, integer, nonlinear and dynamic programming.

I E 533. Linear Programming
3 Credits
Linear programming problem formulation, simplex algorithm, theory of linear programming, duality, revised simplex algorithm, and sensitivity analysis.

I E 534. Nonlinear Programming
3 Credits
Theoretical and computational methods to solve optimization problems in engineering, statistics, economics, and operations research. Topics include convexity, optimality conditions, Newton's method, Lagrange multipliers, search algorithms for unconstrained and constrained problems, as well as barrier and penalty methods. Prerequisite: MATH 192G or equivalent.

I E 535. Discrete Optimization
3 Credits
Combinatorial Optimization problems using both integer programming and graph theoretic approaches. Emphasis on modeling and computational algorithms.

I E 537. Large Scale Systems Engineering
3 Credits
Systems engineering approaches to large-scale complex technological and societal problems. Concepts of interaction and structural graphs, matrices, delta, and Gantt charts. The hall matrix approach, structural concepts, reachability matrices, and cross impact-analysis, modeling and decision making.

I E 539. Fundamentals of Transportation and Routing in Logistics
3 Credits
Introduction to the conceptual, methodological, and mathematical foundations of transportation and routing problems in logistics system. Emphasis on mathematical modeling and computational algorithms.

I E 545. Characterizing Time-Dependent Engineering Data
3 Credits
Theory and techniques employed in the characterization of stochastic processes commonly found in engineering applications. Distribution models include exponential, gamma, Weibull, and extreme value. Design and analysis of experiments involving complete and censored data and elevated stress. Analytical techniques include parametric, nonparametric, and graphical approaches with emphasis on modern computer tools. Exact and approximate maximum-likelihood techniques are stressed. Prerequisite: I E 311 or equivalent.

I E 561. Advanced Safety Engineering
3 Credits
Regulation as well as qualitative, and quantitative methods to achieve and maintain safety in the workplace. Includes liability, worker's compensation, OSHA, hazard control, safety assessment, cost justification, and system analysis. Prerequisite: graduate status in engineering.

I E 563. Topics in Engineering Administration
3 Credits
Study of qualitative and quantitative aspects. Consideration given to philosophical, psychological, political and social implications of engineering administrative decisions.

I E 567. Design and Implementation of Discrete-Event Simulation
3 Credits
Basic modeling concepts, organizations of simulations, input data analysis, random variate generation, simulation design and analysis, model validation, output analysis, and management of simulations. Taught with I E 467 with differentiated assignments for graduate students.

I E 571. Advanced Quality Control
3 Credits
Advanced topics in quality control and design of experiments for improvement of quality. Prerequisite: I E 311 or equivalent.

I E 575. Advanced Manufacturing Processes
3 Credits
Covers major process parameters in casting, forming, machining, and joining. Process economics and selection of processes design and interactions. Prerequisite: graduate standing.

I E 590. Selected Topics
1-3 Credits
May be repeated for a maximum of 9 credits. Prerequisite: consent of the head of the department.

I E 598. Special Research Programs
1-3 Credits
Individual analytical or experimental investigations. May be repeated for a maximum total of 6 credits. Prerequisite: consent of instructor.

I E 599. Master's Thesis
15 Credits
Thesis.

I E 610. Topics in Operations Research
3 Credits
Selected topics of current interest, to be designated by subtitle. May be repeated for a maximum of 6 credits.

I E 620. Topics in Computer Modeling
3 Credits
Selected topics of current interest, to be designated by subtitle. May be repeated for a maximum of 6 credits.

I E 630. Topics in Engineering Management
3 Credits
Selected topics of current interest, to be designated by subtitle. May be repeated for a maximum of 6 credits.

I E 690. Selected Topics
1-15 Credits
May be repeated. Prerequisite: consent of department head.

I E 700. Doctoral Dissertation
15 Credits
Dissertation.

Name:

Office Location: 201 Foreman Engineering Complex
Phone: (575) 646-4923
Website: http://ie.nmsu.edu

Engineering - Doctor of Philosophy

The Department of Industrial Engineering offers the Doctor of Philosophy in Engineering with a specialization in Industrial Engineering. Refer to http://ie.nmsu.edu for a program description and current research areas.

Additional Requirements

PhD candidates in the College of Engineering, who have successfully completed their PhD Qualifier Examination after January 1, 2018, must satisfy a publication requirement which requires two papers:

Paper #1: An archival paper accepted or published in any journal listed in the source publication list for the Web of Science, or a refereed Journal or Conference Proceeding approved by the student’s doctoral committee and the cognizant Department Head(s), before the Doctorate of Philosophy final examination. The candidate should be listed as the lead author in Paper #1.

Paper #2: An additional archival paper submitted, accepted, or published in any journal listed in the source publication list for the Web of Science. Alternatively, one conference paper accepted or published in a national or international conference proceedings.

Entrepreneurship - Undergraduate Minor

The Entrepreneurship Minor is designed to promote entrepreneurship to students across the NMSU campus. The Department of Industrial Engineering coordinates an engineering cluster of electives to support the three required classes offered by the College of Business.

Entrepreneurship

FIN 331 Business Creation and Valuation
FIN 332 Entrepreneurial Finance
BLAW 330 Entrepreneurial Law

Engineering Electives
Select three classes from the following:

CHME 449 Intellectual Property for Engineers and Scientists
E T 480 Innovation and Product Development
I E 381 Technology Ventures
I E 382 Business for the Practicing Engineer

Total Credits 18

Industrial Engineering - Bachelor of Science in Industrial Engineering

Requirements (126 credits)

In addition to the university requirements for graduation, a student must have a 2.0 grade-point average in all departmental courses.

General Education

State of New Mexico Common Core

Area I: Communications

ENGL 111G Rhetoric and Composition 4
ENGL 218G Technical and Scientific Communication 3
Oral Communications Elective ¹ 3

Area II: Mathematics
MATH 191G Calculus and Analytic Geometry I 4

Area III: Natural Sciences
CHEM 111G General Chemistry I 4
PHYS 215G Engineering Physics I 3
PHYS 215GL Engineering Physics I Laboratory 1

Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts
Select 15 total credits from Area IV and V, with at least 6 credits from each area: ¹

Area IV: Social and Behavioral Sciences:
Select 6-9 credits from Economics, Political Science, Psychology, Sociology and Anthropology electives ¹

Area V: Humanities and Fine Arts:
Select 6-9 credits from History, Philosophy, Literature, Art, Music, Dance, Theater, and Religion electives ¹

Institution Specific General Education

Viewing a Wider World Electives ¹ 6

Program Specific Requirements

Mathematics
MATH 192G Calculus and Analytic Geometry II 4
MATH 291G Calculus and Analytic Geometry III 3
MATH 392 Introduction to Ordinary Differential Equations 3
MATH 480 Matrix Theory and Applied Linear Algebra 3

Natural Science Electives 7
CHEM 112G General Chemistry II or PHYS 216G/216GL Engineering Physics II

Choose one of
GEOL 111G Introductory to Geology
BIOL 211G Cellular and Organismal Biology
PHYS 217 Heat, Light, and Sound

Engineering

C E 233 Mechanics-Statics 3
or M E 236 Engineering Mechanics I
CHME 361 Engineering Materials 3
ENGR 100 Introduction to Engineering 3
M E 159 Graphical Communication and Design 2

Engineering Electives (choose one 3 credit engineering course numbered 300 and above) 6
Choose one from the following

C E 234 Mechanics-Dynamics
C E 301 Mechanics of Materials
E E 201 Electric Circuit Analysis
M E 234 Mechanics-Dynamics
M E 237 Engineering Mechanics II
M E 240 Thermodynamics

Industrial Engineering
### Industrial Engineering - Master of Science in Industrial Engineering

The Department of Industrial Engineering offers the Master of Science in Industrial Engineering with focus areas of manufacturing, operations research and engineering management. Refer to [http://ie.nmsu.edu](http://ie.nmsu.edu) for current program offerings and research areas.

### Recommended Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Freshman</td>
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<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
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<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 100</td>
<td>Introduction to Engineering</td>
<td>3</td>
</tr>
<tr>
<td>I E 151</td>
<td>Computational Methods in Industrial</td>
<td>3</td>
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<tr>
<td>Engineering</td>
<td></td>
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<tr>
<td>M E 159</td>
<td>Graphical Communication and Design</td>
<td>2</td>
</tr>
<tr>
<td>MATH 191G</td>
<td>Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 215G</td>
<td>Engineering Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 215GL</td>
<td>Engineering Physics I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Area V: Humanities and Fine Arts</td>
<td>3</td>
<td></td>
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<tr>
<td>Area IV: Social/ Behavioral Sciences</td>
<td>3</td>
<td></td>
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<tr>
<td>Total Credits</td>
<td>34</td>
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# Mechanical Engineering and Aerospace Engineering

## Undergraduate Program Information

The mission of the Mechanical and Aerospace Engineering Department at New Mexico State University is threefold:

- to educate those who will advance knowledge and become the future leaders of industry and academia;
- to conduct both basic and applied research in mechanical and aerospace engineering and related interdisciplinary areas; and
- to provide service to the profession, to the State of New Mexico, to the country, and to the future development of engineering worldwide.

A critical focus within the department is to afford undergraduates of varying backgrounds and abilities every opportunity for achieving success in the mechanical and aerospace engineering professions. To address this focus, the faculty of the Mechanical and Aerospace Engineering Department, with input from other constituents, have established the following program educational objectives that inform the overall undergraduate programs:

- Our graduates will gain relevant employment and/or pursue a graduate degree.
- Our graduates will advance in their level of workplace responsibility.

## Graduate Program Information

Graduate programs of study are available leading to the degrees of

- Master of Science and Doctor of Philosophy in Aerospace Engineering,
- the Master of Science in Mechanical Engineering, and
- the Doctor of Philosophy in Engineering with a concentration in Mechanical Engineering.

Areas of active research in mechanical engineering include the following:

- experimental fluids with application to wind power,
- computational fluid dynamics,
- energy systems and components,
- thermal management,
- space transportation,
- modeling and analysis of machining processes,
- micromechanics and cross property connections,
- computational mechanics with application to material properties,
- renewable energy,
- nonlinear dynamics and vibration,
- reduced order modeling in multibody dynamics,
- structural dynamics and fluids,
- robotics,
- composite materials and nanomaterials.

Areas of active research in aerospace engineering include the following:

- computational, theoretical and experimental aerodynamics,
- vortex dynamics,
- flow control,
- aeroelasticity and flutter,
• space dynamics and control,
• spacecraft motion estimation,
• rarefied gasdynamics and space propulsion,
• ground simulation of reduced gravity environments,
• structural health monitoring, and
• unmanned aerial systems.

Laboratory facilities supporting graduate research include a large subsonic wind tunnel, a large water channel, a robotics, controls and UAS lab, a reduced gravity simulation lab, a space dynamics and controls lab, and a composite materials lab. A mechanical testing lab is also available in the College of Engineering.

In addition to fulfilling the basic requirements for admission to the Graduate School, applicants are expected to have an undergraduate degree equivalent to a BS in mechanical or aerospace engineering from a university accredited by ABET. Graduate students whose BS degree is in a discipline other than A E or M E will normally be required to take undergraduate courses in M E or A E in order to prepare for graduate course work; such undergraduate preparatory work will be determined by the graduate coordinator on a case by case basis. A candidate for the master’s degree may choose one of two options: a thesis option or a course-only option. Both options require a minimum of 30 credits of graduate study.

Doctoral candidates must complete a program of study determined by the student and his or her advisory committee. The student must successfully pass a written qualifying examination (administered during the student’s first year of full-time study) and an oral comprehensive examination administered after approximately 80 percent of the course work is completed. The student must submit and defend an acceptable dissertation based on independent investigation in a field of study approved by the advisory committee. The requirements for the MS and Ph.D. degrees are stated below.

**Degrees for the Department**

Aerospace Engineering - Bachelor of Science in Aerospace Engineering (p. 601)

Mechanical Engineering - Bachelor of Science in Mechanical Engineering (p. 605)

Aerospace Engineering - Master of Science in Aerospace Engineering (p. 603)

Mechanical Engineering - Master of Science in Mechanical Engineering (p. 607)

Aerospace Engineering - Doctor of Philosophy (p. 603)

Engineering - Doctor of Philosophy (p. 605)

**Minors for the Department**

Aerospace Engineering - Undergraduate Minor (p. 604)

Mechanical Engineering - Undergraduate Minor (p. 607)

Professor, Ruey-Hung Chen, Department Head

Associate Professor, Gabe Garcia, Associate Department Head

Professor Chen, Ma, Sevostianov; Associate Professors Choo, Conley, Garcia, Lee, Park, Shashikanth, Shu; Assistant Professors Abdelkefi, Drach, Gross, Kota, Kuravi, Sun


1 Registered Professional Engineer (State other than NM)

A E 102. Introduction to Aerospace Engineering

1 Credit

A survey course of aeronautical, aerospace, and astronautical engineering, with an emphasis on basic aerospace concepts and major aerospace principles without going into detailed math and analysis. Students are given the opportunity to listen to guest speakers and participate in projects utilizing the NMSU Ultralight and NMSU wind tunnel. Restricted to: Main campus only.

A E 339. Aerodynamics I

3 Credits

Fluid properties, conservation equations, incompressible 2-dimensional flow; Bernoulli’s equation; similarity parameters; subsonic aerodynamics: lift and drag, analysis and design of airfoils. May be repeated up to 3 credits. Restricted to: A E majors.

Prerequisite(s): M E 234 or M E 237 and M E 228 or MATH 392.

A E 362. Orbital Mechanics

3 Credits

Dynamics of exoatmospheric flight of orbiting and non-orbiting bodies; 2-body orbital dynamics and Kepler’s laws; orbits in 3 dimensions; orbit determination; orbit design and orbital maneuvers; lunar and interplanetary trajectories. May be repeated up to 3 credits.

Prerequisite(s): M E 228 or MATH 392, M E 234 or M E 237, and M E 261.

A E 363. Aerospace Structures

3 Credits

Advanced concepts of stress and strain, introduction to the analysis of aero structures, complex bending and torsion, thin walled sections and shells, computational techniques. Prerequisites: C E 301
A E 364. Flight Dynamics and Controls
3 Credits
Fundamentals of airplane flight dynamics, static trim, and stability; spacecraft and missile six degree of freedom dynamics; attitude control of spacecraft. May be repeated up to 3 credits.
Prerequisite(s): M E 228 or MATH 392, M E 234 or M E 237, and M E 261.

A E 400. Undergraduate Research
1-3 Credits (1-3)
Performed with the direction of a department faculty member. May be repeated for a maximum of 6 credits.
Prerequisite(s): Consent of faculty member.

A E 405. Special Topics
3 Credits
Topics of modern interest to be offered by the departmental staff. Consent of instructor required.

A E 419. Propulsion
3 Credits
Prerequisite(s): A E 439

A E 424. Aerospace Systems Engineering
3 Credits
Basic principles of top down systems engineering and current practice; preliminary and detailed design of aircraft and space vehicles, including requirement, subsystem interaction, and integration, tradeoffs, constraints and non-technical aspects.

A E 428. Aerospace Capstone Design
3 Credits
Team Project-analysis, design, hands-on build test, evaluate.
Prerequisite(s)/Corequisite(s): A E 447. Prerequisite(s): A E 363 and A E 424.

A E 439. Aerodynamics II
3 Credits
Principles of compressible flow, momentum and energy conservation; thermal properties of fluids; supersonic flow and shock waves; basics of supersonic aerodynamics.

A E 447. Aerofluids Laboratory
3 Credits (2+3P)
Use of subsonic wind tunnels and other flow to study basic flow phenomena and methods of fluid measurement and visualization.

A E 451. Aircraft Design
3 Credits
Conceptual design of aircraft based on existing designs, empirical relationships, and theory. Dimensioning, structural design, and performance analysis of major subcomponents such as fuselage, wing, and propulsion system. Static stability and control analysis.

A E 452. Aircraft Design
3 Credits

A E 509. Individualized Study
3 Credits
Individualized study covering specialized topics in aerospace engineering. Consent of instructor required. Restricted to A E & M E majors.

A E 422. Aerospace Systems Engineering
3 Credits
Prerequisite(s): M E 339, M E 240, and M E 328.

A E 447. Aerofluids Laboratory
3 Credits (2+3P)
Use of subsonic wind tunnels and other flow to study basic flow phenomena and methods of fluid measurement and visualization.

A E 509. Individualized Study
3 Credits
Individualized study covering specialized topics in aerospace engineering. Consent of instructor required. Restricted to A E & M E majors.

A E 510. Special Topics
1-6 Credits (1-6)
Topics in aerospace engineering. May be repeated for a maximum of 6 credits. Consent of instructor required.

A E 527. Control of Mechanical Systems
3 Credits
Rigorous introduction to the control of dynamical systems, with a focus on mechanical systems. Includes basic systems theory, controllability, feedback and stabilization, observers and dynamic feedback, and applications of methods to systems of importance in mechanical engineering. Consent of instructor required. Cross-listed with: M E 527

A E 529. Nonlinear and Optimal Control
3 Credits
Introduction to optimal control theory, Pontryagin’s Maximum Principle, control of simple mechanical systems, Lagrangian and Hamiltonian methods, introduction to geometric control-Lie algebras, distributions, controllability and observability. Cross-listed with: M E 529

A E 552. Introduction to Gasdynamics
3 Credits
Gas kinetics, rarefied gas dynamics, collision dynamics; velocity distribution function, finite rate chemical process; thermal nonequilibrium and chemically reacting flows; introduction to quantum and statistical mechanics; Boltzmann equation and the BGK model; moments of the Boltzmann Equation; the Navier-Stokes Equation; the structure of shock waves.

A E 562. Astrodynamics
3 Credits
Two-body problem, orbit analysis, and classical orbit determination methods; trajectory design and optimization; orbital maneuvers using impulsive or continuous thrust; relative motion and rendezvous; perturbations and Lagrange planetary equations; interplanetary mission design including gravity assists; introduction to the three-body problem, halo orbits, and invariant manifolds in mission design.

A E 566. Aeroelasticity
3 Credits
Introduction to aeroelasticity with emphasis on fluid-structure interactions occurring in aircraft. Phenomena considered include flutter/LCD (limit cycle oscillation), buffeting, divergence, and control reversal. Primary emphasis on structural dynamics, with use of simple aerodynamic models.

A E 598. Special Research Programs
1-3 Credits (1-3)
Individual investigations, either analytical or experimental. May be repeated for a maximum of 6 credits. Restricted to A E & M E majors.

A E 599. Master’s Thesis
15 Credits (15)

A E 600. Doctoral Research
1-15 Credits (1-15)
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination. Graded: Thesis/Dissertation.

A E 700. Doctoral Dissertation
15 Credits (15)
M E 102. Mechanical Engineering Orientation
1 Credit
Emphasis on tours of ME labs and NMSU facilities that illustrate possible career paths for mechanical engineers. Students are introduced to department faculty, student organizations, and support services at NMSU. Topics include role of good communication skills, using modern technology, team building, and intellectual property. Students are advised in planning balance of their academic program. Restricted to majors.

M E 159. Graphical Communication and Design
2 Credits (1+3P)
Sketching and orthographic projection. Covers detail and assembly working drawings, dimensioning, tolerance specification, and design projects. Pre/ Corequisite(s): MATH 190G.

M E 201. Supplemental Instruction to Dynamics
1 Credit
Optional workshop for students in M E 237. The workshop focuses on problem solving skills associated with M E 237. Course does not count toward departmental degree requirements. May be repeated up to 1 credits. Restricted to Las Cruces campus only.
Corequisite(s): M E 237.

M E 202. Supplemental Instruction to Thermodynamics
1 Credit
Optional workshop for students in ME 240. The workshop focuses on problem solving skills associated with ME240. Course does not count toward departmental degree requirements. Restricted to Las Cruces campus only.
Corequisite(s): M E 240.

M E 210. Electronics and System Engineering
3 Credits (2+3P)
Introduction to microcontrollers, measurement systems, motion actuators, sensors, electric circuits, and electronic devices and interfacing. Students required to work individually and in teams to design and test simple electromechanical systems. Restricted to Las Cruces campus only.
Prerequisite(s): MATH 192.

M E 222. Introduction to Product Development
3 Credits (2+3P)
Introduction to modern methods used in the realization of products. Traditional manufacturing processes, such as metal stamping, turning, milling, and casting are reviewed. Modern methods of rapid prototyping and model making are discussed in context of computer-aided design. Techniques for joining metals, plastics, and composites are discussed. Role of quality control is introduced.
Prerequisite: M E 159.

M E 228. Engineering Analysis I
3 Credits
Introduction to engineering analysis with emphasis on engineering applications. Topics include ordinary differential equations, linear algebra, and vector calculus with focus on analytical methods. Restricted to Las Cruces campus only.
Prerequisite(s): MATH 291.

M E 234. Mechanics-Dynamics
3 Credits
Kinematics and dynamic behavior of solid bodies utilizing vector methods.
Prerequisite(s)/Corequisite(s): MATH 291G. Prerequisite(s): C E 233.

M E 236. Engineering Mechanics I
3 Credits
Force systems, resultants, equilibrium, distributed forces, area moments, friction, and kinematics of particles. Pre/ Restricted to: Main campus only.
Prerequisite(s): MATH 192G.
Corequisite(s): PHYS 215G.

M E 237. Engineering Mechanics II
3 Credits
Kinetics of particles, kinematics and kinetics rigid bodies, systems of particles, energy and momentum principles, and kinetics of rigid bodies in three dimensions. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 291. Prerequisite(s): M E 236 or C E 233.

M E 240. Thermodynamics
3 Credits
First and second laws of thermodynamics, irreversibility and availability, applications to pure substances and ideal gases.
Prerequisite: PHYS 215G.

M E 261. Mechanical Engineering Problem Solving
3 Credits (2+3P)
Introduction to programming syntax, logic, and structure. Numerical techniques for root finding, solution of linear and nonlinear systems of equations, integration, differentiation, and solution of ordinary differential equations will be covered. Multi function computer algorithms will be developed to solve engineering problems.
Prerequisite(s): MATH 192.

M E 301. Supplemental Instruction to Engineering Analysis II
1 Credit
Optional workshop for students in ME 328. The workshop focuses on problem solving skills associated with ME328. Course does not count toward departmental degree requirements. May be repeated up to 1 credits.
Corequisite(s): M E 328.

M E 302. Fluids Supplemental Instruction
1 Credit
Optional workshop for students in ME 338 or AE 339. The workshop focuses on problem solving skills associated with fluid mechanics. Course does not count toward departmental degree requirements.
Corequisite(s): M E 338 or A E 339.

M E 326. Mechanical Design
3 Credits
Design methodology and practice for mechanical engineers. May be repeated up to 3 credits.
Prerequisite(s): M E 234 or M E 237 and C E 301.

M E 328. Engineering Analysis II
3 Credits
Advanced engineering analysis with emphasis on engineering applications. Topics include systems of ordinary differential equations, Fourier analysis, partial differential equations, and functions of complex variable with focus on analytical methods. May be repeated up to 3 credits.
Prerequisite(s): M E 228 or MATH 392.
M E 330. Environmental Management Seminar I
1 Credit
Survey of practical and new developments in hazardous and radioactive waste management provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Restricted to M E majors. Crosslisted with: C E 330, CH E 330, E E 330, E S 330, I E 330, WERC 330 and E T 330

M E 331. Intermediate Strength of Materials
3 Credits
Covers stress and strain, theories of failure, curved flexural members, flat plates, pressure vessels, buckling, and composites. May be repeated up to 3 credits.
Prerequisite(s): C E 301 and M E 328 or MATH 392.

M E 332. Vibrations
3 Credits
Vibration of single and n-degree of freedom systems considering free, forced, and damped motion. Lagrange's equations. Dynamic stability. Controls. Matrix iteration. May be repeated up to 3 credits.
Prerequisite(s): M E 328, M E 234 or M E 237, and M E 261.

M E 333. Intermediate Dynamics
3 Credits
Three dimensional kinematics and kinetics, orbital motion, Lagrange's equations, dynamic stability, and controls. May be repeated up to 3 credits.
Prerequisite(s): M E 328 and M E 234 or M E 237.

M E 338. Fluid Mechanics
3 Credits
Properties of fluids. Fluid statics and fluid dynamics. Applications of the conservation equations continuity, energy, and momentum to fluid systems. May be repeated up to 3 credits. Restricted to: M E majors.
Prerequisite(s): M E 234 or M E 237 and M E 228 or MATH 392.

M E 340. Applied Thermodynamics
3 Credits
Thermodynamic cycles, Maxwell relations, Gibbs and Helmholtz functions, mixtures, psychometrics, chemical reactions, chemical equilibrium.
Prerequisite: M E 240.

M E 341. Heat Transfer
3 Credits
Fundamentals of conduction, convection, and radiation. Design of heat transfer systems. May be repeated up to 3 credits.
Prerequisite(s): M E 240 and M E 228 or MATH 392.

M E 345. Experimental Methods I
3 Credits (2+3P)
Emphasis on experimental techniques, basic instrumentation, data acquisition and analysis, and written presentation of results. Includes experiments in dynamics and deformable body mechanics. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): C E 301. Prerequisite(s): M E 228 or MATH 392, M E 210, and M E 234 or M E 237.

M E 400. Undergraduate Research
1-3 Credits
Performed with the direction of a department faculty member. May be repeated for a maximum of 6 credits.
Prerequisite: consent of faculty member.

M E 401. Heating/Air-Conditioning System
3 Credits
HVAC system design including heating and cooling load calculations, psychometrics, piping, duct layout, and system control. May be repeated up to 3 credits.
Prerequisite(s): M E 340 and M E 341.

M E 405. Special Topics
3 Credits
Topics of modern interest to be offered by the departmental staff. May be repeated up to 12 credits.
Prerequisite(s): Senior standing.

M E 425. Design of Machine Elements
3 Credits
Design of machine elements through the application of mechanics. Fatigue and theories of failure. Design projects assigned.
Prerequisite(s): M E 326.

M E 426. Design Project Laboratory I
3 Credits
Students address a design problem in which innovation and attention to detail are emphasized. Solution of the problem entails applications of mechanics and/or the thermal sciences.
Prerequisite(s)/Corequisite(s): M E 425.

M E 427. Design Project Laboratory II
3 Credits
Continuation of M E 426.
Prerequisite: M E 426.

M E 445. Experimental Methods II
3 Credits (2+3P)
Emphasis on experimental techniques, instrumentation and data acquisition in fluid mechanics, heat transfer, and thermodynamics. Laboratory results will be presented in written and verbal formats.
Prerequisite(s): (M E 338 or A E 339), M E 340, M E 341, and M E 345.

M E 449. Mechanical Engineering Senior Seminar
1 Credit
Senior seminar course covering topics relevant to graduating mechanical engineering seniors (job placement, interviewing techniques, resume preparation).
Prerequisite: senior standing.

M E 452. Introduction to Automation and Control System Design
3 Credits (2+3P)
Control system design and implementation. Emphasis on practical applications of traditional control algorithms to mechanical engineering applications in thermofluid systems and mechanical systems. Design of feedback analog and digital control systems. Introduction to robots and automation. Lab assignments include programming industrial robotic and automation systems. May be repeated up to 3 credits.
Prerequisite(s): M E 328 and M E 234 or M E 237, or consent of instructor.

M E 456. Experimental Modal Analysis
3 Credits
Emphasis on hands-on techniques for structural vibration tests for practical applications. Interpretation of experimental results by means of advanced signal processing tools, basic system identification methodology, and reduced-order modeling procedures. May be repeated up to 3 credits.
Prerequisite(s): M E 332, M E 228 or MATH 392, and M E 261, or consent of instructor.
M E 460. Applied Finite Elements
3 Credits
Introduction to the practical aspects of structural finite element modeling. Course focuses on providing a working knowledge of how to effectively incorporate finite element techniques into the design process. May be repeated up to 3 credits.
Prerequisite(s): M E 425.

M E 481. Alternative and Renewable Energy
3 Credits
Current and future energy needs of the United States and the world will be considered primarily from the standpoint of renewable energy sources such as solar, wind, ocean, and biomass. Technical, economic, and environmental aspects of each technology will be addressed.
Prerequisite(s): M E 341, and (M E 338 or A E 339).

M E 483. Introduction to Combustion
3 Credits
Combustion is one of the most fundamental phenomena related to human activities, such as obtaining thermal energies. Fundamental phenomena and physics related to combustion will be discussed, including thermodynamics, chemical reactions; combustion kinetics, premixed and diffuse flames, and examples. May be repeated up to 3 credits.
Prerequisite(s): CHEM 112G, M E 228 or MATH 392, and M E 340.

M E 487. Mechatronics
3 Credits (2+3P)
Introduction to the analysis and design of computer-controlled electromechanical systems, including data acquisition and conversion, force and motion sensors, actuators, mechanisms, feedback control, and robotic devices. Students required to work in teams to construct and test simple robotic systems. May be repeated up to 3 credits.
Prerequisite(s): M E 210 or E E 201 and M E 345.

M E 502. Elasticity I
3 Credits
Introduction to stress tensor, strain tensor, constitutive law, energy theorems, plane stress and plane strain. Also covers torsion of shafts and propagation of stress waves in elastic solids.

M E 503. Thermodynamics
3 Credits
A comprehensive study of the first and second laws of thermodynamics, nonequilibrium processes, equations of state, and statistical thermodynamics.

M E 504. Continuum Mechanics
3 Credits
Basic introduction to the Mechanics of Continuous Media. Its aim is to prepare the student for more advanced courses in Solid and Fluid Mechanics. The topics to be covered include: introduction to Cartesian tensors, tensor algebra and calculus; Lagrangian and Eulerian kinematics; Cauchy and Piola-Kirchhoff stresses; general principles of conservation; constitutive theory for ideal fluids, Newtonian and non-Newtonian fluids, finite and linear elasticity.

M E 505. Fundamentals of the Theory of Plasticity
3 Credits
Basic concepts in continuum mechanics, equations of the plastic state, equations of elastic-plastic equilibrium, criteria for yielding, initial and subsequent yield surfaces, two-dimensional and axi-symmetric plasticity problems, dynamic problems.
Prerequisite(s): M E 502.

M E 509. Individualized Study
3 Credits
Individualized study covering specialized topics in mechanical and aerospace engineering. Consent of instructor required.

M E 510. Special Topics
1-6 Credits
Topics in mechanical engineering. May be repeated for a maximum of 6 credits.
Prerequisite: consent of the department head.

M E 511. Dynamics
3 Credits
An advanced study of the dynamical behavior of systems of particles and rigid bodies, with emphasis on the theoretical background of dynamics.

M E 512. Vibrations
3 Credits
Free and forced vibrations for discrete and continuous systems with single or multiple degrees of freedom. Introduction to nonlinear and random vibration and solution techniques for such systems.

M E 514. Advanced Composite Materials
3 Credits
Study on the anisotropic elasticity, strength of anisotropic materials and micromechanics. Topics from micromechanics and macromechanics through lamination theory and examples of plate bending, buckling and vibration problems. Course taught on an as-needed basis.

M E 517. Nonlinear Dynamics and Chaos
3 Credits
Singular points, periodic solutions, stability, and local bifurcations for ODEs and maps; phase space methods, invariant manifolds, and Poincare maps; nonsmooth, periodic, time-delay, and Hamiltonian systems; perturbation, averaging, and harmonic balance methods; center manifold reduction and normal forms; strange attractors, Liapunov exponents, attractor dimension; dissipative and Hamiltonian chaos

M E 518. Finite Element Analysis
3 Credits
Introduction to finite element method. Topics include mathematical modeling, variational formulation, shape functions, truss, beam, solid, and shell elements. Includes static, dynamic, and nonlinear analysis.

M E 520. Micromechanics
3 Credits
The course covers fundamentals of micromechanics: point force solution, Eshelby s problem, various approximate methods to calculate effective material properties of inhomogeneous materials, variational principles of the mechanics of composites. The history of micromechanics is discussed from Navier and Cauchy to current state of the art.
Prerequisite(s): M E 502.

M E 527. Control of Mechanical Systems
3 Credits
Rigorous introduction to the control of dynamical systems, with a focus on mechanical systems. Includes basic systems theory, controllability, feedback and stabilization, observers and dynamic feedback, and applications of methods to systems of importance in mechanical engineering. Consent of Instructor required. Crosslisted with: A E 527.
Prerequisite(s): M E 452 or equivalent, or consent of instructor.
M E 529. Nonlinear and Optimal Control
3 Credits
Introduction to optimal control theory, Pontryagin’s Maximum Principle, control of simple mechanical systems, Lagrangian and Hamiltonian methods, introduction to geometric control-Lie algebras, distributions, controllability and observability

M E 530. Intermediate Fluid Mechanics
3 Credits
Application of exact and empirical solutions to fundamental flow problems, including viscous and inviscid behavior. These applications establish a theoretical basis for the origin and physical role of common terms in the governing equations.

M E 533. Computational and Theoretical Fluid Mechanics
3 Credits
Application of fluid mechanics theory and computational approaches to advanced flow problems, including viscous/inviscid and laminar/turbulent behavior. Complex flow problems addressed through development of a theoretical formulation, followed by application of computational fluid dynamic (CFD) tools, and finally presentation and validation of solution data.
Prerequisite: M E 530 or consent of instructor.

M E 534. Advanced Computational Fluid Dynamics
3 Credits
Advanced techniques for large-scale numerical simulations of fluid flows: spectral numerical methods, including Fourier and other expansions, Galerkin and collocation projections, computational methods to solve incompressible and compressible Navier-Stokes equations, high-resolution methods for hyperbolic equations with discontinuous solutions, and issues related to implementation on supercomputers.
Prerequisite(s): M E 533.

M E 536. Hydrodynamic Stability and Turbulence
3 Credits
Introduction to fundamentals of hydrodynamic stability, classical linear stability analysis of parallel shear flows and rotating flows, nonlinear stability, basic concepts in turbulence theory
Prerequisite(s): M E 533.

M E 540. Intermediate Heat Transfer
3 Credits
Fundamentals of conduction, convection, and radiation heat transfer. Emphasis on the application of combined heat transfer to the solution of problems not accessible at the undergraduate level.

M E 570. Engineering Analysis I
3 Credits
Introduction to engineering analysis with emphasis on engineering applications. Topics include linear algebra, linear ordinary differential equations, and linear partial differential equations with focus on analytical methods.

M E 580. Engineering Analysis II
3 Credits
Engineering analysis with emphasis on engineering applications. Topics include analytical and numerical methods in linear and nonlinear ordinary and partial differential equations.
Prerequisite: M E 570 or consent of instructor.

M E 598. Special Research Programs
1-3 Credits
Individual investigations, either analytical or experimental. May be repeated for a maximum of 6 credits.

M E 599. Master’s Thesis
15 Credits
Thesis.

M E 600. Doctoral Research
1-15 Credits
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination.

M E 698. Special Research Programs
1-3 Credits
May be repeated for a maximum of 6 credits.

M E 700. Doctoral Dissertation
15 Credits
Dissertation.

Name: Margaret Vasquez
Office Location: Jett Hall Rm. 104
Phone: (575) 646-3502
Website: http://mae.nmsu.edu/

Aerospace Engineering - Bachelor of Science in Aerospace Engineering

The aerospace engineering program prepares students for a range of professional engineering careers in aerospace and related professions. The aerospace engineering curriculum covers the important classical areas of low and high speed aerodynamics, propulsion, orbital mechanics, flight mechanics and control, aerospace structures and laboratory practice. In addition, the principles of systems engineering and design that are necessary to conceive, design, analyze and troubleshoot complex engineering systems are covered extensively and are considered to be especially important in the overall educational experience. Students will also be encouraged to participate in significant non-classroom experiences, including:

- co-ops and internships;
- industrial and laboratory field trips;
- guest speakers from outside NMSU;
- the New Mexico Space Grant Program;
- special seminar programs on current topics in aerospace.

Aerospace engineers find employment in areas of launch vehicles, space vehicles and missions, aircraft systems design, land and sea vehicle design, robotics and automated manufacturing, safety and other areas. The aerospace engineering background also allows graduates to pursue careers in non-aerospace fields of engineering. Graduates of the aerospace engineering program will be prepared to apply the following skills to problems of interest either in the industry or research and development:

- engineering sciences,
- mathematics,
- computational methods,
- modern experimental methods,
- effective communication skills and
- systems engineering principles.
The aerospace engineering program is also intended to prepare students to pursue graduate study, which can be of significant benefit in the aerospace profession. The general goals of the aerospace engineering program, as well as the program educational objectives, are the same as those stated above for the mechanical engineering program.

**Requirements (131 Credits)**

In addition to the NMSU and College of Engineering requirements for graduation, a student must obtain a minimum grade of C- in all math, science, and engineering courses applied toward their BSAE and/or ME minor.

**General Education**

**State of New Mexico Common Core**

**Area I: Communications**
- ENGL 111G Rhetoric and Composition 4
- Written Communications Elective 3
- Oral Communications Elective 3

**Area II: Mathematics**
- MATH 191G Calculus and Analytic Geometry I 4

**Area III: Natural Science**
- CHEM 111G General Chemistry I 4
- CHEM 112G General Chemistry II 4

**Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts**

Select 15 total credits from Area IV and V, with at least 6 credits from each area:

**Area IV: Social and Behavioral Sciences**
- Select 6-9 credits from Economics, Political Science, Psychology, Sociology and Anthropology electives

**Area V: Humanities and Fine Arts**
- Select 6-9 credits from History, Philosophy, Literature, Art, Music, Dance, Theater, and Religion electives

**Institution Specific General Education**

Viewing a Wider World Electives 6

**Program Specific Requirements**

**Mathematics**
- MATH 192G Calculus and Analytic Geometry II 4
- MATH 291G Calculus and Analytic Geometry III 3

Select one Mathematics Elective from the following:
- MATH 391 Vector Analysis
- MATH 471 Complex Variables
- MATH 472 Fourier Series and Boundary Value Problems
- MATH 473 Calculus of Variations and Optimal Control
- MATH 480 Matrix Theory and Applied Linear Algebra
- STAT 371 Statistics for Engineers and Scientists I

**Natural Science**
- PHYS 215G Engineering Physics I 3
- PHYS 216G Engineering Physics II 3

**Engineering**
- ENGR 100 Introduction to Engineering 3
- CE 301 Mechanics of Materials 3
- CHME 361 Engineering Materials 3

**Mechanical Engineering**
- M E 159 Graphical Communication and Design 2
- M E 210 Electronics and System Engineering 3
- M E 222 Introduction to Product Development 3
- M E 228 Engineering Analysis I 3
- M E 236 Engineering Mechanics I 3
- M E 237 Engineering Mechanics II 3
- M E 240 Thermodynamics 3
- M E 261 Mechanical Engineering Problem Solving 3
- M E 328 Engineering Analysis II 3
- M E 341 Heat Transfer 3
- M E 345 Experimental Methods I 3
- M E 449 Mechanical Engineering Senior Seminar 1

**Aerospace Engineering**
- A E 339 Aerodynamics I 3
- A E 362 Orbital Mechanics 3
- A E 363 Aerospace Structures 3
- A E 364 Flight Dynamics and Controls 3
- A E 419 Propulsion 3
- A E 439 Aerodynamics II 3
- A E 424 Aerospace Systems Engineering 3
- A E 428 Aerospace Capstone Design 3
- A E 447 Aeronofluids Laboratory 3

Aerospace engineering senior elective (Approved M E 400 level and/or A E 400 level courses only) 3

Total Credits 131

1 See the required courses (p. 47) section of the catalog for a full list of courses.

2 Courses subject to once per year rotation.

**Course**
<table>
<thead>
<tr>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td><strong>Freshman</strong></td>
<td></td>
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<tr>
<td><strong>Fall</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 191G Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 100 Introduction to Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111G General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>M E 159 Graphical Communication and Design</td>
<td>2</td>
</tr>
<tr>
<td>ENGL 111G Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>17</td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 192G Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112G General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>M E 222 Introduction to Product Development</td>
<td>3</td>
</tr>
<tr>
<td>Written Communications Elective</td>
<td>3</td>
</tr>
<tr>
<td>Area IV: Social/ Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>17</td>
</tr>
</tbody>
</table>

**Sophomore**

**Fall**
- MATH 291G Calculus and Analytic Geometry III 3
- M E 236 Engineering Mechanics I 3
- PHYS 215G Engineering Physics I 3
- M E 210 Electronics and System Engineering 3
Aerospace Engineering - Doctor of Philosophy

The student's academic program is not judged satisfactory unless it prepares the student to contribute to the advancement of knowledge in the field of Aerospace Engineering. The Degree of Doctor of Philosophy is indicative of distinguished achievement in the areas of scholarship and original research. Therefore, a dissertation of high quality is required of all doctoral students in Aerospace Engineering. Students must follow the degree requirements listed below to complete the Ph.D. course of study.

- A minimum of 36 credit hours of coursework (500 level or above) beyond the Bachelor of Science degree, at least 18 of which must support the student's research area.
- A minimum of 24 credit hours of research, A E 700 Doctoral Dissertation, which may include a maximum of 6 credit hours of A E 600 Doctoral Research. A E 600 Doctoral Research is intended for those students who have not completed the qualification examination, a prerequisite for A E 700 Doctoral Dissertation.
- A student is required to have one refereed journal paper accepted and a second one accepted or in review by graduation. The Ph.D. dissertation can be a compilation and reformatted version of these published or accepted journal papers. Exceptions may be made on case by case basis by the Department Head.

Ph.D. Program Transfer Credits

A student who has completed a Master of Science degree in M E, A E, or a closely related field may transfer up to 24 credits of graduate coursework, approved by the student's advisor, into a Ph.D. program of study.

Selection of Permanent Ph.D. Advisor

Newly admitted graduate students will be assigned a temporary advisor for the first semester. The student must select a permanent advisor before registering for the second semester. In selecting a permanent advisor, the student should arrange to meet with several members of the graduate faculty during the first six weeks of enrollment to discuss specific objectives. The student should use these meetings to become familiar with faculty research interests and research projects currently in progress. The faculty member must consent (in writing) to serve as the student's advisor.

Policies governing the Ph.D. written qualifying examination, the Ph.D. written and oral comprehensive examination, the student's Ph.D. committee, and the Ph.D. dissertation are contained in the department's Graduate Program website.

Additional Requirements

PhD candidates in the College of Engineering, who have successfully completed their PhD Qualifier Examination after January 1, 2018, must satisfy a publication requirement which requires two papers:

Paper #1: An archival paper accepted or published in any journal listed in the source publication list for the Web of Science, or a refereed Journal or Conference Proceeding approved by the student's doctoral committee and the cognizant Department Head(s), before the Doctorate of Philosophy final examination. The candidate should be listed as the lead author in Paper #1.

Paper #2: An additional archival paper submitted, accepted, or published in any journal listed in the source publication list for the Web of Science. Alternatively, one conference paper accepted or published in a national or international conference proceedings.
Students may select one of two options for completing their MS degree. Selection of a particular option must be made during the first semester of study in conjunction with selecting a permanent adviser.

### Thesis Option

**Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>M E 570 Engineering Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>Select at least 18 credits of A E graduate courses (^1)</td>
<td>18</td>
</tr>
<tr>
<td>Select one or both from the following:</td>
<td></td>
</tr>
<tr>
<td>A E 509 Individualized Study</td>
<td>3</td>
</tr>
<tr>
<td>A E 510 Special Topics (^2)</td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credits: **30**

\(^1\) Up to 6 credits of M E graduate courses may be substituted with the approval of the Graduate Coordinator. All course must be 500 level or above.

\(^2\) Special topics courses offered formally on a one time basis.

**Publication Requirement:** a refereed conference paper accepted or a refereed journal article in review or accepted by graduation. The MS thesis can be a reformatted version of this paper. Exceptions may be made on a case by case basis by the department head.

### Coursework Option

**Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>M E 570 Engineering Analysis I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Core Courses**

Select one core course from 4 of the 5 following topic areas: **12**

- **Space Dynamics**
  - A E 562 Astrodynamics
- **Aerodynamics**
  - Select one from the following:
    - M E 530 Intermediate Fluid Mechanics
    - M E 533 Computational and Theoretical Fluid Mechanics
    - A E 552 Introduction to Gasdynamics
- **Structural Dynamics and Control**
  - Select one from the following:
    - M E 512 Vibrations
    - A E 527 Control of Mechanical Systems
    - A E 566 Aeroelasticity
- **Mechanics**
  - Select one from the following:
    - M E 502 Elasticity I
    - M E 504 Continuum Mechanics
- **Engineering Analysis**
  - Select one from the following:
    - M E 518 Finite Element Analysis
    - M E 580 Engineering Analysis II

**Additional Requirements**

Select 4 additional A E courses (500 level or above) from the following: **12**

- Core Courses listed above
- Research Area Courses

**Total Credits:** **30**

\(^4\) If course is not in A E or M E program, approval of the Graduate Program Coordinator is required.

### Selection of MS Option and Permanent Adviser

Newly admitted graduate students will be assigned a temporary adviser for the first semester, but they must select a degree option and permanent advisor before registering for the second semester.

In considering a decision about option and advisor, the student should arrange to meet with several members of the graduate faculty during the first six weeks of study to discuss specific educational objectives. The student can use these meetings to become familiar with faculty interests and research projects currently in progress. The faculty member must agree (in writing) to serve as the student's advisor.

All students must pass a final examination. The final examination is to be conducted by the student's advisory committee and is taken after completing all coursework and thesis work for the thesis option, or all coursework for the course-only option.

### Aerospace Engineering - Undergraduate Minor

**Requirements**

**Math and Science**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 191G Calculus and Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 192G Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 291G Calculus and Analytic Geometry III</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 215G Engineering Physics I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Required Engineering**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>C E 301 Mechanics of Materials</td>
<td>3</td>
</tr>
<tr>
<td>M E 236 Engineering Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>M E 237 Engineering Mechanics II</td>
<td>3</td>
</tr>
<tr>
<td>M E 240 Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>M E 328 Engineering Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>A E 339 Aerodynamics I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Technical Electives**

Select one from the following: **3**

- A E 364 Flight Dynamics and Controls
- A E 439 Aerodynamics II

Select one from the following: **3**

- A E 362 Orbital Mechanics
- A E 363 Aerospace Structures
- A E 419 Propulsion

Total Credits: **38**
Technical Electives cannot be used to satisfy BSME Engineering elective requirement.

Engineering - Doctor of Philosophy

Concentration: Mechanical Engineering

The student's academic program is not judged satisfactory unless it prepares the student to contribute to the advancement of knowledge in the field of Mechanical Engineering. The Degree of Doctor of Philosophy is indicative of distinguished achievement in the areas of scholarship and original research. Therefore, a dissertation of high quality is required of all doctoral students in Mechanical Engineering. Students must follow the degree requirements listed below to complete the Ph.D. course of study.

- A minimum of 36 credit hours of coursework (500 level or above) beyond the Bachelor of Science degree, at least 18 of which must support the student's research area.
- A minimum of 24 credit hours of research, M E 700 Doctoral Dissertation, which may include a maximum of 6 credit hours of M E 600 Doctoral Research. M E 600 Doctoral Research is intended for those students who have not completed the qualification examination, a prerequisite for M E 700 Doctoral Dissertation.
- A student is required to have one refereed journal paper accepted and a second one accepted or in review by graduation. The Ph.D. dissertation can be a compilation and reformatted version of these published or accepted journal papers. Exceptions may be made on case by case basis by the Department Head.

Ph.D. Program Transfer Credits

A student who has completed a Master of Science degree in M E, A E, or a closely related field may transfer up to 24 credits of graduate coursework, approved by the student’s advisor, into a Ph.D. program of study.

Selection of Permanent Ph.D. Advisor

Newly admitted graduate students will be assigned a temporary advisor for the first semester. The student must select a permanent advisor before registering for the second semester. In selecting a permanent advisor, the student should arrange to meet with several members of the graduate faculty during the first six weeks of enrollment to discuss specific objectives. The student should use these meetings to become familiar with faculty research interests and research projects currently in progress. The faculty member must consent (in writing) to serve as the student’s advisor.

Additional Requirements

PhD candidates in the College of Engineering, who have successfully completed their PhD Qualifier Examination after January 1, 2018, must satisfy a publication requirement which requires two papers:

Paper #1: An archival paper accepted or published in any journal listed in the source publication list for the Web of Science, or a refereed Journal or Conference Proceeding approved by the student’s doctoral committee and the cognizant Department Head(s), before the Doctorate of Philosophy final examination. The candidate should be listed as the lead author in Paper #1.

Paper #2: An additional archival paper submitted, accepted, or published in any journal listed in the source publication list for the Web of Science. Alternatively, one conference paper accepted or published in a national or international conference proceedings.

Mechanical Engineering - Bachelor of Science in Mechanical Engineering

The mechanical engineering program prepares students for a wide range of professional engineering careers in such areas as: research and development; design; facilities operation and maintenance; management; and production. Graduates of the program will be prepared to apply engineering sciences, mathematics, computational methods, modern experimental methods, and effective communication skills to problems of interest in industry as well as government or scholarly topics. Employment opportunities for graduates are extensive. These opportunities include: energy and utility; manufacturing; automotive; aerospace; defense and space; research and development; and many others. The emphasis in the curriculum is on engineering sciences (solid mechanics, thermal sciences, fluid mechanics and materials science); mathematics; engineering analysis; engineering design; general sciences; and communication balanced with general education topics and electives. Graduates of the program will also be prepared for graduate studies (subject to grade-point and standardized test qualifications). Students will be prepared to take the fundamentals of engineering examination (and are encouraged to do so) as a step towards professional registration.

Requirements (131 Credits)

In addition to the NMSU and College of Engineering requirements for graduation, a student must obtain a minimum grade of C- in all math, science and engineering courses applied toward their BSME and/or AE minor.

General Education

State of New Mexico Common Core

| Area I: Communications                  | ENGL 111G  | Rhetoric and Composition | 4 |
| Written Communications Elective        | Oral Communications Elective | 3 |

Area II: Mathematics

| MATH 191G  | Calculus and Analytic Geometry I | 4 |

Area III: Natural Science

| CHEM 111G  | General Chemistry I | 4 |
| CHEM 112G  | General Chemistry II | 4 |

Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts

Select 15 total credits from Area IV and V, with at least 6 credits from each area: 1

| Area IV: Social and Behavioral Sciences: | Select 6-9 credits from Economics, Political Science, Psychology, Sociology and Anthropology electives 1 |
| Area V: Humanities and Fine Arts:       | Select 6-9 credits from History, Philosophy, Literature, Art, Music, Dance, Theater, and Religion electives 1 |

Institution Specific General Education

Viewing a Wider World Electives 1

6
### Program Specific Requirements

**Mathematics**
- MATH 192G  Calculus and Analytic Geometry II  4
- MATH 291G  Calculus and Analytic Geometry III  3
- Select one Mathematics Elective from the following:  3
  - MATH 391G  Vector Analysis
  - MATH 471G  Complex Variables
  - MATH 472G  Fourier Series and Boundary Value Problems
  - MATH 473G  Calculus of Variations and Optimal Control
  - MATH 480G  Matrix Theory and Applied Linear Algebra
  - STAT 371G  Statistics for Engineers and Scientists I

**Natural Science**
- PHYS 215G  Engineering Physics I  3
- PHYS 216G  Engineering Physics II  3

**Engineering**
- ENGR 100G  Introduction to Engineering  3
- C E 301G  Mechanics of Materials  3
- CHME 361G  Engineering Materials  3

**Mechanical Engineering**
- M E 159G  Graphical Communication and Design  2
- M E 210G  Electronics and System Engineering  3
- M E 219G  Introduction to Product Development  3
- M E 222G  Engineering Analysis I  3
- M E 228G  Engineering Mechanics I  3
- M E 236G  Engineering Mechanics II  3
- M E 240G  Thermodynamics  3
- M E 261G  Mechanical Engineering Problem Solving  3
- M E 262G  Mechanical Design  3
- M E 268G  Engineering Analysis II  3
- M E 338G  Fluid Mechanics  3
- M E 340G  Applied Thermodynamics  3
- M E 341G  Heat Transfer  3
- M E 345G  Experimental Methods I  3
- M E 425G  Design of Machine Elements  3
- M E 426G  Design Project Laboratory I  3
- M E 427G  Design Project Laboratory II  3
- M E 445G  Experimental Methods II  3
- M E 449G  Mechanical Engineering Senior Seminar  1

Select one Mechanics Elective from the following:  3
- M E 331G  Intermediate Strength of Materials
- M E 332G  Vibrations
- M E 333G  Intermediate Dynamics

Mechanical engineering senior electives (Approved M E 400 level and/or A E 400 level courses only)  6

Total Credits  131

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1 See the required courses (p. 47) section of the catalog for a full list of courses.
M E 449  Mechanical Engineering Senior Seminar 1
Area IV or Area V 1 3
Viewing a Wider World 3

Credits 16

Spring
M E 427  Design Project Laboratory II 3
Math Elective 3
Mechanical engineering senior electives 6
Viewing a Wider World 3

Credits 15

Total Credits 131

1 See the required courses (p. 47) section of the catalog for a full list of courses.

Mechanical Engineering - Master of Science in Mechanical Engineering
(30 credits)

Students may select one of two options for completing their MS degree. Selection of a particular option must be made during the first semester of study in conjunction with selecting a permanent adviser.

Thesis Option

Requirements
M E 570  Engineering Analysis I 3
Select at least 18 credits of M E graduate courses 1 18
Select one or both from the following:
M E 509  Individualized Study 3
M E 510  Special Topics 2 6

Total Credits 30

1 Up to 6 credits of A E graduate courses may be substituted with the approval of the Graduate Coordinator. All course must be 500 level or above.

2 Special topics courses offered formally on a one time basis.

Publication Requirement: a refereed conference paper accepted or a refereed journal article in review or accepted by graduation. The MS thesis can be a reformatted version of this paper. Exceptions may be made on a case by case basis by the department head.

Coursework Option

Requirements
M E 570  Engineering Analysis I 3
Core Courses
Select one core course from 4 of the 5 following topic areas: 12
Solid Mechanics
Select one from the following:
M E 502  Elasticity I
M E 504  Continuum Mechanics
Thermal Science
Select one from the following:
M E 503  Thermodynamics

M E 540  Intermediate Heat Transfer

Fluids
Select one from the following:
M E 530  Intermediate Fluid Mechanics
M E 533  Computational and Theoretical Fluid Mechanics

Dynamics and Vibrations
Select one from the following:
M E 511  Dynamics
M E 512  Vibrations

Engineering Analysis and Control
Select one from the following:
M E 518  Finite Element Analysis
M E 527  Control of Mechanical Systems
M E 580  Engineering Analysis II

Additional Requirements
Select 4 additional M E courses (500 level or above) from the following: 3

Core Courses listed above
Research Area Courses
Dual Listed Courses
M E 509  Individualized Study
M E 510  Special Topics
Select one course (500 level or above) from related areas 4 3

Total Credits 30

3 Graduate A E courses may be substituted for M E courses with the approval of the Graduate Program Coordinator.

4 If course is not in A E or M E program, approval of the Graduate Program Coordinator is required.

Selection of MS Option and Permanent Adviser

Newly admitted graduate students will be assigned a temporary adviser for the first semester, but they must select a degree option and permanent adviser before registering for the second semester.

In considering a decision about option and adviser, the student should arrange to meet with several members of the graduate faculty during the first six weeks of study to discuss specific educational objectives. The student can use these meetings to become familiar with faculty interests and research projects currently in progress. The faculty member must agree (in writing) to serve as the student’s adviser.

All students must pass a final examination. The final examination is to be conducted by the student’s advisory committee and is taken after completing all coursework and thesis work for the thesis option, or all coursework for the course-only option.

Mechanical Engineering - Undergraduate Minor

Requirements
Math and Science
MATH 191G  Calculus and Analytic Geometry I 4
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 192G</td>
<td>Calculus and Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 291G</td>
<td>Calculus and Analytic Geometry III</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 215G</td>
<td>Engineering Physics I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Required Engineering**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 301</td>
<td>Mechanics of Materials</td>
<td>3</td>
</tr>
<tr>
<td>ME 236</td>
<td>Engineering Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>ME 237</td>
<td>Engineering Mechanics II</td>
<td>3</td>
</tr>
<tr>
<td>ME 240</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>ME 328</td>
<td>Engineering Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>ME 338</td>
<td>Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>ME 425</td>
<td>Design of Machine Elements</td>
<td>3</td>
</tr>
</tbody>
</table>

**Technical Elective**

Select one from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 452</td>
<td>Introduction to Automation and Control System Design</td>
<td>3</td>
</tr>
<tr>
<td>ME 456</td>
<td>Experimental Modal Analysis</td>
<td></td>
</tr>
<tr>
<td>ME 460</td>
<td>Applied Finite Elements</td>
<td></td>
</tr>
<tr>
<td>ME 481</td>
<td>Alternative and Renewable Energy</td>
<td></td>
</tr>
<tr>
<td>ME 487</td>
<td>Mechatronics</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 38

1 Technical Elective cannot be used to satisfy BSAE Engineering elective requirement.
The College of Health and Social Services brings together associated disciplines and professional fields of study directly applied to the improvement of the quality of life and its existence in rapidly changing family and community environments. The College includes the Department of Public Health Sciences, and the Schools of Nursing and Social Work.

Bachelor Degree Graduation Requirements

Three bachelor degree programs are available. To be awarded a bachelor degree in any of the three programs (i.e., Bachelor of Public Health, Bachelor of Science in Nursing, and Bachelor of Social Work) you must:

1. Complete the requirements for the degree as shown by the department in which the degree is offered including a minimum of 48 credits of upper division courses (numbered 300 and above) and the minimum total number of credits required for the degree.
2. Complete the general education common core (p. 47) presented in the general education section of this catalog, the specific general education courses that may be required by each department, and Viewing a Wider World requirements specified elsewhere in this catalog.
3. Complete any other requirements for graduation as discussed under Regulations in the General Information chapter of this catalog.

Students must check with their academic advisor for current requirements and lists of specific courses that meet these requirements.

While the ultimate responsibility for planning an academic program in compliance with university, college, and departmental requirements rests with you, the college recognizes the importance of helping you work out appropriate academic programs. All Health and Social Service students pursuing baccalaureate degrees are advised about academic matters in their respective department. Students are encouraged to contact departments for specific subject area information and career planning.

Bachelors Degrees

Bachelor of Public Health (p. 626)
Bachelor of Science in Nursing (p. 609)
Bachelor of Social Work (p. 632)

Masters Degrees

Master of Public Health (p. 626)

• Community Health Education
• Health Management and Administration & Policy

Master of Science in Nursing - Nursing Administration (p. 609)

Master of Social Work (p. 632)

Dual Degrees

Master of Public Health/ Master of Social Work (p. 626)

Graduate Certificates

• Family Nurse Practitioner (p. 609)
• Family Psychiatric/Mental Health Nurse Practitioner (p. 609)
• Graduate Public Health (p. 626)

Doctoral Degrees

Doctor of Nursing Practice

• Adult/Geriatric Nurse Practitioner
• Family Psychiatric/Mental Health Nurse Practitioner
• Family Nurse Practitioner
• Public/Community Health Nursing

Doctor of Philosophy-Nursing (p. 609)

Undergraduate Minors

• Gerontology (p. 626)
• Public Health Sciences (p. 626)
• U.S.-Mexico Border Health Issues (p. 626)

Graduate Minors

• Alcohol and Drug Counseling (p. 632)

Accreditation

Within the College of Health and Social Services, the baccalaureate degree program in the School of Nursing is accredited by the Commission of Collegiate Nursing Education (CCNE). The baccalaureate degree program in the School of Social Work is accredited by the Council on Social Work Education. The Bachelor of Public Health degree program in the Department of Public Health Sciences is accredited by the Society for Public Health Education/American Association of Health Education Baccalaureate Program Approval Committee.

Nursing

Undergraduate Program Information

NMSU’s School of Nursing offers a Bachelor of Science in Nursing (B.S.N.) degree. The degree plan provides three options to accommodate either the beginning nursing student, the beginning nursing student with a baccalaureate degree in another field, or the returning registered nurse. Students graduating from the first two options are eligible to take the NCLEX-RN® examination for licensure as a registered nurse upon completion of their program studies. This program is also offered at two additional satellite sites at NMSU Grants, NM and NMSU Alamogordo, NM. Option three is designed for the registered nurse who wishes to complete a BSN.
The Bachelor of Science in Nursing degree program is approved by the New Mexico Board of Nursing and accredited by the Commission on Collegiate Nursing Education (CCNE). Approval by the New Mexico Board of Nursing is required for graduates to be eligible for the National Council Licensing Examination (NCLEX-RN®) for licensure as a registered nurse. Accreditation by the CCNE assures prospective students and employers that the program has met national education standards.

The NMSU SON is a full member of the New Mexico Nursing Education Consortium (NMNEC) and offers the NMNEC BSN curriculum.

**Requirements for B.S.N. Program Admission**

Requirements and procedures to follow for admission to the four-year B.S.N. program are as follows:

1. Obtain admission to NMSU as a regular student.
2. Contact the pre-nursing advisor in the College of Health and Social Services for complete Nursing Program information and advisement.
3. Satisfy NMSU basic academic competency requirements in English and Math.
4. Complete prerequisite coursework before final admission to the nursing major.
5. Prerequisite science courses must have been completed within the past seven years.
6. Achieve a grade of C- or better in each nursing prerequisite course.
7. Achieve a competitive minimum prerequisite GPA of 2.75 which includes grades earned from all higher education institutions.
8. Prelicensure applicants to the NMSU School of Nursing are required to take a standardized admission exam and to obtain a satisfactory score prior to application to the nursing major.
9. Applicants will be considered for admission to the nursing major during the fall or spring semester of anticipated completion of prerequisite coursework or after prerequisite courses are completed. Applicants for fall semester admission may not finish prerequisites in the summer session immediately preceding the fall semester in which they wish to be admitted.
10. Application deadlines each year are:
   a. February 1st—for consideration for Fall admission to the nursing major
   b. September 1st—for consideration for Spring admission to the nursing major

NOTE: Admission is competitive and available seats are limited. Priority for admission will be given to applicants with the highest GPAs in the required prerequisite coursework, scores on the standardized admission exam, and to New Mexico residents.

Any applicant not admitted to the nursing major may reapply.

**Second Degree : BSN (Pathway option) or the Accelerated 2nd Degree (Roadrunner option)**

Requirements and procedures for admission to the two second degree options are as follows:

1. Obtain admission to NMSU as a second bachelor’s degree-seeking student with official transcripts
2. Contact the pre-nursing advisors in the School of Nursing Advising Center for advisement on program application and admission.
3. Have a minimum 3.0 GPA on a 4.0 scale in first bachelor’s degree
4. Have a minimum of a 3.0 GPA on a 4.0 scale in the required prerequisite Anatomy and Physiology or A&P I and A&P II (8 credits), third science course (3 credits in BIOL, MOLB, CHEM, or PHYS), a Pathophysiology course (3-4 credits) and Statistics (3 credits).

Roadrunner applicants must also obtain a B or better in all prerequisites. All courses must be completed before submitting a nursing application and must not be older than 7 years.

5. Roadrunner students are admitted once a year, in the summer. Pathway option students are admitted in spring or fall semesters. Submit an official application to the second degree option to the School of Nursing Advising Center by February 1st, for consideration for summer Roadrunner admissions. Submission dates for Pathway students are February 1st for fall admission, or September 1st for spring admission to the nursing program.

6. Complete a resume documenting prior education and work experience.
7. A Medical Terminology Course is recommended
8. Applications are considered only after all requested documentation is received by the pre-nursing Advisors.
9. Three letters of recommendation are required.

**Graduate Program Information**

**MSN:** The School of Nursing offers graduate course work for nurses leading to a Master of Science in Nursing (MSN) degree. The MSN specialization offered is in Nursing Administration, which is designed to provide students with the knowledge and experience to assume leadership roles in a variety of health care delivery systems. Graduates meet the requirements necessary to teach in basic nursing education programs or manage continuing nursing education programs.

The MSN program is accredited by the Commission on Collegiate Nursing Education (CCNE).

Admission to the MSN program is in accordance with the general regulations of the Graduate School. Additional requirements include a BSN from an accredited college or university; successful completion of an inferential statistics course within the last 5 years; three professional letters of recommendation; a letter stating personal goals for graduate education and intended specialty area; resume identifying clinical practice experience; and proof of licensure or eligibility for licensure as a Registered Nurse in any of the 50 United States, the District of Columbia or U.S. territories.

Application for admission should be submitted online through Admissions. Letters of reference, personal goals, resume, unofficial transcripts and proof of licensure should be uploaded into the Admissions portal. Applicants who are registered nurses without a bachelor’s degree in nursing, but with a bachelor’s degree in another discipline may be considered for admission on an individual basis. Applicants without a BSN are admitted conditionally.

**DNP:** The Doctorate in Nursing Practice (DNP) prepares individuals who can assume advanced nursing practice roles within the health care arena in the areas of Family Psychiatric/Mental Health Nurse Practitioner, Family Nurse Practitioner, Adult/Geriatric and Public/Community Health Nursing. The focus of the DNP is on advanced nursing practice directed towards improving nursing care outcomes for individuals, families, communities, and systems. The program emphasizes culturally sensitive practice, evidenced-based practice, and translation of research to practice as it relates to improving the care of individuals, families, groups and communities experiencing or at risk for health disparities. The
complexity of health care combined with rapidly increasing knowledge and the need for both evidence-based practice and translation of research to practice support the scholarship goals of the Doctorate of Nursing Practice (DNP). For the DNP program, students must also take courses in advanced pathophysiology, advanced pharmacology, and advanced pharmacology in addition to specialty courses within their area of study. The focus of specific clinical experiences varies with student interest and in consultation with faculty advisors. Students in the DNP program complete a Project.

Ph.D.: The intent of the nursing Ph.D. program is to prepare individuals who can assume leadership roles in academia, including the scholarship of teaching, research, and professional service activities. The focus of the program is on nursing scholarship to facilitate the development of new knowledge directed at improving nursing care outcomes for individuals, families, communities and systems. Holistic nursing scholarship as it relates to improving the care of individuals, families, groups and communities experiencing or at risk for health disparities is emphasized. Students in the Ph.D. program complete a dissertation.

Doctoral Admission Criteria: Admission to the Ph.D. and DNP programs is a competitive process and is subject to the general regulations of the Graduate School. Additional requirements include: an MSN from an accredited college or university for the Ph.D. program; a BSN from an accredited program for the BSN to DNP; and an MSN with clinical certification in a nursing specialty area for the MSN to DNP; a graduate level statistics course for both programs (taken within the last five years); three professional letters of recommendation; a letter stating personal goals for graduate education, completion of writing requirement, interview with nursing faculty, resume identifying practice experience; and proof of licensure or eligibility for licensure as a Registered Nurse in any of the 50 United States, the District of Columbia, or U.S. territories. Students in the Ph.D. program complete a dissertation. Contact the Graduate Advisor for more information (575) 646-7770.

Post-MSN Specialty Certificates
Post-MSN certificates for the specialties of Family Nurse Practitioner and Family Psychiatric/Mental Health Nurse Practitioner. Contact the Graduate Advisor for more information (575) 646-7770.

Degrees for the Department
Nursing - Bachelor of Science in Nursing (p. 623)
Nursing Administration - Master of Science in Nursing (p. 625)
Family Nurse Practitioner - Graduate Certificate (p. 623)
Family Psychiatric/Mental Health Nurse Practitioner - Graduate Certificate (p. 623)
Nursing Practice - Doctor of Nursing Practice (p. 625)
Nursing - Doctor of Philosophy (p. 624)
Alexa Doig, Director of the School of Nursing

Professors Keller; Associate Professors Reinhardt, Summers; Assistant Professors DeBlieck, Lynch, Noe, Morales, Saiki, Smith, Kuchler

C. DeBlieck, DNP (U of Minnesota) – nursing informatics and health care technologies; T. Keller, Ph.D. (St. Louis U) – health care policy, health care and nursing administration, professional issues; S. Lynch, Ph.D. (New Mexico State) – women's health and family counseling; S. Noe, DNP (New Mexico State) – substance abuse and addictions; A. Reinhardt Ph.D.(OHSU) – administration, leadership, organization, work environments; L. Summers, Ph.D. (UT- Houston) – adolescent health and mental health, telehealth; J. Smith, Ph.D. (UNM)-nursing education, health disparities; M. Morales, Ph.D. (NMSU)- pediatrics, family health; L. Saiki, Ph.D. (UNM)- women's health, research; E. Kuchler, DNP (NMSU)- public, and community health

NURS 120. Introduction to Pharmacology
3 Credits
General principles of pharmacology including methods of administration, effect on the body, interactions with other drugs, and classification of drugs. Focus on the health care provider's role in safe pharmacologic intervention. Restricted to Allied Health majors. Restricted to: Community Colleges only.

NURS 130. Foundations of Pharmacology
3 Credits
This course provides the nursing student with an introduction to the foundations of pharmacology including: science of drug action, principles of medication administration, accurate calculation of drug doses, medication therapy across the lifespan, application of medications to treat health alterations, normal and adverse responses by the client to medication therapy, medication safety, medication regulation, national patient safety goals, and appropriate nursing interventions to achieve the desired goals of medication therapy. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges only.

Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 147 & NURS 149.

NURS 134. Foundation of Nursing Skills and Assessment
3 Credits (1+6P)
This course provides nursing students with introductory nursing knowledge related to performance of nursing skills and assessment including: techniques of fundamental nursing care, basic and intermediate nursing skills, and foundational physical assessment techniques associated with care across the lifespan. Open to students who have been accepted into the nursing program. Restricted to: NUR majors. Restricted to: Community Colleges only.

Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 136 & NURS 137 or permission of the Program Director.

NURS 136. Foundations of Nursing Practice
6 Credits (4+6P)
This course will introduce the nursing student to foundational theoretical concepts of professional nursing practice, the nursing process, and foundational nursing skills. It includes developmental concepts related to clients across the lifespan. Clinical experiences in the simulation lab, long-term care, the community, and rehabilitation settings will provide the student with the opportunity to apply learned skills to provide total care to meet needs of one adult client and to develop care planning skills related to actual problems. Students must be concurrently enrolled in both the lecture and lab sections of the course. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges only.

Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 134, NURS 136 lab & NURS 137 or permission of the Program Director.
NURS 137. Care of Geriatric Patient  
3 Credits  
This course will introduce the nursing student to foundational concepts of age-appropriate/specific care of the older adult who represents the largest population of individuals placing demands on the healthcare system. It includes basic and complex issues related to care of the older client across the care continuum, provision of cost-effective care in a resource sparse environment. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NURS majors. Restricted to Community Colleges campuses only.  
Prerequisite(s): Admission into the nursing program.  
Corequisite(s): NURS 134 & NURS 136 or permission of the Program Director.

NURS 140. Pathophysiology for Allied Health Professionals  
3 Credits  
Introduction to the nature of disease and its effect on body systems. Deals with the disease processes affecting the human body via an integrated approach to specific disease entities. Includes a review of normal functions of the appropriate body systems. Diseases are studied in relationship to their etiology, pathology, physical signs and symptoms, diagnostic procedures, complication, treatment modalities, and prognosis. Restricted to Allied Health and Health Information Technology majors. Restricted to:Community Colleges only.  
Prerequisite: a grade of C or better in OEHO 140.

NURS 146. Common Health Deviations  
6 Credits (4+6P)  
Common health deviations and the manner by which they alter various body functions are explored. The role of the licensed practical nurse in assisting clients with common health deviations is presented. Ethical and legal implications and the role of the practical nurse are also considered. The licensed practical nursing student will utilize the application of knowledge to client care situation both in the subacute and acute care settings. The nursing process is presented as guide for coordinating client care. Grade of C or better. May be repeated up to 6 credits. Restricted to: NURSING majors. Restricted to Carlsbad campus only.  
Prerequisite(s): NURS153, NURS156, NURS154, NURS157, and NURS210 or consent of program director.

NURS 147. Adult Health I  
6 Credits (4+6P)  
This course focuses on application of the nursing process and theoretical concepts of care for adults with commonly occurring health problems. Selected clinical learning experiences in the simulation lab, acute care, and community settings will allow the student to continue development of: prioritization skills, proficiency in performance of nursing skills, collaborative skills with clients, families, peers and health care team members, care planning skills related to patient actual, psychosocial, and potential problems in the delivery of total nursing care to meet needs of one adult client. Students must be concurrently enrolled in both the lecture and lab sections of the course. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to Community Colleges campuses only.  
Prerequisite(s): Admission into the Nursing Program.  
Corequisite(s): NURS 130, NURS 147 lab, & NURS 149, or permission of the Program Director.

NURS 148. Physical Assessment  
2 Credits (1+3P)  
Introduction of concepts and techniques of interviewing, history taking, review of body systems, and physical assessment of an adult client. The student should be able to apply knowledge of anatomy and physiology, assessment skills, communication skills, cultural awareness, nursing process, critical thinking skills, teaching skills, and psychomotor skills. Restricted to: Community Colleges only.

NURS 149. Mental Health Nursing  
3 Credits (2+3P)  
This course will allow the nursing student to develop skills necessary to provide nursing care for clients with mental health problems in various health care settings including: common mental health disorders, psychosocial dysfunction, psychosocial safety/substance abuse issues, violence, suicide, restraints, developmental age related pathophysiology, psychopharmacology, cultural/religious considerations, grief/loss, promotion of mental health, and therapeutic communication. Selected clinical learning experiences in the simulation lab, acute care, and community settings will allow the student to develop ability to develop: proficiency in performance of nursing skills, collaborative skills with clients, families, peers and health care team members, care planning skills related to patient actual, psychosocial, and potential problems in the delivery of total nursing care to meet needs of one client across the life span with acute/chronic mental health needs. Students must be concurrently enrolled in both the lecture and lab sections of this course. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges only.  
Prerequisite(s): Admission into the Nursing Program.  
Corequisite(s): NURS 130, NURS 147, & NURS 149L, or permission of the Program Director.

NURS 150. Medical Terminology  
3 Credits  
Understanding of the basic elements of medical words. Use of medical abbreviations. Same as OEHO 120 and BOT 150.

NURS 153. Medication and Dosage Calculation  
1 Credit  
Techniques of dosage calculation for medication and fluid administration. RR applicable.  
Prerequisite(s): Meet NMSU basic skills requirement in mathematics or consent of program director.  
Corequisite(s): NURS156 and NURS154.

NURS 154. Physical Assessment  
2 Credits  
Beginning techniques of physical assessment by systems will be presented using the nursing process as a guide for providing safe client centered care throughout the life span. Grade of C or better is required. May be repeated up to 2 credits. Restricted to: NURSING majors. Restricted to Carlsbad campus only.  
Prerequisite(s): BIOL 154 or BIOL 225 or consent of program director.  
Corequisite(s): NURS 153, NURS 156.

NURS 155. Special Topics  
1-4 Credits  
Specific subjects to be announced in the Schedule of Classes.
NURS 156. Basic Nursing Theory and Practice
6 Credits (4+6P)
Introduction to the nursing profession and the beginning skills of nursing practice as it relates to normalcy. The nursing process is presented as a means of guiding the student in providing safe client centered care. Ethical and legal aspects of nursing practice are also included. Basic clinical nursing skills will be presented and practiced in the nursing lab. The student will perform these skills with clients in an actual health care setting. May be repeated up to 6 credits. Restricted to: NURSING majors. Restricted to Carlsbad campus only.
Prerequisite(s): Consent of Program Director.
Corequisite(s): NURS 153, NURS 154.
NURS 157. Maternal/Child Health Deviations
8 Credits (6+6P)
The concepts and principles of nursing care of the family from conception to adolescence. Utilizing the nursing process, the student provides safe client centered care to diverse clients and families. Theoretical instruction is applied to client care situation. Students collaborate with clients, families and the interdisciplinary team in meeting health care needs. Experiences may occur in any of the regional health care facilities. Grade of C or better required. May be repeated up to 8 credits. Restricted to: NURSING majors. Restricted to Carlsbad campus only.
Prerequisite(s): NURS 156, NURS 153, and NURS 154 or consent of program director.
Corequisite(s): NURS 210.
NURS 180. The Adult Client I
8 Credits (4+12P)
Holistic care of the adult client throughout the lifespan, utilizing the nursing process to address personal wellness and acute alterations in wellness in a variety of health care settings. Laboratory and clinical practicum will focus on application of the nursing process in simulated and real world settings. Restricted to: Community Colleges only.
Prerequisite(s): NURS 170, NURS 172, and NURS 173L.
Corequisite(s): NURS 185.
NURS 182. Legal and Ethical Issues in Nursing Practice
2 Credits
Introduction to legal and ethical implications of nursing practice (through the holistic approach to wellness) as a registered nurse. Restricted to: Community Colleges only.
NURS 185. Holistic Approach to Pharmacotherapeutic Intervention I
2 Credits
Level I. Holistic approach to the study of basic pharmacology concepts. Includes pharmacodynamic phases of drug interaction. Nursing process is discussed in relation to medication administration. Special emphasis on the role of the nurse and basic concepts related to specific drug categories. Restricted to: Community Colleges only.
Prerequisite(s): NURS 170, NURS 172, and NURS 173L.
Corequisite(s): NURS 180.
NURS 201. Special Topics
1-4 Credits
Specific topics to be announced in the Schedule of Classes. May be repeated for a maximum of 10 credits. Restricted to: Community Colleges only.
Prerequisite: admission to the nursing program.
NURS 209. Independent Study
1-4 Credits
Individual studies to meet identified student needs. May be repeated for a maximum of 10 credits. Restricted to: Community Colleges only.
Prerequisite: admission to the nursing program.
NURS 210. Pharmacological Requisites of the Childbearing Family
1 Credit
Basic concepts of pharmacology including pharmacokinetics, pharmacodynamics, and pharmacotherapeutics, and their relationship to nursing care will be discussed focusing on medications commonly utilized with the childbearing family. Medication classes to be discussed include labor and delivery, analgesic, vitamins, respiratory, gynecological, endocrine, and anti-microbial/anti-infective drugs. Grade of C or better required. Restricted to: Carlsbad campus only.
Prerequisite(s): BIOL 225 and BIOL 226 or consent of instructor and NURS 153, NURS 154 and NURS 156.
Corequisite(s): NURS 157.
NURS 211. Pharmacological Requisites of Simple Health Deviations
1 Credit
Basic concepts of pharmacology including pharmacokinetics, pharmacodynamics, and pharmacotherapeutics, and their relationship to nursing care are addressed focusing on medications related to the psychiatric, gastrointestinal, musculoskeletal, gynecological, hematological, and anti-neoplastic client. Grade of C or better required. Restricted to: Carlsbad campus only.
Prerequisite(s): BIOL 225 and BIOL 226 or consent of instructor and NURS 153, NURS 154, NURS 156, NURS 157 and NURS 210.
Corequisite(s): NURS 246 and NURS 258.
NURS 212. Pharmacological Requisites of Complex Health Deviations
1 Credit
Basic concepts of pharmacology including pharmacokinetics, pharmacodynamics, and pharmacotherapeutics, and their relationship to nursing care is examined focusing on medications related to complex health deviations. Drug classes to be discussed include cardiovascular, renal, endocrine, and neurological. Grade of C or better required. Restricted to: Carlsbad campus only.
Prerequisite(s): BIOL 225 and BIOL 226 or consent of instructor, and NURS 153, NURS 154, NURS 156, NURS 157, NURS 246, NURS 258, NURS 210 and NURS 211.
Corequisite(s): NURS 256 and NURS 260.
NURS 224. Maternal Child Nursing
5 Credits (4+3P)
This course provides the intermediate nursing student with an in-depth review of care of the childbearing woman, family structures and roles, and nursing care of the child from birth through adolescence. Emphasis includes the care of pre-partum, intra-partum and postpartum clients, the neonate and health deviations in pediatric clients. Clinical experiences in the simulation lab, the community, and acute care settings will provide the student with the opportunity to apply learned skills to provide total care to meet needs of up to two adult, neonatal, or pediatric clients and to apply care planning skills related to actual, psychosocial and potential problems. Students must be concurrently enrolled in both the lecture and lab sections of the course. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges only.
Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 224 lab, NURS 235, & NURS 236, or permission of the Program Director.
NURS 226. Adult Health II
6 Credits (4+6P)
This course focuses on application of nursing process and theoretical concepts of care for adults with complex health alterations. Selected clinical learning experiences in the simulation lab, acute care, and community settings will allow the student to apply: prioritization skills, maintain proficiency in performance of nursing skills, collaborative skills with clients, families, peers and health care team members, and care planning skills related to patient actual, psychosocial, and potential problems in the delivery of nursing care to meet needs of three adult clients. Students must be concurrently enrolled in both the lecture and lab sections of the course. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges only.
Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 224, NURS 226 lab, & NURS 235 or permission of the Program Director.

NURS 224. Community Health Nursing
1 Credit
This course provides an introduction to community health, focusing on health care systems, epidemiology, and nursing care of individuals, families and aggregates of varied cultural backgrounds. Primary, secondary, and tertiary prevention are emphasized. Diverse roles of the community health nurse are examined. Educational theories and their applications are explored. Restricted to: Community Colleges only.

NURS 225. Nursing Leadership and Management
1 Credit
This course introduces the intermediate nursing student to professional practice principles of nursing leadership and management including: health policy and politics, fiscal management & budgeting, conflict management, decision making, interdisciplinary practice, working with teams, roles in disaster planning and management, application of standards of care to risk management, organization of care delivery, health care systems, processes, and practice environments. May be repeated up to 1 credits. Restricted to: NUR majors. Restricted to Community Colleges campuses only.
Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 224, NURS 226 & Clinical Or Permission of the Program Director.

NURS 236. Nursing Preceptorship - Adult Health III
6 Credits (2+12P)
This course is the final course involving care of the patient with acute or chronic illness. It focuses on care of patients with complex or multi-system problems allowing the graduating nursing student to discuss and apply all the skills learned in previous nursing courses. After successfully passing the HESI exam, students have clinical practice with preceptor in various health care settings. Selected clinical learning experiences in the simulation lab, acute care, and community settings will allow the student to: organize care of a group of clients, maintain proficiency in performance of nursing skills, collaborate with clients, families, peers and health care team members, and support care planning skills related to patient actual, psychosocial, and potential problems in the delivery of nursing care to meet needs of the preceptors group of clients. Students must be concurrently enrolled in both the lecture and lab sections of the course. Only students who have been admitted to the nursing program and have successfully completed all level 1, 2 and 3 nursing courses may enroll in this course. Clinical may include inpatient or outpatient care, days, evenings, nights, or weekend experiences. Students are required to work the preceptors assigned schedule. Restricted to: NUR majors. Restricted to: Community Colleges only.
Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 201, NCLEX Review or permission of the Program Director.

NURS 246. Health Deviations I
7 Credits (4+9P)
Introduction to medical/surgical clients, whose health care needs are routine and predictable. Focus is on simple health deviations, including concepts relative to health promotion and maintenance. The nursing process is utilized to provide evidenced based, safe client centered care. Students are expected to apply clinical judgment, communicate and collaborate with clients and the interdisciplinary team in providing care for a group of two to three clients. Grade of C or better required. May be repeated up to 7 credits. Restricted to: Nursing majors. Restricted to Carlsbad campus only.
Prerequisite(s): NURS 153, NURS 156, NURS 154, NURS 157 and NURS 210 or consent of program director.
Corequisite(s): NURS 211, NURS 258.

NURS 256. Health Deviations II
8 Credits (4+12P)
Concepts and principles applied to clients with complex health deviations. Building upon knowledge gained in NURS 246, focus will be on acutely ill clients. The nursing process continues to serve as a guide to provide safe, client centered care. The student collaborates with the interdisciplinary team in all aspects of client care. Student experiences the role of the staff nurse under the guidance and direction of the nursing instructor. Grade of C or better required. May be repeated up to 8 credits. Restricted to: Nursing majors. Restricted to Carlsbad campus only.
Prerequisite(s): NURS 153, 154, 156, 157, 210, 211, 246, and 258 or consent of program director.
Corequisite(s): NURS 212, NURS 260.
NURS 258. Psychosocial Requisites: A Deficit Approach
3 Credits (2+3P)
Nursing theory and practice as it relates to the care of the client experiencing psychosocial health deviations. The role of the nurse is discussed along with the ethical and legal aspects of care for the client with psychosocial disorders. Building upon the communication skills of listening and responding, the student develops the therapeutic skills of interpersonal relationships. Grade of C or better is required. May be repeated up to 3 credits. Restricted to: Nursing majors. Restricted to Carlsbad campus only.

Prerequisite(s): NURS 153, 154, 156, 157, 210, 246, and 258 or consent of program director.
Corequisite(s): NURS 211, NURS 246.

NURS 260. Management of Patients with Health Deviations
2 Credits (2)
A capstone course to the nursing program in which principles in management and delegation to less prepared personnel is explored. A review of leadership roles, legal issues, quality initiatives, informatics and scope of practice is included. Preparation for the NCLEX is an integral portion of the course. Grade of C or better is required. May be repeated up to 2 credits. Restricted to: Nursing majors. Restricted to Carlsbad campus only.

Prerequisite(s): NURS 153, 154, 156, 157, 210, 211, 246, and 258 or consent of program director.
Corequisite(s): NURS 212, NURS 256.

NURS 270. The Adult Client II
5 Credits (2+9P)
Care of adult clients experiencing chronic, life-threatening, and end-of-life health alterations with emphasis on the geriatric population using a holistic approach to wellness. Nursing process, pathophysiology, pharmacology, diet therapy, and alternative therapies are stressed throughout the course. Clinical component will provide an opportunity to apply the nursing process in both the hospital and community setting. Restricted to: Community Colleges only.

Prerequisite(s): NURS 170, NURS 172, NURS 173L, NURS 180, and NURS 185.
Corequisite(s): NURS 285.

NURS 272. Care for the Aging Client
1 Credit
Normal physiological changes of aging and nursing implications related to safety and wellness. Restricted to: Community Colleges only. Restricted to: NURS majors.

NURS 275. Holistic Approach to Pharmacotherapeutic Interventions II
2 Credits
Level II. Holistic approach to the study of basic pharmacology concepts. Includes pharmacodynamic phases of drug interaction. Nursing process is discussed in relation to medication administration. Special emphasis on the role of the nurse and basic concepts related to specific drug categories. Restricted to majors. Community Colleges only.

Prerequisite: NURS 185.
Corequisites: NURS 280 and NURS 283.

NURS 280. Women's Health Issues
4 Credits (2+6P)
Consists of lecture and associated clinical/laboratory experiences that focus on the holistic health concerns for women and the care of families expecting birth. Emphasis placed on the wellness of normal and high-risk women's health, including maternal and newborn care. The nursing process will be utilized to develop caring interventions and effective community communication through teaching healthy strategies. Restricted to: Community Colleges only.

Prerequisite(s): NURS 170 and NURS 180.
Corequisite(s): NURS 275 and NURS 283.

NURS 282 L. Practicum: Management of Client Care
1 Credit
Organization and delivery of wellness care services for groups of clients based on the nursing process. Restricted to: Community Colleges only.

Prerequisite(s): NURS 170, NURS 172, NURS 173L, NURS 180, and NURS 185.
Corequisite(s): NURS 284 L.

NURS 283. Pediatric Nursing
4 Credits (2+6P)
Consists of lecture and associated clinical and laboratory experiences which focus on the care of children from infancy through adolescence including acute and chronic health care problems. Employs nursing process, pathophysiology, pharmacology, and diet therapy through the holistic approach to wellness. Restricted to: Community Colleges only.

Prerequisite(s): NURS 170 and NURS 180.
Corequisite(s): NURS 275, NURS 280.

NURS 284 L. Practicum: Preceptorship
3 Credits
Clinical experience in a leadership role in specific practice areas enhancing the transition from student to practitioner utilizing the holistic approach to wellness. Restricted to: Community Colleges only.

Prerequisite(s): NURS 182.
Corequisite(s): NURS 282 L.

NURS 285. Holistic Approach to Pharmacotherapeutic Intervention III
1 Credit
Level III. Holistic approach to the study of basic pharmacology concepts. Includes pharmacodynamic phases of drug interaction. Nursing process is discussed in relation to medication administration. Special emphasis on the role of the nurse and basic concepts related to specific drug categories. Restricted to: Community Colleges only.

Prerequisite(s): NURS 185 and NURS 275.
Corequisite(s): NURS 285.

NURS 291. Pathophysiology II
1-3 Credits
A continuation of materials presented in NURS 290, Pathophysiology I, covering the remaining body systems. Restricted to: Community Colleges only.

Prerequisite(s): BIOL 226 or 254 and NURS 290 or consent of program director.

NURS 293. Introduction to Nursing Concepts
3 Credits
This course introduces the nursing student to the concepts of nursing practice and conceptual learning. Same as NMNEC course no.: NMNEC101. Restricted to: BSN, BSNP, BSNR, NURS majors. Restricted to Las Cruces campus only.

Prerequisite(s): Admission to Nursing Program.
Corequisite(s): NURS 294, NURS 362.
NURS 294. Principals of Nursing Practice
4 Credits
This course introduces the nursing student to the application of concepts through clinical skills in seminar, laboratory, and/or clinical settings. Principles of communication, assessments, safety, and interventions including accurate calculation, measurement, and administration of medications will be included. Same as NMNEC course no.: NMNEC102. Restricted to: NURS majors. Restricted to Las Cruces campus only. 
Prerequisite(s): Admission to the nursing program.

NURS 300. Principles of Professional Nursing Practice
7 Credits (4+6P)
Focus on the principles, concepts, theories, and terminology central to the study of nursing and its evolution. Uses the nursing process as a framework for providing research-based professional nursing care. Includes clinical component. Restricted to Majors. Restricted to BSN, BSNP, BSNR, NURS majors.

NURS 302. Foundations of Health Assessment
3 Credits (2+2P)
Theoretical basis and skills for biopsychosocial assessment of adults. Includes clinical component. Restricted to BSN, BSNR, BSNP, NURS majors.

NURS 314. Computer Technology for Nurses
3 Credits
Introduction to health care informatics and its use in nursing practice. Focus includes electronic communication resources, issues and technological applications that support nursing and health care.

NURS 315. Introduction to Professional Nursing for the R. N.
3 Credits
Transition course for the R.N. providing an overview of theories and concepts that are the bases for professional nursing practice.

NURS 322. Nursing Health Assessment
3 Credits
Theoretical basis for the biopsychosocial assessment of individual patients across the life span for the RN. Restricted to Majors.

NURS 324. Nursing Care of the Older Adult
3 Credits
Survey course addressing nursing care provisions for the elderly population in a variety of acute, community and home settings.

NURS 325. Human Pathophysiology for Nursing
3 Credits
Concepts of alteration and adaptation in structure and function of the human body across the life span.

NURS 326. Pharmacology in Clinical Nursing Practice
4 Credits
Pharmacological concepts and principles and their implications for nursing practice. Includes techniques of dosage calculation for medication and fluid administration. Restricted to BSN, BSNP, BSNR, NURS majors.

NURS 328. Human Pathophysiology Foundation for Nursing
4 Credits
Human pathophysiology concepts of adaptation and alteration in function and structure across the life span and their implications for nursing practice. Restricted to: BSN, BSNP, BSNR majors.
Prerequisite(s): Grade of C or better in both BIOL 253 and BIOL 254.
Corequisite(s): NURS 362, NURS 293, NURS 294.

NURS 352. Bioterrorism
3 Credits
Examines the role of today's nurse in the face of real or potential radiological and chemical threats. Emphasis is placed on clinical and public education and safety as well as nursing/logical responses. Taught online.

NURS 353. Nursing Informatics
3 Credits
This course addresses nursing informatics principles and practices. Key concepts include relationship with evidence-based nursing practice, use of decision support systems, clinical information systems, telehealth, and standardized nursing language. Restricted to BSNC majors.

NURS 360. Introduction to Nursing Concepts
3 Credits
This course introduces the nursing student to the concepts of nursing practice and conceptual learning. Same as NMNEC course no.: NMNEC101 Restricted to: NURS majors.
Prerequisite(s): Admission to Nursing Program.
Corequisite(s): NURS 361, NURS 362.

NURS 362. Evidence Based Practice
3 Credits
The focus of this course is the principles of evidence based nursing practice. It includes the identification of clinical practice problems, the evaluation of available evidence, and the integration of evidence with clinical expertise and patient preferences in application to practice. Same as NMNEC course no.: NMNEC103. Restricted to: NURS majors.
Prerequisite(s): Admission to the nursing program.
Corequisite(s): NURS 293, NURS 294.

NURS 372. Adult Health Nursing I
8 Credits (4+8P)
Theoretical basis for select acute and chronic illnesses related to adults is provided, and critical thinking is used to plan nursing care. Includes clinical component.

NURS 373. Nursing the Psychiatric-Mental Health Client
5 Credits (3+4P)
Theoretical and practical knowledge applied to provision of psychiatric-mental health nursing service across the health care continuum. Includes clinical component. Restricted to BSN, BSNR, BSNP, NURS majors.

NURS 375. Introduction to Nursing Research
3 Credits
Introduction to scientific inquiry. Evaluation and utilization of nursing research for clinical practice.
Prerequisite(s): (STAT/A ST 251G, A ST 311, OR STAT 271G) and (NURS 303, NURS 326, and NURS 328) or consent of instructor. Restricted to BSN, BSNP, BSNR, NURS majors.

NURS 376. Research and Evidence-Based Practice for the Practicing RN
3 Credits
Course provides introduction to evidenced-based practice and research principles for the practicing RN. Evidence-based practice principles and processes are covered. Foundations of research (quantitative and qualitative) research designs and research evaluation are included. Emphasis is placed on ethical and practical issues in critiquing and using research/evidence-based findings. Restricted to BSNC majors.
Prerequisite(s): A ST 311, or admission to RN-BSN Option with consent of instructor.
NURS 377. Health and Illness Concepts I
3 Credits
This course will focus on health and illness concepts across the lifespan. Concepts covered are related to homeostasis/regulation, sexuality/reproductive, protection/movement and emotional processes. Same as NMNEC course no.: NMNEC201. Restricted to: NURS majors.
Prerequisite(s): NURS 294, NURS 293 & NURS 362.
Corequisite(s): NURS 378, NURS 379, NURS 380.

NURS 378. Health Care Participant
3 Credits
This course introduces the nursing student to the attributes of the health care participant as an individual, a family, or a community. Same as NMNEC course no.: NMNEC202. Restricted to: NURS majors.
Prerequisite(s): NURS 293, NURS 294 & NURS 362.
Corequisite(s): NURS 377, NURS 379, NURS 380.

NURS 379. Nursing Pharmacology
3 Credits
This course introduces the nursing student to pharmacologic nursing practice from a conceptual approach. Same as NMNEC course no.: NMNEC203. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): BIO 253 & BIO 254 OR SPM 271 & SPM 371 OR BIO 225 & Bio 226.
Corequisite(s): NURS 328.
Corequisite(s): NURS 377, NURS 378, NURS 379.
NURS 380. Assessment and Health Promotion
4 Credits
This course introduces the nursing student to the assessment of and the health promotion for the health care participant as an individual, a family, or a community. This course uses seminar, laboratory and/or clinical settings. Same as NMNEC course no.: NMNEC204. Restricted to: NURS majors.
Prerequisite(s): NURS 293, NURS 294 & NURS 362.
Corequisite(s): NURS 377, NURS 378, NURS 379.

NURS 395. Health and Illness Concepts II
3 Credits
This course will cover health and illness concepts across the lifespan. Concepts covered are related to oxygenation and hemostasis, homeostasis and regulation, protection and movement, and cognitive and behavioral processes. Same as NMNEC course no.: NMNEC301. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 328, NURS 377, NURS 378, NURS 379, NURS 380.
Corequisite(s): NURS 396, NURS 398.

NURS 396. Professional Nursing Concepts I
3 Credits
This course covers foundational concepts for professional development, including selected professional attributes and care competencies. Same as NMNEC course no.: NMNEC302. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 328, NURS 377, NURS 378, NURS 379, NURS 380.

NURS 397. Special Topics
1-9 Credits (1-9)
Specific subjects to be announced in the Schedule of Classes. May be repeated for a total of 11 credits.

NURS 398. Care of Patients with Chronic Conditions
4 Credits
The focus of this course is to provide safe, evidence-based nursing care for patients with chronic conditions, across the lifespan in a variety of settings. This course builds upon curricular concepts. This course is a combination of lab and clinical. Same as NMNEC course no.: NMNEC303. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 328, NURS 377, NURS 378, NURS 379, NURS 380.
Corequisite(s): NURS 395, NURS 396.

NURS 410. Adult Health Nursing II
6 Credits (3+6P)
Focus is on the use of critical thinking to plan nursing care of adults with selected complex illnesses. Clinical component included.
NURS 415. Parent-Child Nursing
8 Credits (4+8P)
Concepts and principles of nursing applied to healthy and ill infants, children, adolescents, and childbearing women within the context of the family. Includes clinical component.

NURS 416. Older Adult Nursing
2 Credits
Introduction to aging, health problems and issues associated with aging. Implications for nursing care of the elderly.

NURS 420. Community Health Nursing
3 Credits
Concepts basic to the nursing care of families, groups, and communities with an emphasis on health promotion, disease prevention, and health maintenance.

NURS 426. Community Health Nursing for the R.N.: Clinical
3 Credits
Focusing on the use of critical thinking to plan nursing care of adults with selected complex illnesses. Clinical component included.

NURS 460. Strategies for Student Success
3 Credits
This course is designed to assist and support students as they identify learning needs and develop a plan for successfully mastering nursing knowledge. Course activities and assignments will be aligned with student’s self-identified learning goals to enhance their opportunity for success. Restricted to: NURS, BSN, BSNP, BSNR majors.

NURS 466. Health and Illness Concepts III
4 Credits
This course will cover health and illness concepts across the lifespan. Concepts covered are related to hemostasis/regulation, oxygenation/homeostasis, protection/movement, and emotional processes. Same as NMNEC course no.: NMNEC401. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 360, NURS 361, NURS 362.
Corequisite(s): NURS 467, NURS 468.

NURS 467. Clinical Intensive I
4 Credits
This is the first of two Level Four clinical courses in which the student will apply the curricular concepts in the management of care participants with acute conditions across the lifespan. This course is a combination of seminar, lab, and clinical. Same as NMNEC course no.: NMNEC402. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 395, NURS 396, NURS 398.
Corequisite(s): NURS 466, NURS 468.
NURS 468. Clinical Intensive II

4 Credits

This is the second of two Level Four clinical courses in which the student will apply the curricular concepts in the management of care participants with acute conditions across the lifespan. This course is a combination of seminar, lab, and clinical. Same as NMNEC course no.: NMNEC404. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 395, NURS 396, NURS 398.
Corequisite(s): NURS 466, NURS 467.

NURS 470. Nursing Organization and Management

3 Credits

Concepts of organization and delivery of care to groups of patients based on the nursing process. Emphasis on the roles of the nurse as manager, leader, and change agent within health-care organizations.

NURS 472. Community and Population Focused Nursing

6 Credits (3+6P)

Synthesis of nursing, social, and public health science to develop health promotion, disease prevention, and protection strategies for communities and populations. Clinical component included.

NURS 475. Issues and Trends in Professional Nursing

3 Credits

Explores the challenges associated with issues and trends in health care and the legal and ethical implications of professional nursing practice.

NURS 476. Nursing Organization & Management for the R.N.: Clinical

3 Credits

Nursing process applied to organization, management, and delivery of health care. An integrating experience for the R.N. student designed to facilitate the transition to professional practice. Students work with mentors in a clinical setting to develop professional nursing roles related to leadership and management.

NURS 477. Nursing Organization and Management for the RN

3 Credits

Course covers nursing organization, leadership, and management principles, theories, and research for the practicing RN. Restricted to BSNC majors.

NURS 479. Nursing Care for Complex Patients

8 Credits (2+12P)

Principles and priorities of nursing care for patients across the life span experiencing complex care problems. Includes integrating experiences designed to facilitate the transition from student to professional nurse. Includes clinical component.

NURS 486. Concept Synthesis

3 Credits

This course will focus on the synthesis of curricular concepts in the care of complex patients. Same as NMNEC course no.: NMNEC501. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 466, NURS 467, NURS 468.
Corequisite(s): NURS 487, NURS 488, NURS 489.

NURS 487. Professional Nursing Concepts II

3 Credits

This course covers policy concepts for professional nursing. Same as NMNEC course no.: NMNEC502. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 466, NURS 467, NURS 468.

NURS 488. Clinical Intensive III

4 Credits

The focus of this clinical course is application of the curricular concepts in the management of care participants with complex conditions across the lifespan. This course is a combination of seminar, lab, and clinical. Same as NMNEC course no.: NMNEC503. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 466, NURS 467, NURS 468.
Corequisite(s): NURS 486, NURS 487, NURS 489.

NURS 489. Capstone

4 Credits

The synthesis, integration, and application of concepts to professional nursing practice will be applied in the final clinical course to ensure readiness to enter practice. Same as NMNEC course no.: NMNEC504. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): Successful completion of all previous nursing courses.
Corequisite(s): NURS 486, NURS 487, NURS 488.

NURS 490. Independent Study

1-3 Credits

Individual studies with prior approval of department head.

NURS 500. Applied Statistics for Evidence-Based Practice

3 Credits

Provides the logic and appropriate use of statistical techniques most commonly used. Emphasis is based on underlying logic of procedure, the appropriate use of underlying assumptions of procedures, interpretation of results from statistical software and evaluation of published results of the procedures. Statistical software will be used. Restricted to: NURP majors.
Prerequisite(s): Admission to DNP Program.

NURS 505. Theoretical Foundations of Advanced Nursing

3 Credits

This course is designed to prepare advanced practice nurses with the skills and knowledge needed to critically analyze and synthesize scholarly evidence to promote high quality evidence-based practice.
Prerequisite(s)/Corequisite(s): Students must be enrolled in the graduate program in nursing or have the permission of advisor and faculty of course to enroll in course. Restricted to: NURS majors.

NURS 506. Health Policy for Advanced Nursing Practice

3 Credits

This course provides a conceptual approach to understanding health policy including the social, legal, political and ethical factors that influence policy development. Strategies for influencing policy direction and change are examined. Restricted to: NURS, NUSC, NURP majors.

NURS 507. Nursing Research in Evidence-Based Practice

3 Credits

This course is designed to prepare advanced practice nurses with the skills and knowledge needed to critically analyze and synthesize scholarly evidence to promote high quality evidence-based practice.
Prerequisite(s)/Corequisite(s): Students must be enrolled in the graduate program in nursing or have the permission of advisor and faculty to enroll in the course. Restricted to: NURS, NUSC, NURP majors.
NURS 511. Advanced Pathophysiology for Clinical Nursing
3 Credits
In-depth study of the physiological and pathological bases of altered health states of patients across the life span. Case studies facilitate application of complex concepts to clinical nursing practice. Restricted to: NURS, NUSC, NURP majors.

NURS 512. Advanced Clinical Pharmacology
3 Credits
Principles of clinical pharmacology for advanced clinical practice. Focus on pharmacology as it relates to human physiology and pathophysiology across the lifespan. Restricted to: NURS, NUSC, NURP majors.

NURS 514. Psychopharmacology for Advanced Practice
3 Credits
Principles of clinical psychopharmacology with emphasis on clinical application of major drug classifications including decision making, prescribing, drug monitoring and patient education.

NURS 515. Advanced Health Assessment
3 Credits (2+1P)
Assessment theory and skills for advanced clinical practice. Emphasis on assessment of patients across the life span. May be repeated up to 3 credits. Restricted to: NURS, NUSC, NURP majors.

NURS 518. Genetics and Health
2 Credits
Assess the impact of emerging genetic technologies on healthcare at the 2 Credits
NURS 518. Genetics and Health
2 Credits
Assess the impact of emerging genetic technologies on healthcare at the individual, system and population level. Restricted to DNP majors.
Prerequisite(s): Admission to DNP Program.

NURS 530. Promoting Health Behavior
3 Credits
Emphasis is on the role of the advanced practice nurse in facilitating health behavior change. The impact of health status on health behavior, ethical issues relate to health promotion, and the processes for promoting healthy behaviors are explored. Theoretical models of behavior change and primary, secondary, and tertiary prevention concepts serve as a basis for developing nursing interventions that promote behavior change.

NURS 540. Advanced Psychosocial Pathology for Family, Psychiatric-Mental Health Nursing
3 Credits
In-depth study of psychosocial pathology, factors contributing to psychosocial dysfunction, and diagnostic reasoning basic to advanced-practice psychiatric mental health nursing; emphasis on etiology and differential diagnoses. Restricted to: NURS majors.
Prerequisite(s): Admission to DNP Program.

NURS 562. Innovations and Health Care Organizations
3 Credits
Examines complexity and innovation within health care systems, health care delivery, and population health. Areas of focus are systems, organizations, health disparities, and ethical decision making. Emphasis is on improvement in services and outcomes. Taught with NURS 649. Restricted to: NURS, NUSC, NURP majors.

NURS 563. Human Resource Management in Nursing
3 Credits
Contemporary approaches to the development and management of nursing resources that complement organizational vision, strategies and management goals. Management of a diverse, quality workforce that results in an improved organizational performance. Performance evaluation, motivation, professional development and legal and regulatory aspects will be explored.

NURS 564. Nursing Fiscal Management
3 Credits
Concepts of financial management emphasizing principles of health care budgeting and finance in managing health care resources. A focus is to achieve quality outcomes through financial resource management. Restricted to: NURS majors.
Prerequisite(s): NURS 562.

NURS 565. Advanced Leadership in Healthcare
3-5 Credits (3+1-2P)
Analysis of leadership theories as they pertain to the nurse executive and the advanced practice nurse in complex health care organizations. Emphasis will be placed on organizational change and conflict management in working with interdisciplinary health care teams. Clinical component included for DNP students only. May be repeated up to 5 credits. Restricted to: NURS, NUSC, NURP majors.
Prerequisite(s): NURS 562.

NURS 566. Seminar in Nursing Administration- Roles
3 Credits
Role preparation for the nurse administrator as manager, leader, collaborator and change agent. Synthesis of concepts from management and nursing as a basis for role effectiveness in nursing administration.
Corequisite: NURS 595.

NURS 567. Nursing Informatics
3 Credits
This course is provides the foundational knowledge necessary to integrate systems and information technologies. Topics include informatics, knowledge management, healthcare information systems/telehealth including the electronic health record. Focuses on using available technology to enhance safety and monitor the health status and outcomes of populations. Restricted to: NURS, NUSC, NURP majors.
Prerequisite(s): Consent of Instructor.

NURS 572. Pharmacology of Addictions
4 Credits
Concepts and principles of the pharmacology of psychoactive substances and the addiction process; including the pharmacological approach to treatment. Restricted to: NURS majors.

NURS 573. Cardiovascular/Renal Nursing
3 Credits
This course emphasizes the comprehensive management of individuals with acute and chronic cardiovascular/renal diseases within the context of family and communities using a case-based approach.
Prerequisite(s): Graduate status or permission of instructor.

NURS 574. Oncology Nursing
3 Credits
This course presents the clinical aspects of cancer diagnosis, the clinical management of major cancers, and their treatment modalities. The course will also focus on supportive therapies for the cancer patient and symptom management.
Prerequisite(s): Graduate status or permission of instructor.

NURS 590. Independent Study
1-10 Credits
Individual studies and directed research with prior approval of department head. May be repeated on a different topic. May be repeated for a maximum of 20 credits.
Prerequisite: consent of instructor.
NURS 591. Preceptorship: Prescription Drugs, Medicines and Other Therapeutics
1-11 Credits (4+4P)
The course provides preceptored clinical experiences that provide advanced practice nursing students opportunities for practice and mastery of skills for management of culturally diverse patients within their designated specialty area to include prescribing drugs, medicines and other therapeutics, as well as monitoring the effects of the prescribed management. It requires the student to demonstrate integration, synthesis and application of assessment, diagnosis and management to include health promotion of patients with acute and/or stable chronic health conditions. Graded: S/U. Restricted to MSN majors. **Prerequisite(s):** NURS 542 or NURS 530 or NURS 521.

NURS 595. Advanced Field Work in Nursing
1-6 Credits (4+24P)
Faculty-supervised, independent work in student's advanced practice role. Field work normally taken after the core and designated specialty courses. Minimum of three field-work credits (12 contact hours) required in major area of study. May be repeated for a maximum of 12 credits. Restricted to majors. Graded S/U. **Prerequisites:** NURS 532 and NURS 561.

NURS 597. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a different subject area. May be repeated for a maximum of 8 credits. **Prerequisite:** consent of instructor.

NURS 600. Philosophy of Science in Nursing
3 Credits
Offers a framework for asking both ontological and epistemological questions about knowledge, human science, and nursing science.

NURS 601. Theory I: Methods and Processes of Nursing Knowledge Development
3 Credits
Building on the Philosophy of Science course, the student will engage in analysis and critique of both developmental processes and composition of nursing disciplinary knowledge. Diverse approaches will be used to appraise and critique historical and contemporary milestones in the development and evaluation of nursing thought. Emphasis is also placed on implications of theory and knowledge development as related to multicultural and rural issues. **Prerequisite(s):** NURS 600.

NURS 602. Theory II: Contemporary Substantive Nursing Knowledge
3 Credits
Critically examine existing & evolving substantive knowledge drawn from nursing and other disciplines. Focus on the construction, analysis of current substantive nursing knowledge, including evaluation of relationships among theories, evidence and explanation will be pursued. Special attention to existing and evolving theories applicable to rural, multicultural and educational settings. **Prerequisite:** NURS 601

NURS 605. Quantitative Methods in Nursing Research
3 Credits
Focus on approaches to developing nursing knowledge by means of quantitative research methods as applied to clinical problems, theoretical modeling of human responses to health and illness, and health policy issues. Emphasizes detailed analysis and critique of non-experimental and experimental designs, issues pertaining to sampling and statistical power, the reliability and validity of measurers, and uses and abuses of descriptive and inferential statistics in nursing research literature. Students are expected to develop sufficient discernment to read, critique, evaluate, and discuss the quality, significance, and limitations of published quantitative nursing research. **Prerequisite:** NURS 621.

NURS 606. Quantitative Methods in Nursing Research
3 Credits
Focus on approaches to developing nursing knowledge by means of quantitative research methods as applied to clinical problems, theoretical modeling of human responses to health and illness, and health policy issues. Emphasizes detailed analysis and critique of non-experimental and experimental designs, issues pertaining to sampling and statistical power, the reliability and validity of measurers, and uses and abuses of descriptive and inferential statistics in nursing research literature. Students are expected to develop sufficient discernment to read, critique, evaluate, and discuss the quality, significance, and limitations of published quantitative nursing research. **Prerequisite:** NURS 621.

NURS 607. Qualitative Methods in Nursing Research
3 Credits
Major methodological traditions of qualitative research and their applications to knowledge development and clinical research in nursing are the emphasis. Overview of at least one computer-assisted qualitative data analysis software application. Students will engage in detailed critique and discussion of significant nursing investigation representing various qualitative approaches and traditions.

NURS 608. Field Methods in Qualitative Research
3 Credits
The purpose of this course is to provide opportunities for students to engage in, analyze and evaluate various procedures and techniques used to gather qualitative data. Major data collection approaches including ethnography, phenomenology, grounded and critical theory are discussed. Students have the opportunity to participate in mini-field work projects while gathering expertise in field techniques used in qualitative research. Issues such as role of literature in qualitative research, investigator as instrument, ethical dilemmas, field entry and departure, and reflexivity are analyzed as they relate to the process of gathering and interpreting qualitative data. **Prerequisites:** NURS 607 or consent of instructor.

NURS 610. Nursing Education: Pedagogy and Roles
3 Credits
Teaching-learning process in the clinical and classroom settings. Focuses on educational patterns and pathways in nursing and the roles of faculty in academia. Educational reform is analyzed in relationship to diversity in students, faculty, practice settings and technology-driven learning environments. Instructional designs, teaching strategies, and outcome evaluations are examined for their pedagogic use. The development of critical thinking outcomes, mentorships and partnerships to meet the needs of students are addressed. The course examines issues and challenges that impact the educational process such as student and faculty recruitment, the changing healthcare environment, differentiation of practice, advanced practice, reduced resources and links with theory and research.

NURS 620. Advanced Health Care Statistics I
3 Credits
This course provides knowledge, skills and practice in collecting, analyzing and interpreting data. The following quantitative techniques will be examined and utilized using SPSS: principle of measurement, probability, principles of parametric and non-parametric techniques, Kolmogorov-Smirnov test, comparison of means, correlation analyses, use of psychometric techniques, binomial test, sign test, McNemar test, median test, Cochran Q test, Phi coefficient, Fisher's Exact test, Mann-Whitney U, Kruskal-Wallis test, Wilcoxon Signed Ranks and Spearman Rho. A graduate level statistics course completed within three years prior to the date of expected admission is desirable. Restricted to majors
NURS 621. Advanced Health Care Statistics II
3 Credits
This course is the second of a two-semester quantitative statistical course designed to provide knowledge, skills and practice in collecting, analyzing, and interpreting data. The following quantities techniques will be examined and utilized using SPSS: analysis of variance (ANOVA), analysis of covariance (ANCOVA), linear, multiple, and logistic regression, structural equation modeling (SEM), principle components analysis, and factor analysis. Restricted to majors.
Prerequisite: NURS 620.

NURS 623. Mixed Methods
3 Credits
Presents a brief overview of research paradigms with emphasis on formulating research questions, aims and methods for a mixed method/model approach. Students may use proposals developed in earlier qualitative and quantitative research classes to devise mixed method proposal integrating readings on these methods and own research interests. Prerequisite: NURS 606 and NURS 607

NURS 624. Measurement in Culturally Diverse Border Populations
3 Credits
The focus of this course is the development of essential competencies required to locate, select, evaluate, and use instruments to operationalize nursing variables. Ethical considerations in nursing research and research issues in diverse populations will be discussed. Specific attention is given to the process of moving from concept to construct, measurement theory, validity/reliability issues, and measurement issues in diverse populations including literacy, social desirability bias, sensitive data, translations, and cultural equivalency. Restricted to PhD in Nursing majors.
Prerequisite(s): Admission to PhD in Nursing program; NURS 606; NURS 623; or consent of Instructor.

NURS 630. Issues in Studying Health of Culturally Diverse and Border Populations
3 Credits
Analysis and evaluation of the unique health care needs of culturally diverse and rural populations across the lifespan from ethnic, economic, gender, and sexual orientation perspectives. Interdisciplinary strategies to affect positive health outcomes are discussed, analyzed, and evaluated. Restricted to: NURS, NUSC, NURP majors.

NURS 631. Population Based Approaches to Health Promotion
3 Credits
Population based approaches to health promotion focuses on preparing nursing students to identify, critically analyze and evaluate health promotion initiatives in culturally diverse and border populations using the Southwestern U.S. and U.S./Mexico border as the case exemplar. It examines historical, socio-economic, legal and professional issues associated with health promotion and policy initiatives. It considers prospects for social change, political movements and alternative approaches to develop and hasten adoption of health promotion initiatives in partnership with communities, advocacy groups and health care agencies.

NURS 649. Innovations and Health Care Organizations
3 Credits
Examines complexity and innovation within health care systems, health care delivery, and population health. Areas of focus are systems, organizations, health disparities, and ethical decision making. Emphasis is on improvement in services and outcomes. Taught with NURS 562. Restricted to: NURS, NUSC, NURP majors.

NURS 650. Behavioral Approaches and Determinants of Nursing and Health
3 Credits
Focuses on how behavioral/mental health concepts are applied in determining health outcomes for individuals, families, and communities. Students will apply and synthesize theoretical constructs within practice and research focusing on behavioral/mental health concepts. Health outcomes are viewed in a traditionally holistic manner in that health outcomes are discussed as an integral part of the human experience of healing and health.

NURS 651. Applied Nursing Science for the APN
3 Credits
Explores the philosophical and scientific underpinnings for nursing knowledge relevant to the role of the doctorate of nursing practice. Restricted to: NURS, NUSC, NURP majors.
Prerequisite(s): NURS 507.

NURS 652. Translational Methods and Evidence-Based Practice
3 Credits
Designed to prepare DNP student to demonstrate advanced levels of clinical judgment, systems thinking, and accountability in design, delivery, and evaluating evidence based on care to improve patient outcomes. Translate evidence into their specialty practice environment. Restricted to: NURS, NUSC, NURP majors.
Prerequisite(s): NURS 651.

NURS 658. The Aging Adult
3 Credits
This course focuses on the care and management of older adults and their families. Content is directed at assessment and management of acute and chronic presentations of illness and complex, multiple health problems across the health care continuum. It will include examination of the psycho-socio-cultural processes which influence the behavioral patterns, coping, and adaptation of older adults. Restricted to DNP majors.
Prerequisite(s): Admission to DNP program.

NURS 659. Addictive Disorders
4 Credits
Focus on care of the individual with addictive disorders. The impact on the individual as well as the community will be examined. Advanced practice nursing interventions based on theoretical and research based knowledge of addictions will be addressed. The pharmacology of psychoactive substances, the addiction process, and pharmacological approach to treatment will be included. Treatment of addictive disorders and their relevance to culturally diverse clientele with a variety of lifestyles will be evaluated. Restricted to: NURP majors.
Prerequisite(s): Admission to DNP program.

NURS 660. Family, Psychiatric Mental Health Nursing I
7 Credits (3+16P)
This course provides the family psychiatric nurse practitioner student with advanced theoretical knowledge and practice in individual therapies, comprehensive psychiatric evaluation, personality development concepts, dual diagnoses and psychotherapy principles; including management of health promotion, health maintenance and disease prevention activities. Emphasis will be placed on individuals across the lifespan in a multicultural environment. Restricted to: NURP, NUSC, NURS majors.
Prerequisite(s): NURS 511, NURS 512, NURS 515.
NURS 662. Family, Psychiatric-Mental Health Nursing II
3-7 Credits (3+1-4P)
This course provides further knowledge and skills for the family psychiatric nurse practitioner student in the conceptual framework and practice of psychotherapy in a variety of settings. Emphasis is placed on work with individuals and families and groups across the lifespan in a multicultural environment to help manage their acute and chronic mental illnesses, including, dual diagnosis, psychopathology and psychopharmacology. Advanced practice nurses in the certificate program will have varying hours of credit. May be repeated up to 7 credits. Restricted to: NURS,NUSC,NURP majors.
Prerequisite(s): NURS 660.

NURS 664. Family, Psychiatric Mental Health Nursing III
5 Credits (1+4P)
This course provides further knowledge and skills for the family psychiatric nurse practitioner student to refine competencies in neuropsychology, assessment, diagnosis and treatment. Emphasis will be placed on individuals, families and groups across the lifespan in a multicultural environment. May be repeated up to 5 credits. Restricted to: NURS,NUSC,NURP majors.
Prerequisite(s): NURS 662.

NURS 670. Diagnostic Reasoning
3 Credits (2+4P)
This course is designed to develop advanced knowledge of differential diagnosis based upon physical and mental assessment of clients/patients across the lifespan in a variety of clinical settings. Students apply, synthesize, and integrate advanced clinical problem solving and reasoning to determine differential nursing and medical diagnoses, interpret and apply laboratory and diagnostic techniques to determine a final judgment and diagnosis. Restricted to DNP majors.

NURS 671. Primary Care I
7 Credits (3+16P)
This course provides the nurse practitioner student with advanced theoretical knowledge and practice in the assessment and management of health promotion, health maintenance and disease prevention activities across the lifespan; including the assessment and management of common acute and chronic health concerns. Emphasis will be placed on primary health care of individuals and their families in a multicultural environment. Restricted to: NURS, NURP, NUSC majors.
Prerequisite(s): NURS 511, NURS 512, NURS 515.

NURS 672. Primary Care II
3-7 Credits (3+1-4P)
The course continues the development of knowledge and skills for the nurse practitioner student for the assessment and management of selected common acute and chronic health conditions across the lifespan. Emphasis will be placed on primary health care of individuals and their families in a multicultural environment. Advanced practice nurses in the certificate program will have varying hours of credit. May be repeated up to 7 credits. Restricted to: NURP,NURS,NUSC majors.
Prerequisite(s): NURS 671.

NURS 673. Primary Care III
5 Credits (1+4P)
The course continues the development of knowledge and skills for the nurse practitioner student with special attention to complex and chronic health conditions across the lifespan and business, legal, and ethical issues in primary care. Variable clinical credits, 1-4. May be repeated up to 5 credits. Restricted to: NURS,NUSC,NURP majors.
Prerequisite(s): NURS 672.

NURS 676. Women's Health
3 Credits
The course will examine patient and family perspectives as well as health care system variables and societal issues that affect the organization and delivery of women's health care. Students will engage in critical analysis of the evidence base concerning psychosocial and spiritual concerns and barriers to and opportunities for improving women's health care across the diverse settings in which health care is delivered. Focus on evidence-based approaches to the primary care management of women. May be repeated up to 3 credits.

NURS 678. Health Needs of Special Populations
2-4 Credits (2+1-2P)
This course provides an overview of infant, child, adult and older adult health needs and interventions that promote and support optimal health. The conceptual and theoretical foundation for advanced practice with individuals and families across the lifespan is emphasized, including pharmaco-therapeutic and integrated bio-psychosocial interventions for diverse populations across the continuum of care. Advanced practice nurses in the certificate program will have varying hours of credit. May be repeated up to 4 credits.
Prerequisite(s): NURS 671, NURS 672, NURS 673, NURS 660, NURS 662, NURS 664.

NURS 684. Lifestyle Change and Adherence Issues with Diverse Populations
3 Credits
Includes the critical examination of selected theories of health behavior on life style choices and adherence issues with diverse populations within the community setting. Emphasis is given to the analysis of health behavior in regard to planning, development, and evaluation of population based health programs. Restricted to DNP majors.

NURS 685. Epidemiology for Advanced Nursing Practice
2 Credits
Emphasis is on the practical application of the principles of epidemiology in the measurement and evaluation of population health. Epidemiological literature will be critiqued and synthesized to evaluate population-based public health nursing problems. Issues related to disease surveillance, causation, genetic patterns, screening and social trends in population health will be examined. Use of existing data bases and technology programs are covered. Restricted to: NURP, NURS, NUSC majors.

NURS 690. Doctoral Nursing Seminar
1-3 Credits (1-3)
Seminar to build nursing scholarship skills, consisting of a series of 1 credit seminars that are taken as part of the doctoral degree plan. May be repeated up to 7 credits. Restricted to: NUSC majors.

NURS 691. Independent Study
1-6 Credits (1-6)
Individual studies and directed research with prior approval of department head. May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.

NURS 697. Professional Roles for Advanced Practice Clinical Nursing
3 Credits
This course will focus on providing an in depth understanding of the legal, historical, political, social, and ethical aspects of advanced practice nursing. Traditional and emerging roles for advanced practice nursing are examined. Restricted to DNP majors.
Prerequisite(s): Admission to DNP program, NURS 664 OR NURS 672.
NURS 698. Advanced Clinical Immersion
1-4 Credits (1-4)
Capstone practicum experience for advanced practice students. Focus will be on a practice issue chosen by the student for further development as an evidence-based doctoral project. May be repeated up to 4 credits. Restricted to: NURP majors. S/U Grading (S/U, Audit).
Prerequisite(s): NURS 511, NURS 512, NURS 515 or enrollment in postmasters track.

NURS 699. Clinical Scholarly Project
1-4 Credits (1-4)
Building on the practice expertise of the DNP student, this series of credits is to provide the student with the opportunity to design an innovative clinical practice improvement project/program addressing an actual health care concern. Through mentored activities, the DNP student will identify, develop, implement, evaluate, and disseminate an independent analytic. Graded: S/U. NURS 652. Restricted to: NURP majors. S/U Grading (S/U, Audit).
Prerequisite(s): Admission to DNP program.

NURS 700. Doctoral Dissertation
1-9 Credits (1-9)
Dissertation may be repeated to maximum of 30 credits. Minimum requirements are 21 credit hours. Comprehensive examine is included within these 21 credits.

NURS 999. Practical Nursing Requirements Completed
99 Credits
A phantom course created to indicate a student has met Practical Nursing requirements. Used to indicate this in academic history to replace an administrative message not converted from SOLAR to VISTAS. 01/97

Name:

Office Location:

Phone: (575) 646-3812

Website: http://schoolofnursing.nmsu.edu/

Family Nurse Practitioner - Graduate Certificate

Post-Master’s Certificate Program: This program is for those Master’s-Prepared Advanced practice nurses (Nurse practitioners) who hold current “certification” in a clinical specialty area who wish to obtain the coursework needed to sit for certification in another area. The SON currently offers a post-MSN certificate in Family Psych/Mental Health Practitioner and Family Nurse Practitioner.

The Post-Master’s certificate consists of 18 credit hours which includes a minimum of 500 clinical hours. When applying to the Post-Master’s Certificate program, please select “Graduate Certificate” in the application system. Please note that the clinical hours are “required” for national certification and cannot be waived or negotiated.

The Family, Psych/Mental Health Specialty prepares nurses for advanced practice with a focus on mental health issues across the lifespan. The curriculum builds upon four core FPMHNP competencies: advanced health assessment (physical and psychosocial); diagnosis (diagnosis of mental disorders, pathophysiology, and neurophysiology); psychotherapy (individual, group, and family); and medication management (pharmacology and psychopharmacology). Other courses develop competencies in health care systems, best-practice research utilization and translation, and health care quality improvement. Graduates are prepared to sit for the Family, Psych/Mental Health Nurse Practitioner Exam.

Nursing - Bachelor of Science in Nursing

Four-Year Curriculum Plan Courses

Math basic academic skills requirement must be satisfied.

Departmental Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
<td>3</td>
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<tr>
<td>or STAT 251G</td>
<td>Statistics for Business and the Behavioral Sciences</td>
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<tr>
<td>BIOL 211G</td>
<td>Cellular and Organismal Biology</td>
<td>3</td>
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<tr>
<td>BIOL 211GL</td>
<td>Cellular and Organismal Biology Laboratory</td>
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<tr>
<td>BIOL 219</td>
<td>Public Health Microbiology</td>
<td>3</td>
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<tr>
<td>or BIOL 311</td>
<td>General Microbiology</td>
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<tr>
<td>BIOL 311 L</td>
<td>General Microbiology Laboratory</td>
<td>2</td>
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<tr>
<td>BIOL 253</td>
<td>Human Anatomy</td>
<td>4</td>
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<tr>
<td>BIOL 354</td>
<td>Physiology of Humans</td>
<td>3</td>
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<tr>
<td>C EP 110G</td>
<td>Human Growth and Behavior</td>
<td>3</td>
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<tr>
<td>HNDS 251</td>
<td>Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>MATH 121G</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>PSY 201G</td>
<td>Introduction to Psychology</td>
<td>3</td>
</tr>
</tbody>
</table>
Select one from the following: 4

CHEM 110G Principles and Applications of Chemistry
CHEM 111G General Chemistry I
CHEM 112G General Chemistry II

Common Core
- Communications Area I
- Math Area II (counted in department)
- Science Area III (counted in department)
- Social/Behavior Science Area IV (3 credits counted in department)
- Humanities Area V

University Requirements
Select 6 credits from VWW (from specified list) 6

Nursing Courses 1

Level 1
- NURS 293 Introduction to Nursing Concepts
- NURS 294 Principals of Nursing Practice
- NURS 328 Human Pathophysiology Foundation for Nursing
- NURS 362 Evidence Based Practice

Level 2
- NURS 377 Health and Illness Concepts I
- NURS 378 Health Care Participant
- NURS 379 Nursing Pharmacology
- NURS 380 Assessment and Health Promotion

Level 3
- NURS 395 Health and Illness Concepts II
- NURS 396 Professional Nursing Concepts I
- NURS 398 Care of Patients with Chronic Conditions

Level 4
- NURS 466 Health and Illness Concepts III
- NURS 467 Clinical Intensive I
- NURS 468 Clinical Intensive II

Level 5
- NURS 486 Concept Synthesis
- NURS 487 Professional Nursing Concepts II
- NURS 488 Clinical Intensive III
- NURS 489 Capstone

Total Credits 41

1 Formal Acceptance required before taking NURSING courses. The NMSU School of Nursing participates in the New Mexico Nursing Education Consortium. The nursing curriculum offered is the NMNEC Statewide Curriculum Plan.

Note: A grade of C- or better is required for all courses in the curriculum. You must also complete 6 elective credits from the Part III Viewing a Wider World general education category.

1. An applicant who is not a U.S. citizen or who has been convicted of a felony is advised to contact the appropriate State Board of Nursing regarding eligibility for licensure.
2. Clinical clearances are required for all students prior to admission and concurrent with each semester of studies. These include: current immunizations; background screening; drug testing; individual health insurance coverage; current CPR status; various health agency orientations, as well as other requirements mandated by clinical affiliation agreements. Failure to complete and provide documentation within timelines established by the School of Nursing may prevent admission to/or continuation within the nursing program.
3. Students are required to make a satisfactory score on nationally-normed, standardized tests before application. In the last semester of the curriculum, students are required to take a comprehensive/standardized exam and to make a satisfactory score on this exam prior to their final clinical experience.
4. Newly admitted students are required to attend an orientation session which occurs prior to the start of classes for their first nursing semester.
5. School-wide activities begin 1-3 days prior to the start of classes. Attendance is required.

Nursing - Doctor of Philosophy

Ph.D.: The intent of the nursing Ph.D. program is to prepare individuals who can assume leadership roles in advancing the scholarship of teaching, research and professional service activities. The focus of the program is on nursing scholarship to facilitate development of new knowledge and nursing education directed at improving nursing care outcomes for individuals, families, communities and systems.

Admission to the Ph.D. and DNP programs is in accordance with the general regulations of the Graduate School. Additional requirements include:

- a MSN from an accredited college or university;
- successful completion of an upper division statistics course for the DNP program and a graduate level statistics course for the Ph.D. program (taken within the last five years);
- three professional letters of recommendation;
- a letter stating personal goals for graduate education, completions of writing requirement, interview with nursing faculty, resume identifying practice experience; and
- proof of licensure or eligibility for licensure as a Registered Nurse in any of the 50 United States, the District of Columbia, or U.S. territories.

Students in the Ph.D. program complete a Dissertation. All materials should be sent to the School of Nursing with Graduate School application materials placed in a separate envelope. Contact the Ph.D. programs for full and part-time options.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS 600</td>
<td>Philosophy of Science in Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 601</td>
<td>Theory I: Methods and Processes of Nursing Knowledge Development</td>
<td>3</td>
</tr>
<tr>
<td>NURS 602</td>
<td>Theory II: Contemporary Substantive Nursing Knowledge</td>
<td>3</td>
</tr>
<tr>
<td>NURS 606</td>
<td>Quantitative Methods in Nursing Research</td>
<td>3</td>
</tr>
<tr>
<td>NURS 607</td>
<td>Qualitative Methods in Nursing Research</td>
<td>3</td>
</tr>
<tr>
<td>NURS 610</td>
<td>Nursing Education: Pedagogy and Roles</td>
<td>3</td>
</tr>
<tr>
<td>NURS 620</td>
<td>Advanced Health Care Statistics I</td>
<td>3</td>
</tr>
<tr>
<td>NURS 621</td>
<td>Advanced Health Care Statistics II</td>
<td>3</td>
</tr>
<tr>
<td>NURS 623</td>
<td>Mixed Methods</td>
<td>3</td>
</tr>
</tbody>
</table>
Those enrolled as Ph.D. students have dissertation and non-dissertation options (check with advisor). All students must complete a written and oral examination after completing 41-47 credit hours.

New Mexico State University is a full member of the National Council of State Authorization Reciprocity Agreements consortium (SARA). Students will need to check the SARA website (http://nc-sara.org/) before application to determine if NMSU has a reciprocity agreement with their home state before application is made.

**Nursing Administration - Master of Science in Nursing**

**MSN:** The School of Nursing offers graduate course work for nurses leading to a Master of Science in Nursing (MSN) degree with a specialization in Nursing Administration. This specialization is designed to provide students with the knowledge and preparation to assume leadership roles in a variety of health care delivery systems. The program is accredited by the Commission on Collegiate Nursing Education (CCNE).

Admission to the MSN program is in accordance with the general regulations of the Graduate School. Additional requirements include:

- a B.S.N. from an accredited college or university;
- successful completion of an inferential statistics course within the last 5 years;
- three professional letters of recommendation;
- a letter stating personal goals for graduate education and intended specialty area;
- resume identifying clinical practice experience; and
- proof of licensure or eligibility for licensure as a Registered Nurse in any of the 50 United States, the District of Columbia or U.S. territories;
- a personal interview with Graduate Nursing Faculty is required.

For admission information, contact the NMSU Office of Admissions, http://prospective.nmsu.edu/.

**Specialization: Nursing Administration**

The MSN course of study leading to the master’s degree in Nursing Administration follows

**MSN: Administration**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>NURS 505</td>
<td>Theoretical Foundations of Advanced Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 507</td>
<td>Health Policy for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 508</td>
<td>Nursing Research in Evidence-Based Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 531</td>
<td>Promoting Health Behavior</td>
<td>3</td>
</tr>
<tr>
<td>NURS 532</td>
<td>Human Resource Management in Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 541</td>
<td>Nursing Fiscal Management</td>
<td>3</td>
</tr>
<tr>
<td>NURS 542</td>
<td>Advanced Leadership in Healthcare</td>
<td>3</td>
</tr>
<tr>
<td>NURS 543</td>
<td>Seminar in Nursing Administration- Roles</td>
<td>3</td>
</tr>
<tr>
<td>NURS 544</td>
<td>Nursing Informatics</td>
<td>3</td>
</tr>
<tr>
<td>NURS 545</td>
<td>Advanced Field Work in Nursing</td>
<td>12</td>
</tr>
<tr>
<td>NURS 546</td>
<td>Innovations and Health Care Organizations</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives:** 3

**Total Credits:** 49-56

**Thesis or Non-thesis Track**

Select one from the following: 4-9

- **Thesis Track**
  - A ST 505 Statistical Inference I

- **Non-thesis Track**
  - Satisfactory completion of final MSN project and paper

**Nursing Practice - Doctor of Nursing Practice**

**DNP:** The Doctorate in Nursing Practice (DNP) at New Mexico State University prepares individuals who can assume advanced nursing practice roles in the focal areas of family practice, family psychiatric/mental health, and adult/geriatric nursing. As a U.S./Mexico border community, DNP coursework is directed towards improving nursing care outcomes for individuals, families, communities and systems along the border. Students are encouraged to engage in those clinical experiences that address border and minority health issues and concerns. Within this context, the NMSU, DNP program emphasizes evidenced-based practice and the translation of research into practice as it relates to improving the care of individuals, families, groups and communities experiencing or at risk for health disparities. In addition to the BSN to DNP, the program includes tracks for post-MSN to DNP preparation for the certified advanced practice nurse and certificate programs in Family/Mental Health and Family Nurse Practitioner for those nurse practitioners seeking additional clinical certification.

**Requirements**

**DNP Students**

**Core Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS 507</td>
<td>Nursing Research in Evidence-Based Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 511</td>
<td>Advanced Pathophysiology for Clinical Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 512</td>
<td>Advanced Clinical Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td>NURS 515</td>
<td>Advanced Health Assessment</td>
<td>3</td>
</tr>
<tr>
<td>NURS 545</td>
<td>Advanced Leadership in Healthcare</td>
<td>3</td>
</tr>
<tr>
<td>NURS 546</td>
<td>Advanced Leadership in Healthcare</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives:** 3

**Total Credits:** 49-56
Public Health Sciences

NURS 630 Issues in Studying Health of Culturally Diverse and Border Populations 3
NURS 649 Innovations and Health Care Organizations 3
NURS 651 Applied Nursing Science for the APN 3
NURS 652 Translational Methods and Evidence-Based Practice 3
NURS 685 Epidemiology for Advanced Nursing Practice 2
NURS 697 Professional Roles for Advanced Practice Clinical Nursing 3
NURS 698 Advanced Clinical Immersion 1-20
NURS 506 Health Policy for Advanced Nursing Practice 3
NURS 530 Promoting Health Behavior 3
NURS 690 Doctoral Nursing Seminar 1-3
Total Credits 43-66

MSN to DNP
NURS 506 Health Policy for Advanced Nursing Practice 3
NURS 507 Nursing Research in Evidence-Based Practice 3
NURS 565 Advanced Leadership in Healthcare 3-5
NURS 567 Nursing Informatics 3
NURS 649 Innovations and Health Care Organizations 3
NURS 651 Applied Nursing Science for the APN 3
NURS 652 Translational Methods and Evidence-Based Practice 3
NURS 698 Advanced Clinical Immersion 1-20
NURS 530 Promoting Health Behavior 3
NURS 685 Epidemiology for Advanced Nursing Practice 2
NURS 690 Doctoral Nursing Seminar 1-3
Total Credits 28-51

Concentration: Public/Community Health Nursing
Required Courses
MPH 530 Epidemiological Approaches to Disease Control and Prevention 3
MPH 550 Environmental Public Health Issues 3
NURS 631 Population Based Approaches to Health Promotion 3
NURS 685 Epidemiology for Advanced Nursing Practice 2
Total Credits 11

Concentration: Family Nurse Practitioner
Required Courses
NURS 671 Primary Care I 7
NURS 672 Primary Care II 7
NURS 673 Primary Care III 5
NURS 676 Women’s Health 3
NURS 678 Health Needs of Special Populations 4
Total Credits 26

Public Health Sciences

Undergraduate Program Information

The curriculum in public health prepares students for careers in community and public health programs, also in voluntary, private and governmental agencies. Upon completion of the degree, the graduate is eligible to take the national Certified Health Education Specialist (CHES) examination administered by the National Commission for Health Education Credentialing, Inc. The Bachelor of Public Health degree has the full approval of the Council on Education in Public Health.

Students seeking admission to the Bachelor of Public Health degree in the Department of Public Health Sciences at NMSU are first admitted as pre-public health (PPHL) students. Students keep this designation until they have met the following admissions requirements:

1. A cumulative grade-point average of at least 2.5 after completing specified general education coursework (the common core).
2. A grade of C- or better in prerequisite departmental courses
   PHLS 150G Personal Health and Wellness 3
   PHLS 275 Foundations of Health Education 3
   PHLS 375 Foundations of Community Health Education 3
   PHLS 395 Foundations of Public Health 3
3. A grade of C- or better in MATH 120 Intermediate Algebra.
5. Entrance Exam: A score of 37% or better on the Conventions of Written English assessment and 75% or better on the Math assessment.
6. Submission of an application packet that includes
   a. a brief personal statement of interest in the profession, and
   b. a completed application for the Bachelor of Public Health degree program.
The Bachelor of Public Health degree program accepts applicants during the Spring and Fall semesters. The deadlines for accepting application packets are September 15th for Spring admission and February 15th for Fall admission. All applications must be submitted to the College of Health and Social Services, CHSS, Room 326.

Applicants may receive a conditional acceptance into the program if they are currently enrolled in the last of the required prerequisites at the time they submit an application to the Bachelor of Public Health degree program. Such conditional acceptance will be revoked if the applicant does not successfully complete each of the prerequisite courses.

Students must attain a grade of C- or better in all required PHLS core coursework.

Any student who receives two or more grades of D or F in required PHLS core courses must petition, in writing, to continue as a major. Unsuccessful petitioners will be dismissed from the program. Should said student receive any further grades of D or F they will be irrevocably dismissed from the BPH program.

Graduate Program Information

The Department of Public Health Sciences offers the Master of Public Health degree (MPH) in Community Health Education and Health Management, Administration and Policy. The degree program prepares public health professionals to function in a variety of settings, including health programs at the local, state, and federal government levels; profit and nonprofit organizations and agencies; worksite settings; and educational institutions. The MPH program is fully accredited by the Council on Education for Public Health (CEPH).

Admissions Requirements

Students may be admitted on a full-time or part-time basis to the on-campus program or part-time in the fully online version of the program. The online Community Health Education program has curriculum and degree requirements in common with the on-campus program, and is covered by the same CEPH accreditation. The fully online Health Management and Policy program is also fully accredited by CEPH. All coursework for the online degree can be completed off-campus utilizing web-based technologies and they are aimed at meeting the needs of working students and others for whom a campus-based program is not an option. In addition to meeting all admissions requirements of the Graduate School, applicants must meet the following departmental requirements:

- Complete a short bio-sketch and an essay describing the applicant's reasons for wishing to pursue the MPH degree at NMSU. Any paid or volunteer work performed in a public health or related agency setting should also be described in detail, including length of work and descriptions of the work typically performed as part of the job.
- Scores from a recent administration (within the past five years) of the GRE are required (verbal reasoning, quantitative reasoning, and analytical writing scores).
- Submit at least three letters of reference from former faculty and/or employers.

Applications are now completed online. Go to http://gradschool.nmsu.edu/. For more information, contact the Graduate Coordinator at mphapps@nmsu.edu, or obtained via the website: publichealth.nmsu.edu (https://publichealth.nmsu.edu).

Degrees for the Department

Public Health - Bachelor of Public Health (p. 630)
Public Health - Master of Public Health (p. 631)
Master of Public Health/Master of Social Work - Dual Degree (p. 630)
Public Health - Graduate Certificate (p. 630)

Minors for the Department

Gerontology - Undergraduate Minor (p. 629)
Public Health Sciences - Undergraduate Minor (p. 632)
U.S.-Mexico Border Health Issues - Undergraduate Minor (p. 632)

Associate Professor, Anup K. Amatya, Department Head

Professors Forster-Cox, McDonald, Rao, Tomaka; Associate Professors Amatya, Kozel, Kratzke, Palacios, Wilson; Assistant Professors Morales


PHLS 100. Introduction to Health Science
1 Credit

An overview of professional career opportunities in the realm of health science as well as the functional roles of practice, education, administration, and research. Some field trips will be required.

PHLS 150G. Personal Health and Wellness
3 Credits

A holistic and multi-disciplinary approach towards promoting positive lifestyles. Special emphasis is placed on major problems that have greatest significance to personal and community health. Topics to include nutrition, stress management, fitness, aging, sexuality, drug education, and others.

PHLS 275. Foundations of Health Education
3 Credits

Role and responsibility of the health educator with emphasis on small group dynamics, oral and written communication skills, building community coalitions and an introduction to grant writing. Taught with HL S 375. Cannot receive credit for both HL S 275 and HL S 375.

Prerequisite(s): Either HL S 100 or HL S 150G, or consent of instructor.
PHLS 295. Essentials of Public Health
3 Credits
The course will focus on principles and major areas if public health, including ecological and total personal concept of health care system, epidemiological approaches to disease prevention and control. Consent of Instructor required.

PHLS 301V. Human Sexuality
3 Credits
Examination of human sexuality from a variety of perspectives: cultural, sociological, physiological and psychological. Issues examined from viewpoints such as gender, individual, family, and professional roles.

PHLS 305V. Global Environmental Health Issues
3 Credits
Introduction to global environmental health challenges in the 21st century with an emphasis on environmental problems as they affect public health and personal well-being.

PHLS 375. Foundations of Community Health Education
3 Credits
Role and responsibility of the health educator, with emphasis on small-group dynamics, oral and written communication skills, building community coalitions, and an introduction to grant writing. Equivalent to PHLS 275. May be repeated up to 3 credits.

PHLS 380V. Women's Health Issues
3 Credits
A focus on the unique issues and problems that confront women today and how they affect the health of women. Same as W S 381V.

PHLS 395. Foundations of Public Health
3 Credits
The course will focus on principles and major areas of public health, including ecological concepts of healthcare systems and epidemiological approaches to disease promotion and control. Equivalent to PHLS 295. May be repeated up to 3 credits.

PHLS 400. Epidemiology
3 Credits
Epidemiologic approaches to disease prevention and control. Factors influencing health status. May be repeated up to 3 credits. Restricted to: Public Health majors.
Prerequisite(s): PHLS 471.

PHLS 450. Biometrics and Health Research
3 Credits
Critical analysis of community health research and related methodologies. May be repeated up to 3 credits. Restricted to: Public Health majors.
Prerequisite(s): E ST 311G.

PHLS 451. Environmental Health
3 Credits
Introduction to environmental health designed to address public health issues. May be repeated up to 3 credits. Restricted to: Public Health, HNFS and E S majors.
Prerequisite(s): Junior or Senior standing.

PHLS 452. Administration of Health Programs
3 Credits
Covers administrative responsibilities, organizational theory, strategic planning, and systems theory as applied to the administration of a variety of health programs. May be repeated up to 3 credits. Restricted to: Public Health majors.
Prerequisite(s): HL S 395 or HL S 450, or consent of instructor.

PHLS 458. Public Health Resources and Policy Analysis
3 Credits
Covers issues related to U.S.-health policy and allocation of resources. Examination of local, state, and federal public health and health care funding. Assessment of impact of health policy on health education, medical practice, and the workplace. May be repeated up to 3 credits.

PHLS 459. Infectious and Noninfectious Disease Prevention
3 Credits
History, etiology, and prevention of diseases affecting humans. May be repeated up to 3 credits. Consent of Instructor required. Crosslisted with: MPH 559. Restricted to: Public Health majors.
Prerequisite(s): PHLS 395 and Consent of Instructor.

PHLS 460. American Indian Health
3 Credits
Critical health issues facing American Indians in the contemporary world. Course included in the undergraduate American Indian Program minor. May be repeated up to 3 credits. Crosslisted with: MPH 560.

PHLS 461. Health Disparities: Determinants and Interventions
3 Credits
Investigates: descriptions of health disparities and measurement issues; physical environmental factors, behavioral and emotional variables; impact of aging of the populations, increased racial and ethnic diversity, and technological developments; intervention strategies and evaluation results. May be repeated up to 3 credits. Crosslisted with: MPH 561.

PHLS 462. Hispanic Health Issues
3 Credits
Cultural differences that aid or hinder communication with Hispanic clients and the application of cross-cultural communication skills. Some field trips may be required. May be repeated up to 3 credits. Crosslisted with: MPH 562.

PHLS 464V. Cross-Cultural Aspects of Health
3 Credits
An examination of health practices from a variety of cultural perspectives: communication, observation, research, and assimilation. Issues to be addressed will be examined from a number of viewpoints, such as individual, family, community, and professional roles.

PHLS 465. International Health Problems
3 Credits
Comparison of domestic health programs and problems with those in other parts of the world; emphasis on political parameters and delivery processes. Additional attention is focused on the health issues of the U.S.-Mexico border. May be repeated up to 3 credits. Crosslisted with: MPH 565.
Prerequisite(s): HL S 395 or consent of instructor.

PHLS 466. International Health Practicum
1-3 Credits
Intensive examination of health practices and beliefs from a cultural perspective. Focus on health structure, index of diseases, morbidity, mortality and epidemiological approaches to planning. Required travel (personal travel, lodging, and related expenses are extra). May be repeated up to 3 credits. Crosslisted with: MPH 566. Restricted to: BPH majors.

PHLS 467. Rural Health Issues
3 Credits
Comprehensive overview of rural health services with Southwestern United States and New Mexico focus. May be repeated up to 3 credits. Crosslisted with: MPH 567.
PHLS 468. Coping with Loss and Grief: A Cross-Cultural Perspective
3 Credits
A cross-cultural perspective to death, loss and grief. Hospice philosophy of caring for the dying will be included.

PHLS 469. U.S.-Mexico Border Health Issues
3 Credits
Interdisciplinary analysis of the impact of living conditions and health issues of communities along the U.S.-Mexico border and of the strategies and initiatives to address these issues. Problem-based learning, case analysis, lecture, guest speakers, computer based instruction, and field trips. May be repeated up to 3 credits. Crosslisted with: MPH 569.

PHLS 471. Health Informatics
3 Credits
The application of technology to engage communities and individuals in behavioral and environmental change processes. The course will focus on the use of technology to describe the magnitude of health problems and their sources; analyze risk factors; identify community strengths from which strategies may be defined and tools created to intervene, prevent problems, and promote health and well-being; and continuously evaluate, refine, and implement what works. May be repeated up to 3 credits. Crosslisted with: MPH 571. Restricted to: PHL,C HL majors.
Prerequisite(s): HL S 395 or consent of instructor.

PHLS 473. Health Program Planning
3 Credits
Planning and development of community health education interventions for behavior change at the individual, family, social network levels of practice. Emphasis on applying program-planning models and designs into a grant-writing project. May be repeated up to 3 credits. Restricted to: Public Health majors.

PHLS 475. Methods of Community Health Education
3 Credits
Responsibilities of health educators, analysis of social forces affecting health needs, application of wide range of health education methods and instructional media, and program implementation skills. May be repeated up to 3 credits. Crosslisted with: MPH 575. Restricted to: Public Health majors.
Prerequisite(s): HL S 275/375.

PHLS 476. Theoretically-Based Interventions
3 Credits
Identifying and developing interventions to problematic health-related behaviors. Taught with MPH 576. May be repeated up to 3 credits. Restricted to: Public Health majors.
Prerequisite(s): HL S 473.

PHLS 478. Health Program Evaluation and Research
3 Credits
Covers the application of research and evaluation models for decision-making program and policy development of community health education interventions. Focus on the individual, family, and social network levels of practice. May be repeated up to 3 credits. Restricted to: Public Health majors.
Prerequisite(s): HL S 473.

PHLS 479. Problems in Health Education
3 Credits
Provides opportunity for synthesis of program planning, implementation, and evaluation methodologies in the preparation and delivery of health education topics. Some field trips will be required. May be repeated up to 3 credits. Restricted to: Public Health majors.
Prerequisite(s): Either HL S 395, HL S 478, HL S 476, or consent of instructor.

Name:
Office Location:
Phone: (575) 646-4300
Website: http://publichealth.nmsu.edu/

Gerontology - Undergraduate Minor
On-Line Program Only
A grade of C- or better is required for all minor requirements.
Core Gerontology Courses
GERO 415 Introduction to Gerontology 3
GERO 493 Adulthood and Aging 3
Select 6 credits from the following: 6
FCS 213 Adult Development and Aging
GERO 450 Health Promotion for the Older Adult
GERO 451 Aging and Public Policy
NURS 416 Older Adult Nursing
Additional Independent Study (to be arranged with either Public Health or Nursing department)

Total Credits 12

Master of Public Health/Master of Social Work - Dual Degree
The department of Public Health Sciences and the School of Social Work offer a dual MPH/MSW degree program. The two degrees are:
1. Master of Public Health (MPH) in Community Health Education and

Student interested in pursuing the dual degree program must:
- Prepare and submit separate admissions applications to both programs
- Notify each program in writing of the intent to pursue the dual degree program
- Be officially admitted to both degree programs
- Notify the NMSU Graduate School of the intent to pursue the dual degree program
- Complete all course requirements
- Complete separate final examinations for both degree programs

If you are interested in pursuing this option please call and talk with the Dual Program Coordinator in the MPH program. The dual degree waives some courses from each program and students enrolled in this program should expect to complete the program in three years.

Public Health - Bachelor of Public Health
General Requirements (35 credits)
General education requirements for the Department of Public Health Sciences follow those outlined by the university in this catalog.

Departmental Requirements
You are required to complete the following Public Health Sciences core courses. Of the 120 credits required for the degree, you must have a minimum of 48 upper division credit hours (300- and 400-level courses).

General Education Requirements
Select 35 credits of General Education Requirements

Viewing a Wider World Courses
6

Prerequisite Courses
A ST 311 Statistical Applications 1
or A ST 251G Statistics for Business and the Behavioral Sciences

Public Health Education Core
PHLS 471 Health Informatics 3
PHLS 473 Health Program Planning 3
PHLS 475 Methods of Community Health Education 3
PHLS 476 Theoretically-Based Interventions 3
PHLS 478 Health Program Evaluation and Research 3
PHLS 496 Community Health Education Field Experience 6
PHLS 497 Senior Seminar in Community Health Education 1
PHLS 499 Problems in Health Education 3

Public Health Core
PHLS 450 Epidemiology 3
PHLS 451 Biometrics and Health Research 3
PHLS 452 Environmental Health 3
PHLS 457 Administration of Health Programs 3
PHLS 459 Infectious and Noninfectious Disease Prevention 3

Cultural Foundations Course Requirements
Select 3 credits from the following: 3
PHLS 461 Health Disparities: Determinants and Interventions
PHLS 462 Hispanic Health Issues
PHLS 464V Cross-Cultural Aspects of Health
PHLS 465 International Health Problems
PHLS 466 International Health Practicum
PHLS 467 Rural Health Issues
PHLS 468 Coping with Loss and Grief: A Cross-Cultural Perspective
PHLS 469 U.S.-Mexico Border Health Issues

Departmental Electives
Elective courses 2 24
Electives: to bring the total to 120 credits, with 28 credits being upper-division

Total Credits 120

1 A ST 311 Statistical Applications: does not meet the Common Core Area II.
2 Students are encouraged to select additional PHLS and GERO courses to satisfy the elective requirement. Students with an associate degree in an allied health field may transfer up to 24 credit hours of electives.

Additional Requirements
All students are required to complete an exit survey please see the department for more information.

Public Health - Graduate Certificate
The graduate certificate program in public health is not an official graduate degree offered by NMSU but rather a focused collection of courses that enrolled students complete in public health. These courses are designed to provide and/or enhance students’ knowledge of and skills in public health practice. Those students who successfully complete the previously listed courses receive a certificate of completion statement on their official transcript and a formal certificate from the university.

Certificate Program Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPH 510</td>
<td>Community and Psychosocial Aspects of Public Health</td>
<td>3</td>
</tr>
<tr>
<td>MPH 530</td>
<td>Epidemiological Approaches to Disease Control and Prevention</td>
<td>3</td>
</tr>
<tr>
<td>MPH 540</td>
<td>Health Services System: Administration and Organization</td>
<td>3</td>
</tr>
<tr>
<td>MPH 550</td>
<td>Environmental Public Health Issues</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

1 For those who have not had any statistics courses it is strongly recommended that they complete MPH 520 Biostatistical Applications in Public Health as their elective.

Note that students who complete the Graduate Certificate are eligible to sit for the Certified Public Health (CPH) examination.

Apply online at http://gradschool.nmsu.edu/. International students are required to contact the Center for International Programs at (575) 646-5480.

Public Health - Master of Public Health

Public Health Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPH 510</td>
<td>Community and Psychosocial Aspects of Public Health</td>
<td>3</td>
</tr>
<tr>
<td>MPH 520</td>
<td>Biostatistical Applications in Public Health</td>
<td></td>
</tr>
<tr>
<td>MPH 530</td>
<td>Epidemiological Approaches to Disease Control and Prevention</td>
<td>3</td>
</tr>
<tr>
<td>MPH 540</td>
<td>Health Services System: Administration and Organization</td>
<td>3</td>
</tr>
<tr>
<td>MPH 550</td>
<td>Environmental Public Health Issues</td>
<td>3</td>
</tr>
</tbody>
</table>

Concentrations

Select one from the following concentrations: 18
- Community Health Education
- Health Management, Administration and Policy

Cultural Foundation Course

Select 3 credits from the cultural foundation series numbered MPH 560-MPH 569 3

Additional Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPH 596</td>
<td>Field Experience</td>
</tr>
</tbody>
</table>

Thesis and Non-thesis Options

Select one of the following options in consultation with your graduate advisor:

Thesis Option 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPH 599</td>
<td>Master’s Thesis</td>
</tr>
</tbody>
</table>

Non-Thesis Option 2

Select 3 credits from electives

Total Credits 24

1 Only for those in the Community Health Education concentration
2 Available for those in the Community Health Education concentration and the Health Management, Administration & Policy concentration

Concentration: Community Health Education

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPH 570</td>
<td>Foundations of Public Health Education</td>
<td>3</td>
</tr>
<tr>
<td>MPH 572</td>
<td>Techniques of Health Communication/ Education</td>
<td>3</td>
</tr>
<tr>
<td>MPH 573</td>
<td>Community Organization in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>MPH 574</td>
<td>Health Program Planning</td>
<td>3</td>
</tr>
<tr>
<td>MPH 578</td>
<td>Evaluative Approaches in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>MPH 579</td>
<td>Research and Resources in Community Health</td>
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</tr>
</tbody>
</table>

Total Credits 18

Concentration: Health Management Administration and Policy

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MPH 541</td>
<td>Principles of Health Program Management</td>
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<tr>
<td>MPH 545</td>
<td>Health Services Organization and Delivery</td>
<td>3</td>
</tr>
<tr>
<td>MPH 546</td>
<td>Public Health Finance and Budget Management</td>
<td>3</td>
</tr>
<tr>
<td>MPH 547</td>
<td>Public Health Law and Ethics</td>
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</tr>
<tr>
<td>MPH 558</td>
<td>Public Health Policy Analysis</td>
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<tr>
<td>MPH 578</td>
<td>Evaluative Approaches in Public Health</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 18

Elective courses may include other MPH courses or 500-level courses from other departments. Some MPH courses are crossed listed with PHLS 400 level courses (e.g. PHLS 467 Rural Health Issues and MPH 567 Rural Health Issues). Students who have previously taken one of these 400 level courses at NMSU, may not take the corresponding 500 level MPH course for degree completion credit.

The thesis option requires a total of 45 credit hours, while the non-thesis option requires 42 credit hours. Final examination for the non-thesis option includes both oral and written questions pertaining to the student’s graduate course work. Final examination for the thesis option consists of an oral defense of the thesis and related course work.

Selected elective and option courses may also be available during summer sessions.

All MPH students must comply with the Student Code of Conduct for the Department of Public Health Sciences. This can be found online at the Department’s web page (http://publichealth.nmsu.edu)

Students completing the Community Health Education concentration are eligible to sit for the Certified Health Education Specialist (CHES) examination. Students completing either the Community Health Education or the Health Management, Administration and Policy...
Public Health Sciences - Undergraduate Minor

A grade of C- or better is required for all minor requirements.

Core Public Health Education Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHLS 275</td>
<td>Foundations of Health Education</td>
<td>3</td>
</tr>
<tr>
<td>PHLS 395</td>
<td>Foundations of Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PHLS 450</td>
<td>Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>PHLS 457</td>
<td>Administration of Health Programs</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one from the following:

- PHLS 301V Human Sexuality
- PHLS 380V Women’s Health Issues

Select 3 credits from the following:

- PHLS 461 Health Disparities: Determinants and Interventions
- PHLS 462 Hispanic Health Issues
- PHLS 464V Cross-Cultural Aspects of Health
- PHLS 465 International Health Problems
- PHLS 466 International Health Practicum
- PHLS 467 Rural Health Issues
- PHLS 468 Coping with Loss and Grief: A Cross-Cultural Perspective

Total Credits: 18

1 All public health minors must complete A ST 251G Statistics for Business and the Behavioral Sciences/STAT 251G Statistics for Business and the Behavioral Sciences or A ST 311 Statistical Applications with a B or better before taking PHLS 450 Epidemiology.

U.S.-Mexico Border Health Issues - Undergraduate Minor

A grade of C- or better is required for all minor requirements.

Core Requirements

Select 3 credits from the following:

- PHLS 466 International Health Practicum
- PHLS 469 U.S.-Mexico Border Health Issues

Select four from the following:

- PHLS 461 Health Disparities: Determinants and Interventions
- PHLS 462 Hispanic Health Issues
- PHLS 464V Cross-Cultural Aspects of Health
- PHLS 465 International Health Problems
- PHLS 467 Rural Health Issues
- PHLS 486 Special Topics
- PHLS 486 Special Topics (when subtitle relates to US-Mexico Border Health)

Total Credits: 18

Social Work

Undergraduate Program Information

The BSW degree (CSWE accredited) allows you to join a profession dedicated to helping people in personal and social situations. As a unique and challenging field, social work addresses the complexity of human behavior and the ever-present needs and potential of people. From rural communities to inner cities, social workers are at work in social service agencies, mental health centers, hospitals, schools, neighborhood organizations, probation offices and private agencies. Social work roles are varied and flexible. Social workers practice in areas such as child abuse, community organization, direct services with individuals and families, mental health, group work, and the administration, planning and development of social programs. With each consumer group and in every agency setting, social workers help to correct the causes or alleviate the results of poverty, racism, poor health, mental illness or any condition that prohibits people from reaching their potential.

Graduate Program Information

The School of Social Work offers full-time and part-time graduate study in Las Cruces and Albuquerque leading to the Master of Social Work (MSW) degree. The program is designed to provide academic and fieldwork education with an emphasis in Advanced Generalist Practice with Populations of the Southwest based on the foundation first year of generalist practice. The program is fully accredited by the Council on Social Work Education (CSWE).

Admission to the program is in accordance with the general regulations of the Graduate School, which include a completed undergraduate degree from an accredited institution. In addition to applying to the Graduate School, application must also be made to the School of Social Work. The application to the School of Social Work spells out admission requirements that include submitting an application form, a written statement, a current resume and personal references and statistics course. Applicants having a degree from a non-liberal arts area must show coursework that includes two courses from the humanities, two from the natural and biological sciences (with one course containing content in human biology) and three from the behavioral and social sciences, with at least one course in sociology or psychology. Applicants are also required to complete a Basic Statistics course prior to beginning their MSW program of study. The program does not grant academic credit for work or other life experience in lieu of social work course or field content.

The School of Social Work is committed to ensuring a culturally diverse student population to enhance the social work profession at both state and national levels. To meet this goal of diversity, the school makes an effort to recruit and retain a diverse student population.

Applicants who qualify for advanced standing may complete the program with 34 credits rather than 60 credits. Admission to the advanced-standing program is for highly qualified applicants who have a Bachelor of Social Work degree (BSW) from a social work program accredited by the CSWE and earned within seven years of beginning the advanced standing program, a cumulative GPA of at least 3.0 and a minimum GPA of 3.5 in core Undergraduate Social Work courses.
Degrees for the Department
Social Work - Bachelor of Social Work (p. 635)
Social Work - Master of Social Work (p. 636)
Master of Social Work/Master of Public Health - Dual Degree (p. 635)

Minors for the Department
Alcohol and Drug Counseling - Graduate Minor (p. 635)

Tina Hancock, DSW, Director

Professors Wagner; Associate Professors Blair, de la Rosa, Gurrola, Nedjat-Haiem, Whittlesey-Jerome; Assistant Professor Gergerich; College Associate Professor Cabada; College Assistant Professors Burns, Ortiz; BSW Academic Advisor, Irma Hernandez

R. Blair, Ph.D. (Utah) – mental health, individual therapy; S Burns, M.S.W. (Michigan) - direct practice; O. Cabada, M.S.W. (Texas) - mental health, social justice; I. de la Rosa, Ph.D. (Michigan) – program evaluation, research; E. Gergerich, Ph.D (Arkansas) - gerontology; M. Gurrola, Ph.D (Arizona) - social justice, immigration; T. Hancock, D.S.W. - domestic violence, immigration; F. Nedjat-Haiem, Ph.D (California) - gerontology; M. Ortiz, M.S.W. (NMSU) – cultural competence, practice; D.L. Wagner, Ph.D. (Portland State Univ.) - gerontology, community planning; W. Whittlesey-Jerome, Ph.D. (Texas-Arlington) – mental health, policy, research

S WK 221G. Introduction to Social Welfare
3 Credits
A broad overview of current social problems and the role of social agencies and community members in addressing these problems.

S WK 251. Women's Issues in Social Work
3 Credits
Examines gender-specific social problems and their identification and resolution through the use of social agencies and community resources. Community Colleges only.

S WK 253. Case Management
3 Credits
Introduction to case management for social- and human-services workers. Overview of typical duties and responsibilities of a case manager, including setting goals, performing assessments, writing progress notes, and linking clients with other resources in the community. Recommended for students considering a career in social work or human services. Community Colleges only.

Prerequisites: PSY 201G and S WK 221G.

S WK 300. Social Work Practice Skills
3 Credits
Introduction to generalist social work practice. Interpersonal skills, values, and ethics required in the helping relationship. Taught in a small-group format. May be repeated up to 3 credits. Restricted to: S WK majors. Restricted to Las Cruces campus only.

Prerequisite(s): S WK 300.

S WK 301. Orientation to Field
1 Credit
This course will provide an orientation to requirements for a social work field practicum and to establish the transfer of learning between classroom instruction and future practicum skill application. Restricted to S WK majors.

Corequisite(s): S WK 300.

S WK 309. Sociocultural Concepts
3 Credits
Theoretical and sociohistorical perspectives on racism, sexism, ageism, heterosexism, classism, ableism, and other forms of discrimination and oppression. Cultural diversity, strengths, and Southwest and border issues are examined.

S WK 311. Human Behavior and the Social Environment I
3 Credits
Major theories of human behavior and the life span from conception to adolescence. Restricted to: S WK majors.

Corequisite(s): S WK 309.

S WK 312. Human Behavior and the Social Environment II
3 Credits
Continuation of S WK 311. Major theories of human behavior and the life span from young adulthood through old age. Restricted to: S WK majors.

Corequisite(s): S WK 311.

S WK 313. Social Work Practice with Individuals
3 Credits
Generalist social work practice theory and skills in engagement, information gathering, assessments, planning, interventions, evaluation, and termination with individual client systems. Restricted to: S WK majors.

Prerequisite(s): S WK 300.

S WK 315. Social Work Practice with Families
3 Credits
Generalist social work practice theory and skills in engagement, information gathering, assessments, planning, interventions, evaluation, and termination with multicultural family systems. Restricted to: S WK majors.

Prerequisite(s): S WK 300.

S WK 316. Social Work Research
3 Credits
This undergraduate course is designed to prepare students to be effective consumers of research and to evaluate their own practice. Students will learn to read, critically evaluate and use the research of others to select interventions that are based on evidence of effectiveness. Students will demonstrate the knowledge, values and skills to be critical consumers of research for effective and ethical practice as well as possess the basic skills necessary to evaluate their own social work professional practice. May be repeated up to 3 credits. Restricted to: Social Work majors.

Prerequisite(s): STAT 251G, STAT 271G or A ST 251G.

S WK 331V. Introduction to Social Policy: History
3 Credits
Historical overview of the economic, political, and cultural impact on social welfare policy, institutions, and professions with international content.
S WK 401. Field Experience I  
3 Credits  
This course is a social work practicum at a university approved agency. This course focuses on generalist social work practice. At this level students are expected to assume substantive responsibility for carrying out social work activities at the beginning level of social work practice.  
• Students are given the opportunity to observe and assume social work activities in direct and indirect practice under close supervision.  
• These field work opportunities enable students to apply and integrate previous and current semester learning.  
• Opportunities will be available for students to develop knowledge of professional practice at multiple system levels and with a variety of cultural, ethnic, racial, gender and age groups.  
• Students in this Field Practicum Course are required to take a Field Seminar that will provide the students the opportunity to discuss the integration of academic and practice experience learning. Restricted to: S WK majors. S/U Grading (S/U, Audit).  
Corequisite(s): S WK 412.

S WK 403. Social Work Practicum II  
3 Credits  
This course is a social work practicum at a university approved agency. This course focuses on generalist social work practice. At this level students are expected to assume substantive responsibility for carrying out social work activities at the beginning level of social work practice.  
• Students are given the opportunity to observe and assume social work activities in direct and indirect practice under close supervision.  
• These field work opportunities enable students to apply and integrate previous and current semester learning.  
• Opportunities will be available for students to develop knowledge of professional practice at multiple system levels and with a variety of cultural, ethnic, racial, gender and age groups.  
• Students in this Field Practicum Course are required to take a Field Seminar that will provide the students the opportunity to discuss the integration of academic and practice experience learning. Restricted to: S WK majors. S/U Grading (S/U, Audit).  
Corequisite(s): SWK 419.

S WK 405. Service Learning  
3 Credits  
This course introduces students to field work as an essential component of social work education. Students are required to provide a minimum of 40 hours of service to a human services agency. This course will focus on the connection between coursework, field work, the NASW Code of Ethics and skills needed to work with people.  
Prerequisite(s): S WK 301, S WK 313.

S WK 412. Practicum Seminar I  
3 Credits  
This practicum seminar course must be taken with SWK 401 to provide students who are enrolled in the field practicum course the opportunity to discuss and reflect on social work knowledge, values and skills as they interact with clients in their practicum placement.  
• Students will have an opportunity to present a case and discuss how they are able to integrate the nine social work competencies  
• The seminar will provide opportunities to integrate previous and current semester learning.  
Corequisite(s): S WK 401.

S WK 415. Generalist Social Work Practice with Organizations and Communities  
3 Credits  
This course focuses on generalist social work values, knowledge and skills regarding practice with larger systems. Course content will include theories of community and organizational assessment and intervention. Strategies for advocacy and change, leadership for community and organizational change. May be repeated up to 3 credits.  
Prerequisite(s): S WK 300, S WK 313, S WK 315.  
Corequisite(s): S WK 417.

S WK 416. Generalist Social Work Practice with Groups  
3 Credits  
Generalist social work practice skills with group client systems focusing on the planned change process and the empowerment of oppressed populations. May be repeated up to 3 credits. Restricted to: S WK majors.  
Prerequisite(s): SWK 415.

3 Credits  
Policy practice related to the formation of current social welfare policies that promote social and economic justice. Emphasis is on the development and influences of social policy, policy analysis, and the policy change process. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: S WK majors.

S WK 418. Professionalism in the Field of Social Work  
3 Credits  
This course is designed to prepare you to develop professional skills, knowledge, awareness and boundaries as a social worker as you get ready to enter the field practicum. May be repeated up to 3 credits. Restricted to: S WK majors.  
Corequisite(s): SWK 419.

S WK 419. Practicum Seminar II  
3 Credits  
This practicum seminar course must be taken with S WK 403 to provide students who are enrolled in the field practicum course the opportunity to discuss and reflect on social work knowledge, values and skills as they interact with clients in their practicum placement.  
• Students will have an opportunity to present a case and discuss how they are able to integrate the nine social work competencies  
• The seminar will provide opportunities to integrate previous and current semester learning.  
May be repeated up to 3 credits. Restricted to: S WK majors. S/U Grading (S/U, Audit).  
Corequisite(s): S WK 403.

S WK 443. Family and Child Welfare Practice  
3 Credits  
Current issues and interventions in child protection, foster care, family preservation and support, family reunification, adoption and permanency planning. Cannot receive credit for S WK 443 and M SW 543.

S WK 447. Identifying Mental Health Concerns  
3 Credits  
This course is designed to advance students' knowledge and professional skills for addressing mental health concerns in social work practice at the bachelor's level. Students will learn to identify major mental health concerns across the life span. Culturally competent practices are considered in regard to various mental health concerns. Restricted to: SWK majors.
S WK 449. Independent Study
1-6 Credits
Individual studies directed by consenting faculty with the prior approval of the department head.
Prerequisite: majors or consent of instructor.

S WK 490. Family and Child Welfare Policy
3 Credits
This course is designed to provide students with an understanding of the history and evolution of child welfare policies, initiatives and factors that influence advocacy and practices within the child welfare system. Child welfare policies and services specific to the state of New Mexico are infused throughout the course. Taught with MSW 590. Students enrolled in S WK 490 will not receive credit MSW 590. Students enrolled in S WK 490 will not receive credit MSW 590.

S WK 497. Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be used as a mandatory practice elective. Restricted to: S WK majors.
Prerequisite(s):; Junior or above standing, majors or consent of instructor.

Name:
Office Location:
Phone: (575) 646-2143
Website: http://socialwork.nmsu.edu

Alcohol and Drug Counseling - Graduate Minor

This minor involves the departments of: Counseling and Educational Psychology; Family and Consumer Science; Nursing; and Social Work. Completion of this minor will prepare students for completion of the coursework necessary to take the exam for state licensure as a drug and alcohol counselor in the State of New Mexico. If you are interested in the minor please request an information sheet from the Graduate Program Coordinator that will outline the program requirements and specify the application process.

Master of Social Work/Master of Public Health - Dual Degree

The School of Social Work and the Department of Health Science offer a joint MSW/MPH degree program. The two degrees are:

1. Master of Social Work (MSW) and
2. Master of Public Health (MPH) in Community Health Education.

Students interested in pursuing the joint degree program must:

• Prepare and submit separate admissions applications to both programs.
• Notify each program in writing of the intent to complete the joint degree program.
• Be officially admitted to both degree programs.
• Notify the NMSU Graduate School of the intent to complete the joint degree program.
• Complete all course requirements for both degree programs.
• Complete separate final examinations for both degree programs.

If you are interested in pursuing this option please call and talk to the Graduate Program Coordinator. It is anticipated that students in this program will take three academic years to complete the joint MSW/MPH degree programs.

Social Work - Bachelor of Social Work

The B.S.W. program prepares you for a beginning professional level of generalist social work practice with an understanding and appreciation of the cultural diversity of the Southwest.

To be admitted as a B.S.W. candidate, you must formally apply for admission to the program. A 2.5 grade-point average is required for admission. Consult the pre-social work major advisor, located in the School of Social Work in the College of Health and Social Services. The deadline for submitting applications is the last Friday in January. The program is fully accredited by the Council on Social Work Education and all students have access to copies of the Curriculum Policy Statement.

General Education Requirements

Students need to complete the New Mexico State University general education requirements before applying to the Bachelor of Social Work program. The School of Social Work requirements include S WK 221G Introduction to Social Welfare and two semesters of a second language. Once accepted into the program, students also need to meet a Cultural Emphasis requirement.

Students may choose one of three tracks to complete a minimum of six credit hours.

1. Take two more semesters of any language.
2. Take an approved language immersion program.
3. Take two approved upper-level courses with a multicultural emphasis (you can get the approved list of courses from your social work advisor).

If the cultural emphasis classes are also Viewing a Wider World classes, you still need to complete the total number of specified upper-division credits necessary for graduation. Highly recommended electives for social work students include courses in sociology, history, Spanish, psychology, family life, child development, English, philosophy, anthropology, computer science, criminal justice, government and economics. Electives must be sufficient to bring total credits to 120, including 52 upper-division credits, for graduation.

Departmental Requirements

Preparation for entry-level professional social work requires a thorough knowledge of theory and skills; therefore, the high number (57) of core social work credits is required.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Fall</td>
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<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
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<tr>
<td>or ENGL 111GH</td>
<td>Rhetoric and Composition Honors</td>
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<tr>
<td>BIOL 101G</td>
<td>Human Biology</td>
<td>3</td>
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<tr>
<td>BIOL 101GL</td>
<td>Human Biology Laboratory</td>
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<tr>
<td>Communications</td>
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</tr>
</tbody>
</table>
### Social Work - Master of Social Work

#### Second Language
- **Credits**: 3-4

#### Spring
- **Credits**: 14-15
  - **One from the following:**
    - **Credits**: 3
      - MATH 112G Fundamentals of Elementary Math II
      - MATH 121G College Algebra
      - MATH 142G Calculus for the Biological and Management Sciences
      - MATH 210G Mathematics Appreciation
    - **Credits**: 3
      - STAT 251G Statistics for Business and the Behavioral Sciences
      - or STAT 271G Statistics for Psychological Sciences
      - C EP 110G Human Growth and Behavior
    - **Credits**: 3
      - Lab Science
    - **Credits**: 3-4
      - S WK 221G Introduction to Social Welfare

#### Sophomore
- **Credits**: 19-20
  - **Fall**
    - A ST 311 or STAT 251G Statistical Applications
    - or Statistics for Business and the Behavioral Sciences
    - Humanities/Fine Arts
    - Humanities/Fine Arts
    - Social/Behavioral Science
    - **Select one from the following:**
      - ENGL 203G Business and Professional Communication
      - ENGL 211G Writing in the Humanities and Social Sciences
      - ENGL 218G Technical and Scientific Communication
    - **Credits**: 15
  - **Spring**
    - Viewing a Wider World/C E
    - Elective
    - **Credits**: 12

#### Junior
- **Credits**: 12
  - **Fall**
    - Select sufficient electives to bring the total number of credits to a minimum of 120 credits.
    - S WK 300 Social Work Practice Skills
    - S WK 309 Sociocultural Concepts
    - S WK 311 Human Behavior and the Social Environment I
    - S WK 331V Introduction to Social Policy: History
    - **Credits**: 12
  - **Spring**
    - S WK 301 Orientation to Field
    - S WK 312 Human Behavior and the Social Environment II
    - S WK 313 Social Work Practice with Individuals
    - **Credits**: 13

#### Senior
- **Credits**: 13
  - **Fall**
    - S WK 405 Service Learning
    - S WK 415 Generalist Social Work Practice with Organizations and Communities
    - S WK 416 Generalist Social Work Practice with Groups
    - S WK 417 Social Welfare Policy: Legislation
    - **Credits**: 12
  - **Spring**
    - S WK 412 Practicum Seminar I
    - S WK 418 Professionalism in the Field of Social Work
    - **Credits**: 15

#### Total Credits
- **Credits**: 112-114

1. BIOL 101G Human Biology and BIOL 101GL Human Biology Laboratory: must be completed before starting the S WK program and require a grade of C- or better.
2. C EP 110G Human Growth and Behavior and S WK 221G Introduction to Social Welfare: must be completed before starting the S WK program and require a grade of C- or better.

**NOTE:** Students need to submit a formal application packet to the School of Social Work in January and be accepted into program before they can take junior or senior year courses.

A grade of C- or better is required for all social work courses.

### Social Work - Master of Social Work

The requirements for the Master of Social Work degree include 60 credits of designated graduate courses (34 credits of designated graduate courses for those accepted for advanced standing), a cumulative grade-point average of at least 3.0 on a 4.0 scale in all course and fieldwork.

Note that all social work courses must be taken in sequence. Successful completion of course work for each semester is a prerequisite for the course work of the following semester.

Any social work graduate student who receives an F in a social work course is dismissed from the program and must reapply for admission to the MSW program. Any social work student who receives a D in a social work course must repeat the course. Any social work student who receives 2 D’s in social work courses is dismissed from the program and must reapply for admission to the MSW program.

An integral part of a graduate social work program is completing the field experience. For those enrolled in the two-year program, two practicum placements will be required, which result in the student’s spending 950 hours in the field. For those students entering the program with advanced standing, one field placement is required, totaling 500 hours in the field. Students are offered a wide range of field settings in New Mexico and West Texas. Students should be prepared to travel some distance and be responsible for their own transportation costs.
Application Deadlines
The deadline for complete applications is January 15th of each year.
  • Late applications that are complete will be considered when received on a space available basis.

Course of Study
Full-Time Program (60 credits)

<table>
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<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>First Year</td>
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<tr>
<td>Fall</td>
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<tr>
<td>MSW 509</td>
<td>Sociocultural Concepts and Populations of the Southwest</td>
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<tr>
<td>MSW 510</td>
<td>Human Behavior and the Social Environment I</td>
<td>3</td>
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<tr>
<td>MSW 520</td>
<td>Social Work Practice I</td>
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<tr>
<td>MSW 551</td>
<td>Generalist Field Practicum I</td>
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<tr>
<td>Spring</td>
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<tr>
<td>MSW 500</td>
<td>Social Problems and Social Welfare Policy</td>
<td>3</td>
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<td>MSW 521</td>
<td>Social Work Practice II</td>
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<td>MSW 552</td>
<td>Generalist Field Practicum II</td>
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<td>MSW 560</td>
<td>Social Work Research I</td>
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<td>Second Year</td>
<td></td>
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<tr>
<td>Fall</td>
<td></td>
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</tr>
<tr>
<td>MSW 524</td>
<td>Practice III: Advanced Practice with Individuals</td>
<td>3</td>
</tr>
<tr>
<td>MSW 525</td>
<td>Practice IV: Advanced Generalist Practice with Groups</td>
<td>3</td>
</tr>
<tr>
<td>MSW 547</td>
<td>Social Work Mental Health Practice</td>
<td>3</td>
</tr>
<tr>
<td>MSW 554</td>
<td>Advanced Generalist Field Experience I</td>
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<tr>
<td></td>
<td>Total Credits</td>
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</table>

Course of Study: Full-Time Advanced Standing (34 credits)
Full-Time Advanced Standing begins in Summer and then follows the Year Two schedule, with the addition of 3 credits MSW or/outside elective in both fall and spring semesters.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Summer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSW 559</td>
<td>Social Work Practice &amp; Research for Advanced Standing</td>
<td>4</td>
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MSW Electives
Select at least one from the following: (to complete the two elective requirement)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>MSW 590</td>
<td>Family and Child Welfare Policy</td>
<td>3</td>
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<tr>
<td>MSW 591</td>
<td>Systemic Integration of Alcohol and Drug Issues</td>
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<tr>
<td>MSW 597</td>
<td>Special Topics</td>
<td>7</td>
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Course of Study: Part-Time Program (60 credits)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>First Year</td>
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</tr>
<tr>
<td>Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSW 509</td>
<td>Sociocultural Concepts and Populations of the Southwest</td>
<td>3</td>
</tr>
<tr>
<td>MSW 510</td>
<td>Human Behavior and the Social Environment I</td>
<td>3</td>
</tr>
<tr>
<td>MSW 520</td>
<td>Social Work Practice I</td>
<td>3</td>
</tr>
<tr>
<td>MSW 547</td>
<td>Social Work Mental Health Practice</td>
<td>3</td>
</tr>
<tr>
<td>MSW 554</td>
<td>Advanced Generalist Field Experience I</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
<td>15</td>
</tr>
<tr>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSW 503</td>
<td>Policy Analysis and Change</td>
<td>3</td>
</tr>
<tr>
<td>MSW 526</td>
<td>Practice V: Advanced Practice with Families</td>
<td>3</td>
</tr>
<tr>
<td>MSW 527</td>
<td>Practice VI: Advanced Practice with Organizations and Communities</td>
<td>3</td>
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<tr>
<td>MSW 555</td>
<td>Advanced Generalist Field Experience II</td>
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</tr>
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<td></td>
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Second Year

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Fall</td>
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</tr>
<tr>
<td>MSW 520</td>
<td>Social Work Practice I</td>
<td>3</td>
</tr>
<tr>
<td>MSW 551</td>
<td>Generalist Field Practicum I</td>
<td>6</td>
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<td></td>
<td>Total Credits</td>
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<tr>
<td>Spring</td>
<td></td>
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</tr>
<tr>
<td>MSW 521</td>
<td>Social Work Practice II</td>
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### MSW 552 Generalist Field Practicum II 6
### Summer
- MSW 503 Policy Analysis and Change 3
- MSW 525 Practice IV: Advanced Generalist Practice with Groups 3
- Credits 9
### Third Year
#### Fall
- MSW 524 Practice III: Advanced Practice with Individuals 3
- MSW 547 Social Work Mental Health Practice 3
- MSW 554 Advanced Generalist Field Experience I 6
- Credits 12
#### Spring
- MSW 526 Practice V: Advanced Practice with Families 3
- MSW 527 Practice VI: Advanced Practice with Organizations and Communities 3
- MSW 555 Advanced Generalist Field Experience II 6
- Credits 12
- Total Credits 60

### Course of Study: Part-Time Advanced Standing (34 credits)

<table>
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<tr>
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<td></td>
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<tr>
<td><strong>Fall</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSW 525</td>
<td>Practice IV: Advanced Generalist Practice with Groups</td>
<td>3</td>
</tr>
<tr>
<td>MSW 547</td>
<td>Social Work Mental Health Practice</td>
<td>3</td>
</tr>
<tr>
<td>Credits</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td><strong>Spring</strong></td>
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</tr>
<tr>
<td>MSW 503</td>
<td>Policy Analysis and Change</td>
<td>3</td>
</tr>
<tr>
<td>MSW 527</td>
<td>Practice VI: Advanced Practice with Organizations and Communities</td>
<td>3</td>
</tr>
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<td>Credits</td>
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<td>6</td>
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<td><strong>Summer</strong></td>
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<tr>
<td>MSW 559</td>
<td>Social Work Practice &amp; Research for Advanced Standing</td>
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<td>MSW 560</td>
<td>Social Work Research I</td>
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<tr>
<td><strong>Fall</strong></td>
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<tr>
<td>MSW 524</td>
<td>Practice III: Advanced Practice with Individuals</td>
<td>3</td>
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<tr>
<td>MSW 554</td>
<td>Advanced Generalist Field Experience I</td>
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<tr>
<td>Credits</td>
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<td>9</td>
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<tr>
<td><strong>Spring</strong></td>
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</tr>
<tr>
<td>MSW 526</td>
<td>Practice V: Advanced Practice with Families</td>
<td>3</td>
</tr>
<tr>
<td>MSW 555</td>
<td>Advanced Generalist Field Experience II</td>
<td>6</td>
</tr>
<tr>
<td>MSW Electives</td>
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<table>
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<tbody>
<tr>
<td>MSW 590</td>
<td>Family and Child Welfare Policy</td>
<td>3</td>
</tr>
<tr>
<td>MSW 597</td>
<td>Special Topics</td>
<td>1-3</td>
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<td>Credits</td>
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<td>13-15</td>
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<td>Total Credits</td>
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<td>41-43</td>
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</tbody>
</table>

### Related Outside Elective Examples (choose one graduate level)

UNDERGRADUATE HONORS COLLEGE

Dean - Miriam S. Chaiken
Associate Dean and Director of National Scholarships - Tim Ketelaar
Assistant Dean for Development - Cindy Gwaltney Nicholson
Executive Administrative Assistant - Valerie Torres
Crimson Scholars Coordinator - Roman Gutierrez
Student Programs Coordinator - Abby Nayra

The Honors College is located in the Conroy Honors Center on the corner of University and Espina Avenues. Most honors classes are taught in the Conroy Honors Center.

Phone: (575) 646-2005
Website: http://honors.nmsu.edu/

Mission of the William Conroy Honors College

The mission of the New Mexico State University Honors College is to serve the citizens and state of New Mexico by providing an enriching environment for diverse, academically talented and motivated students. The Honors College also seeks to create a community of scholars and mentors that fosters personal growth, critical thinking, leadership, independence, curiosity and social responsibility. The college aspires to cultivate student potential to broadly understand and positively impact communities, organizations and the larger world. The Honors College aims to focus campus attention on excellence in undergraduate education while strengthening New Mexico State University’s reputation as the university of choice in New Mexico.

In support of this mission, the Honors College integrates the following objectives:

- Provide students with an interdisciplinary, intellectually challenging curriculum that integrates active and service-based learning;
- Promote university-wide undergraduate research opportunities, linking students with faculty mentors;
- Foster faculty enrichment and professional development;
- Encourage, mentor and guide students seeking postgraduate scholarships and fellowships;
- Offer students opportunities for developing leadership skills;
- Create a residential community that combines learning inside and outside the classroom.

In small classes taught by master teachers, students in the Honors College engage in lively discussion and collaborative investigation of interdisciplinary topics. By taking honors courses, students may also work toward completing general education requirements and disciplinary requirements in the major.

Students in the Honors College are ‘dual citizens’, meaning they enroll in both the college(s) of their major/minor and the Honors College. The Honors College does not offer a degree instead, it offers students the opportunity to graduate with various levels of honors distinction (described below).

The Honors Faculty

The Honors College faculty come from academic departments from throughout the university. Members of the faculty are chosen through a rigorous selection process and include many of New Mexico State University’s most distinguished teachers and researchers.

Professors Alexander, Amato, Bosland, Bronstein, Butler, Cleveland, Fouillade, Hammond, Harvey, Horodowich, Hubbell, Huhmann, Knapp, Lapid, Lawton, Linkin, Lodder, Malamud, Manning, Munson-McGee, Olberding, Serrano, Shearer, Stanford, Storm, Thompson

Associate Professors Armfield, Boeing, Clarkson, Guy, Herrera, Keleher, Ketelaar, Lee, Miller-Tomlinson, Morgan, Rourke, Salamaca-Riba, Schirmer

Assistant Professors Flores-Carmona, Hout

College Professors Fitzsimmons, Gilpin, Lavender, LaPorte, Masson, McCamley, Rochelle

Emeritus Professors Eamon, Ellis, Lapid, Ocepek, Rundell, Townley, Wolf

Admission to the Honors College

Students admitted to the Honors College are designated as Crimson Scholars, the following eligibility criteria apply:

Automatic Eligibility. Entering freshmen are automatically eligible for admission to the Honors College and Crimson Scholars by meeting one of the following criteria:

- composite ACT score of 26 (or 1170 SAT score); or
- high school GPA of 3.75 or higher

Admission by Petition. Entering freshmen who have an ACT score of at least 24 (or 1100 SAT score) or a high school GPA of 3.50 may submit a written petition for provisional admission to the Honors College using a form provided by the Honors College office upon the request of the student.

Transfer and Continuing Students. Transfer and continuing students who have earned at least 3 college credit hours will be eligible for admission to the college on the basis of a cumulative college GPA that meets eligibility requirements for continuing students (see below).

Eligibility for Continuing Membership. The eligibility criteria for continuing membership in the Honors College is the same as for continuing Crimson Scholars status. The requirements are:

- Fewer than 28 hours earned: 3.3 GPA
- More than 28 hours earned: 3.5 GPA

Appeals. Students who fall below the designated GPAs and lose their eligibility for Honors College status due to extraordinary circumstances may petition the College Admission Committee for readmission.

Enrolling in Honors Courses

Students do not have to be members of the Honors College to enroll in honors courses. Any eligible student may enroll. The eligibility requirements to enroll in lower-division honors courses are the same as those pertaining to admission to the college and continuation in the college. For upper-division courses, the requirement is a cumulative...
3.2 GPA. Students lacking these requirements may petition the Honors College Dean for permission on a case-by-case basis.

Graduating with University Honors

The Honors College offers two program options:

1. Graduation with University Honors and
2. The Honors Certificate.

Each option has separate eligibility requirements, benefits and forms of recognition for the student. Almost all honors courses fulfill university general education requirements. To have these courses count toward one of these programs, a student must earn at least a B.

Any student who attains an overall GPA of 3.5-3.749 and who completes 15 credits of honors coursework and the honors capstone is eligible to graduate with University Honors. Students who attain an average of 3.75 or better and who complete 15 credits of honors coursework and the honors capstone are eligible to graduate with Distinction in University Honors. Transcripts will certify graduation with University Honors or Distinction in University Honors. Students who complete the requirements for graduation with either distinction receive recognition in the commencement program, a Certificate of Distinction and a medallion upon graduation.

University Honors Requirements -- Suggested Sequence

Freshman-Sophomore Years

Three courses from the Honors Core (lower division) 9

Junior-Senior Years

Two 300- or 400-level Honors Certificate Program courses 6

Thesis or Final Project 3

Total Credits 18

Senior Capstone

In order to graduate from the Honors College with the designation of University Honors or Distinction in University Honors, a student must complete a Capstone. The Capstone is normally completed during the senior year and may be undertaken only if the student meets the eligibility requirements for graduation from the College (3.5 minimum GPA and the required courses). The Capstone carries 3 graded credit hours.

Before beginning the final project, the student must choose a faculty advisor and file with the College a proposal that is approved by the faculty advisor and the Dean of the Honors College. The final project is graded by the faculty advisor, who submits a final grade to the Dean of the Honors College.

Candidates for graduation with University Honors and Distinction in University Honors are expected to make public presentations of their final projects at one or more of the following:

1. the Undergraduate Research and Creative Arts Symposium,
2. a department seminar,
3. and/or a seminar sponsored by the Honors College.

The method of presentation shall be that deemed appropriate for the discipline in which the project is undertaken.

The written component of the final project shall be filed with the Honors College in a bound copy according to the guidelines established by the college.

The Senior Capstone may be any one of the following:

Thesis — The thesis is an independent scholarly or scientific research project that is undertaken with the advice and direction of a member of the university faculty. The thesis does not need to be on a topic in the student’s major field, but must meet the guidelines and protocols of the discipline in which it is written. The student’s faculty advisor will review the student’s thesis and determine a final grade.

Creative Arts or Performance Project — The Senior Creative Arts/Performance project may take the form of an exhibition, performance, recital or other venue deemed appropriate by the faculty advisor and the Dean of the Honors College. In addition to the performance or exhibition, the student must complete a written report or description of the project that is approved by the faculty advisor, to be filed with the Honors College.

Service Learning Project — The Service Learning Project shall be undertaken under the auspices and supervision of an agency approved by the Dean of the Honors College. A faculty advisor must approve the project and monitor its progress. The Service Learning Project must be more than simply a certain number of hours volunteered to an agency. It must also involve a creative and leadership element, such as the design of a program or policy that identifies a problem and meets a specific need of the agency. A time log and journal shall be kept by the student during the course of the project. A written report describing the objective and design of the project, as well as an evaluation of its successes and failures, must be submitted to the Honors College according to norms established by the college. The report must also contain a reflective component, demonstrating increased self-awareness and personal growth.

Honors Contract — An Honors Contract is a mechanism for adding an "honors dimension" to a course that is not listed as an honors course (HON prefix). The contract allows honors students to convert a regular non-honors course into an honors course that counts toward graduation with University Honors. The Honor Contract project should add an academic or experiential dimension to the course by introducing new material and/or experiences. Contract form may be downloaded from the Honors College website.

Community Service Options

The Honors College encourages its students to perform volunteer public service. Under certain circumstances, public service may be used as an alternative to completing some of the requirements for graduation from the Honors College. The following guidelines apply:

During the sophomore, junior or senior year, a student with at least a 3.5 GPA may undertake community service with an agency or organization in Doña Ana County (or an agency outside the area approved by the Honors College Dean) to earn a waiver of up to 3 of the hours required for University Honors (not including the Final Project). A minimum of 15 hours of community service per week, per semester is required for each honors credit hour to be waived. Community service hours must be verified by a supervisor of the agency or organization on a form approved by the Honors College. On-campus activities are not included under this option. The student must also certify that the community service hours are not being used for any course or degree requirement. Approval of the
Dean of the Honors College must be obtained prior to beginning volunteer service to be eligible for this option.

**International Study Option**

Students in the Honors College are strongly encouraged to participate in international study. An NMSU honors student with at least a 3.5 GPA may earn a waiver of up to 3 credit hours required for University Honors for such international study (not including the Final Project). This waiver will be awarded for college credit earned while participating in any international study program approved by the Honors College or the Office of International Study. One honors hour will be waived for each 3 semester credit hours earned with a grade of ‘A’, ‘B’, or ‘S’. Permission to use this option must be approved in advance by the Honors College.

Note: Waiver of university honors credit for service learning or international study does not reduce or affect in any way the total number of hours required for graduation. Waiver of honors credit for service learning or international study cannot be applied toward the final project requirement.

**Honors Certificate Program**

Sophomores, juniors and seniors with a cumulative grade-point average of 3.2 are eligible for the Honors Certificate Program. A student who completes at least two 300- or 400-level honors seminars will be given a Certificate of Distinction at graduation and special recognition in the commencement program. See the honors Dean for details on available seminars, Honors College, Conroy Honors Center.

**Crimson Scholars Program**

The Crimson Scholars Program is a benefits and recognition program for academically superior students who have a cumulative 3.5 GPA and are taking three or more credits per semester. Crimson Scholars receive a number of benefits, including:

- Automatic eligibility for all Honors courses
- Early registration
- Extended library check-out privileges
- Special advising
- The option to live in the Honors Living Learning Community in our residence hall.

Students who earned at least 75% of their credits from New Mexico State University with Crimson Scholar status at the time of graduation receive a "Crimson Scholar Graduate" notation on their transcript.

Students who complete 75% of their credits as Crimson hours from New Mexico State University at the time of applying for their degree, receive recognition in the commencement program and are eligible to purchase a Crimson Scholar cord for graduation.

Students who have maintained Crimson Scholars status for 24 Crimson hours from New Mexico State University earn a Crimson scholar pin.

To be eligible for the Crimson Scholars Program, applicants must be degree seeking.

- Entering freshmen must have either:
  - a minimum ACT standard composite score of 26;
  - a 3.75 or better high school GPA; or
  - a minimum SAT score of 1170; or
- Currently enrolled students must have a minimum cumulative GPA of 3.5 for 75% of the credits at NMSU
- Transfer students must have a 3.5 cumulative GPA from their previous institution(s) or complete 3 or more credits at NMSU for eligibility.

To maintain Crimson Scholar status:

- Freshmen entering on an ACT score must maintain a cumulative GPA of 3.5 and complete three or more credits per semester to continue in the program.
- Sophomores, juniors and seniors must maintain a minimum cumulative GPA of 3.5 and be currently enrolled in a total of 3 or more credits per semester at NMSU or any NMSU community college to retain their Crimson Scholars status.
- Crimson Scholars whose GPA drops below the required cumulative 3.5 or drop below the three credit minimum will be dropped from the program. If in the following semester, the student’s cumulative GPA and credits again meet the minimum requirement, the student will automatically be reinstated.

In recognition of the student’s academic achievement, a statement designating “Crimson Scholar Graduate” is placed on the student’s transcript after completion of 75% of credits earned at NMSU as Crimson hours at the time of graduation and a minimum cumulative GPA of 3.5. To be designated in the commencement program as a Crimson Scholar graduate, a student must complete a minimum 75% of credits earned at NMSU as Crimson hours at the time of applying for their degree. Crimson Scholars receive recognition in the commencement program and are eligible to purchase a Crimson Scholar cord for graduation. Students who complete 24 Crimson hours from New Mexico State University earn a Crimson Scholar pin. Crimson Scholars are entitled to early registration and library privileges. Additional information is available from the Crimson Scholars Office, located in the Conroy Honors Center.

**NOTE:** Crimson Scholars interested in work-study positions must submit a yearly Free Application for Federal Student Aid (FAFSA) and complete a financial aid file with the NMSU Office of Financial Aid.

1 does not include I or audit course designations at NMSU

**The Honors Living and Learning Community (HLLC)**

The New Mexico State University Honors Living and Learning Community (HLLC) is an educational initiative that links in-class and out-of-class learning experiences for honors students. The goals of the Honors Living and Learning Community are to:

1. supplement classroom learning experiences with co-curricular programming;
2. foster the development of an honors community that includes honors students, faculty, and staff; and
3. create a supportive environment for honors students.

Above all, the Honors Living and Learning Community aims to develop a small-college environment within the context of a large research university, thus giving students the benefits of both. Honors students, especially first-year students, are encouraged to take advantage of
this special opportunity. The Honors Living and Learning Community is comprised of three components:

The Conroy Honors Center — is the academic home of the Honors College. This historic building was designed by the renowned southwestern architect Henry C. Trost and built in 1908 to house the campus chapter of the YMCA. The Conroy Center houses the administrative offices of the program along with three seminar rooms, a student commons area, a kitchen and a computer lab.

The Honors Residence Hall — is the focus of NMSU's vibrant honors community. It is a place where honors students live among a community of excellent students with outstanding academic records and who are interested in getting the most out of the academic opportunities offered to them at a large research institution. It also hosts many social and extracurricular academic activities.

The Honors Residence Hall is equipped with an electronic classroom, where some introductory honors courses are taught. The honors faculty participate in residence hall programming and frequently attend residence hall floor meetings with students. The Honors Residence Hall is open to both men and women of any university class standing.

Honors College information:

Honors College, MSC 3HON
New Mexico State University
P O Box 30001
Las Cruces NM 88003-8001
Phone: (575) 646-2005

Crimson Scholars Program information:

Roman Gutierrez, Coordinator
Crimson Scholars Program, MSC 3HON
New Mexico State University
P O Box 30001
Las Cruces NM 88003-8001
Phone: (575) 646-2542
THE NMSU COMMUNITY COLLEGES

Chancellor • Garrey Carruthers
Executive Vice President and Provost • Daniel Howard
Associate Vice President and Deputy Provost • Greg Fant
President NMSU-Alamogordo • Kenneth Van Winkle
President NMSU-Carlsbad • John Gratton
President NMSU-Doña Ana • Renay Scott
President NMSU-Grants • Mickey Best

NMSU’s Community College campuses make two years of college education available to students in their home environment. The community colleges provide a high quality program of education for all full-time and part-time students; provide occupational education; and provide noncredit community education courses.

A student attending any NMSU Community College campus is enrolled as a New Mexico State University student and may change campuses without completing additional admission procedures.

Associate Degree Graduation Requirements

Associate degree programs are offered at the NMSU Community College campuses for those desiring specialized training for employment. Community, junior, and technical college transfer students may be admitted and classified on the basis of acceptable credits at two-year institutions. The Associate in prebusiness degree, administered by the College of Business, is available to NMSU Community College campus students completing the requirements as outlined in the “College of Business” section of this catalog. Most courses required for the Associate in Applied Science degree with options in electronics technology offered at the Carlsbad, Grants and Alamogordo campuses meet lower division requirements for the baccalaureate degree program in Electronics Engineering Technology, which is offered on the Las Cruces campus through the College of Engineering.

Math requirements in associate degree and certificate programs vary. ENGL 111G and all developmental studies courses in English, math and reading must be completed with a grade of C- or better. Please refer to your NMSU Community College campus catalog for details. The last 15 semester credits for an associate degree must be taken in residence at NMSU or one of the NMSU Community Colleges. Degree requirements remain in effect for six years. The designation, Meritorious Graduate, is awarded to the top 15 percent of the students receiving associate degrees within each college in any one academic year, provided 45 or more credits have been completed at NMSU and/or a NMSU Community College with computable grades.

Certificate Programs

In addition to the regular degree programs offered by the NMSU Community College campuses, certificate programs are available. Students should contact the NMSU Community College campus for information on available certificate programs.

NMSU Community College Campus Information

Information concerning NMSU Community College campus programs, class schedules, catalogs, registration and other data may be obtained from the NMSU Community College campus administration.

Kenneth Van Winkle, President
NMSU-Alamogordo Community College
2400 N. Scenic Dr.
Alamogordo, New Mexico 88310
Alamogordo Course Catalog
(575) 439-3696

John Gratton, President
NMSU-Carlsbad Community College
1500 University Drive
Carlsbad, New Mexico 88220
Carlsbad Course Catalog
(575) 234-9210

Renay Scott, President
NMSU-Doña Ana Community College
Box 30001, Dept. 3DA
Las Cruces, New Mexico 88003
Dona Ana Course Catalog
(575) 527-7510

Mickey Best, President
NMSU-Grants Community College
1500 Third Street
Grants, New Mexico 87020
Grants Course Catalog
(505) 287-6678
COURSE LISTINGS

Courses are titled in the following style:

ASTR 110G Introduction to Astronomy (4 cr. (3+3P))

- Course number (110) indicates the course is a freshman course.
- Suffix (G) indicates a New Mexico Common Core course.
- Suffix (V) indicates a Viewing a Wider World course.
- Suffix (H) indicates a Honors courses outside of the Honors prefix.
- Suffix (L) indicates a Laboratory course.
- Suffix (M) indicates a Multicultural course.
- Credits - The unit of university credit is the semester hour, which is the equivalent of one hour's recitation or a minimum of two hours of practice per week for one semester. The (3+3P) means that the class meets for 150 minutes per week for lecture and also requires 150 minutes per week of "laboratory" (practice, field work, or recitation).

Course Number Designation

- 100-199 – Freshman courses
- 200-299 – Sophomore courses
- 300-399 – Junior courses
- 400-499 – Senior courses
- 500-599 – First-year graduate courses
- 600-699 – Advanced graduate courses
- 700 – Ph.D. dissertation

In order to register for 300-level courses, a student must have met the basic academic skills requirements.

The letter N will be added as a suffix to the course number when the course credits are not applicable to the baccalaureate and specified associate degrees.

A

- A E-AEROSPACE ENGINEERING (A E) (p. 646)
- A EN-AGRICULTURAL ENGINEERING (A EN) (p. 647)
- A S-ARTS AND SCIENCES (A S) (p. 647)
- A ST-APPLIED STATISTICS (A ST) (p. 648)
- ACCT-ACCOUNTING (ACCT) (p. 649)
- ACES-AGRI, CONSUMER & ENV SCIE (ACES) (p. 651)
- AEEC-AGRICULTURAL ECON/ECON (AEEC) (p. 652)
- AERO-AEROSPACE STUDIES (AERO) (p. 653)
- AERT-AEROSPACE TECHNOLOGY (AERT) (p. 654)
- AG E-AGRICULTURAL ECONOMICS (AG E) (p. 655)
- AGRO-AGRONOMY (AGRO) (p. 657)
- AHS-ALLIED HEALTH SCIENCE (AHS) (p. 659)
- ANSC-ANIMAL SCIENCE (ANSC) (p. 660)
- ANTH-ANTHROPOLOGY (ANTH) (p. 665)
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A E 102. Introduction to Aerospace Engineering
1 Credit
A survey course of aeronautical, aerospace, and astronautical engineering, with an emphasis on basic aerospace concepts and major aerospace principles without going into detailed math and analysis. Students are given the opportunity to listen to guest speakers and participate in projects utilizing the NMSU Ultralight and NMSU wind tunnel. Restricted to: Main campus only.

A E 339. Aerodynamics I
3 Credits
Fluid properties, conservation equations, incompressible 2-dimensional flow; Bernoulli's equation; similarity parameters; subsonic aerodynamics: lift and drag, analysis and design of airfoils. May be repeated up to 3 credits. Restricted to: A E majors.
Prerequisite(s): M E 234 or M E 237 and M E 228 or MATH 392.

A E 362. Orbital Mechanics
3 Credits
Dynamics of exoatmospheric flight of orbiting and non-orbiting bodies; 2-body orbital dynamics and Kepler's laws; orbits in 3 dimensions; orbit determination; orbit design and orbital maneuvers; lunar and interplanetary trajectories. May be repeated up to 3 credits.
Prerequisite(s): M E 228 or MATH 392, M E 234 or M E 237, and M E 261.

A E 363. Aerospace Structures
3 Credits
Advanced concepts of stress and strain, introduction to the analysis of aero structures, complex bending and torsion, thin walled sections and shells, computational techniques. Prerequisites: C E 301

A E 364. Flight Dynamics and Controls
3 Credits
Fundamentals of airplane flight dynamics, static trim, and stability; spacecraft and missile six degree of freedom dynamics; attitude control of spacecraft. May be repeated up to 3 credits.
Prerequisite(s): M E 228 or MATH 392, M E 234 or M E 237, and M E 261.

A E 400. Undergraduate Research
1-3 Credits (1-3)
Performed with the direction of a department faculty member. May be repeated for a maximum of 6 credits.
Prerequisite(s): Consent of faculty member.

A E 405. Special Topics
3 Credits
Topics of modern interest to be offered by the departmental staff. Consent of instructor required.

A E 419. Propulsion
3 Credits
Propulsion systems, thermodynamic cycles, combustion, specific impulse; principles of gas turbines, jet engines, and rocket propulsion systems. Prerequisites: A E 439

A E 424. Aerospace Systems Engineering
3 Credits
Basic principles of top down systems engineering and current practice; preliminary and detailed design of aircraft and space vehicles, including requirement, subsystem interaction, and integration, tradeoffs, constraints and non-technical aspects.
Prerequisite(s): A E 362.

A E 428. Aerospace Capstone Design
3 Credits
Team Project-analysis, design, hands-on build test, evaluate.
Prerequisite(s)/Corequisite(s): A E 447. Prerequisite(s): A E 363 and A E 424.

A E 439. Aerodynamics II
3 Credits
Principles of compressible flow, momentum and energy conservation; thermal properties of fluids; supersonic flow and shock waves; basics of supersonic aerodynamics.
Prerequisite(s): A E 339, M E 240, and M E 328.

A E 447. Aerofluids Laboratory
3 Credits (2+3P)
Use of subsonic wind tunnels and other flow to study basic flow phenomena and methods of fluid measurement and visualization.
Prerequisite(s)/Corequisite(s): A E 439. Prerequisite(s): M E 345.

A E 451. Aircraft Design
3 Credits
Conceptual design of aircraft based on existing designs, empirical relationships, and theory. Dimensioning, structural design, and performance analysis of major subcomponents such as fuselage, wing, and propulsion system. Static stability and control analysis.
Prerequisite(s): A E 339 and A E 363.

A E 509. Individualized Study
3 Credits
Individualized study covering specialized topics in aerospace engineering. Consent of instructor required. Restricted to A E & M E majors.
A E 510. Special Topics
1-6 Credits (1-6)
Topics in aerospace engineering. May be repeated for a maximum of 6 credits. Consent of instructor required.

A E 527. Control of Mechanical Systems
3 Credits
Rigorous introduction to the control of dynamical systems, with a focus on mechanical systems. Includes basic systems theory, controllability, feedback and stabilization, observers and dynamic feedback, and applications of methods to systems of importance in mechanical engineering. Consent of instructor required. Cross-listed with: M E 527

A E 529. Nonlinear and Optimal Control
3 Credits
Introduction to optimal control theory, Pontryagin's Maximum Principle, control of simple mechanical systems, Lagrangian and Hamiltonian methods, introduction to geometric control-Lie algebras, distributions, controllability and observability. Cross-listed with: M E 529

A E 552. Introduction to Gasdynamics
3 Credits
Gas kinetics, rarefied gas dynamics, collision dynamics; velocity distribution function, finite rate chemical process; thermal nonequilibrium and chemically reacting flows; introduction to quantum and statistical mechanics; Boltzmann equation and the BGK model; moments of the Boltzmann Equation; the Navier-Stokes Equation; the structure of shock waves.

A E 562. Astrodynamics
3 Credits
Two-body problem, orbit analysis, and classical orbit determination methods; trajectory design and optimization; orbital maneuvers using impulsive or continuous thrust; relative motion and rendezvous; perturbations and Lagrange planetary equations; interplanetary mission design including gravity assists; introduction to the three-body problem, halo orbits, and invariant manifolds in mission design.

A E 566. Aeroelasticity
3 Credits
Introduction to aeroelasticity with emphasis on fluid-structure interactions occurring in aircraft. Phenomena considered include flutter/LCD (limit cycle oscillation), buffeting, divergence, and control reversal. Primary emphasis on structural dynamics, with use of simple aerodynamic models.

A E 598. Special Research Programs
1-3 Credits (1-3)
Individual investigations, either analytical or experimental. May be repeated for a maximum of 6 credits. Restricted to A E & M E majors.

A E 599. Master's Thesis
15 Credits (15)

A E 600. Doctoral Research
1-15 Credits (1-15)
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination. Graded: Thesis/Dissertation.

A E 700. Doctoral Dissertation
15 Credits (15)

A EN - AGRICULTURAL ENGINEERING (A EN)

A EN 459. Design of Water Wells/Pumping Systems
3 Credits
Design of water wells; selection and specification of pumps and power units.
Prerequisite: C E 382.

A EN 475. Soil and Water Conservation
3 Credits
Types and extent of erosion. Design and operation of structural and vegetative systems to control erosion. Elements of hydrology.
Prerequisite: C E 331.
Corequisite: C E 382 or consent of instructor.

A EN 478. Irrigation and Drainage Engineering
3 Credits (2+3P)
Design and operation of surface and sprinkler irrigation systems; pumping and conveyances; introduction to principles and practices of drainage systems and wells.
Prerequisite: C E 382 or consent of instructor.

A EN 498. Special Topics
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

A S - ARTS AND SCIENCES (A S)

A S 100. Insights: University Experience for Future Careers
1 Credit
Research and investigation of college majors and career opportunities.

A S 101. Success Seminar
1 Credit
Academic and personal strategies and campus resources to enhance scholastic achievement. May be repeated up to 1 credits.

A S 102. Career Planning and Development
1 Credit
Individual assessment of self, the world of work, and the career decision making process.

A S 103. Quantitative Foundations
1-3 Credits (1-3)
Course is designed to prepare students for College level mathematics. Initial assessments generate individualized paths to mastery of fundamental skills. Course also covers strategies and campus resources to enhance scholastic achievement. Traditional Grading with RR. Restricted to Las Cruces campus only.

A S 200. Interdisciplinary Topics
1-4 Credits
An interdisciplinary approach to subject matter cutting across departmental fields. Specific subjects to be announced in the Schedule of Classes.

A S 300. Interdisciplinary Topics
1-3 Credits
An interdisciplinary approach to subject matter cutting across departmental fields. Specific subjects to be announced in the Schedule of Classes. Graded S/U.
A S 305. Prehealth Internship
1-3 Credits
Placement with an office of a health professional. May be repeated for a maximum of 3 credits. Student must be registered with the Prehealth Advisory Committee and must have a minimum of 15 credits completed at NMSU. Consent of instructor required. Graded: S/U.
Prerequisite(s): Minimum junior standing, 2.5 GPA.

A S 350. Faculty Lead International Travel
1-3 Credits (1-3)
This is an intensive Faculty Led International Program and earns an additional credit(s) for participation the FLiP. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): Students need to be enrolled or have taken the course related to the Faculty Led International Program.

A S 480. Topics in Pharmacy
12-18 Credits (12-18)
This course accepts the transfer of credits from the University of New Mexico College of Pharmacy to New Mexico State University for students who are participants in the UNM/NMSU Pre-Pharmacy Cooperative Program. May be repeated up to 18 credits. 35 must be General Education, 48 must be upper division, and 6 must be Viewing a Wider World. Restricted to: Bachelor of Individualized Studies - Pre-Pharmacy majors.
Prerequisite(s): Student must have completed 91 undergraduate credits at NMSU.

A S 490. Advanced Topics in Pharmacy
12-18 Credits (12-18)
This course accepts the transfer of credits from the University of New Mexico College of Pharmacy to New Mexico State University for students who are participants in the UNM/NMSU Pre-Pharmacy Cooperative Program. May be repeated up to 18 credits. 35 must be General Education, 48 must be upper division, and 6 must be Viewing a Wider World. Restricted to: Bachelor of Individualized Studies, Pre-Pharmacy majors.
Prerequisite(s): Student must have completed 91 undergraduate credits at NMSU.

A ST- APPLIED STATISTICS (A ST)

A ST 251G. Statistics for Business and the Behavioral Sciences
3 Credits
Techniques for describing and analyzing data; estimation, hypothesis testing, regression and correlation; basic concepts of statistical inference. Same as STAT 251G.
Prerequisite: C- or better in MATH 120.

A ST 311. Statistical Applications
3 Credits
Techniques for describing and analyzing economic and biological data; estimation, hypothesis testing, regression and correlation; basic concepts of statistical inference.
Prerequisite(s): MATH 120.

A ST 450. Special Topics
1-4 Credits
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

A ST 456. Statistical Methods and Data Analysis
3 Credits
Methods for sampling and estimation; analysis of variance and elementary experimental designs; linear regression and correlation; multiple regression, variable selection methods and residual analysis; introduction to statistical packages.
Prerequisite(s): A ST 251, A ST 311, or equivalent.

A ST 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval of the department head. Maximum of 3 credits per semester and a grand total of 3 credits.

A ST 503. SAS Basics
2 Credits (1+2P)
An introduction to the statistical software package, SAS, and its utilization in an interactive computing environment, primarily PC/SAS. Provides a fundamental understanding of the structure of SAS, its data management capabilities, and how to invoke a variety of descriptive and simple statistical SAS procedures.
Corequisite(s): A ST 505, or consent of instructor.

A ST 504. Statistical Software Applications
1 Credit
Optional Computing course to accompany A ST 506. Computer analysis of topics covered in A ST 505 and A ST 506.
Prerequisite(s): A ST 503 or consent of instructor.
Corequisite(s): A ST 506.

A ST 505. Statistical Inference I
4 Credits (3+2P)
A qualitative introduction to the concepts and methods of statistical inference. Sampling, frequency distributions (z, t, x2, F), estimation, and testing. One-way analysis of variance. Simple linear regression.
Prerequisite: consent of the instructor.

A ST 506. Statistical Inference II
3 Credits (2+2P)
Introduction to multiple regression; the analysis of variance for balanced studies; multiple comparisons, contrasts, factorials, experimental designs through split plots.
Prerequisite: A ST 505 and the ability to use a standard computer package such as SAS (may be satisfied by A ST 503) or consent of instructor.

A ST 507. Advanced Regression
3 Credits
Examination of multiple regression; residual analysis, collinearity, variable selection, weighted least squares, polynomial models, and nonlinear regression: linearizable and intrinsically nonlinear models.
Prerequisites: A ST 503 and A ST 505 or consent of instructor.

A ST 508. Analysis of Advanced Designs and Related Topics
3 Credits
Complete and incomplete block designs; fixed, mixed, and random models; unbalanced data; analysis of covariance; nested experiments; fractional factorials.
Prerequisite(s): A ST 503 and A ST 506; or consent of instructor.
A ST 515. Statistical Analysis with R
3 Credits
Introduction to R data types, basic calculations and programming, data input and manipulation, one and two sample tests, ANOVA, regression, diagnostics, graphics, probability distributions, and basic simulations in the R software environment.
Prerequisite(s): A ST 505 or equivalent with consent of instructor.

A ST 521. Sampling Methodology
3 Credits (3+2P)
Methodology of sampling finite populations using design-based (simple random, stratified, systematic, cluster, and multistage), model-based (regression and ratio estimators), and adaptive sampling. Properties of estimators under all designs are discussed.
Prerequisite(s): Either A ST 505 or A ST 565, or consent of instructor.

A ST 522. Survey Sampling
2 Credits (3+2P)
Techniques of survey sampling (mail questionnaire and telephone surveys) applicable to social sciences. Techniques of questionnaire preparation and methods of evaluating results are presented.
Prerequisite: A ST 521, or consent of instructor.

A ST 523. Biological Sampling (s)
3 Credits
Methods of sampling biological populations: area frame, quadrant, line intercept, line transect, and mark-recapture. May be repeated up to 3 credits.
Prerequisite(s): A ST 505 or consent of instructor.

A ST 545. Time Series Analysis and Applications
3 Credits
A systematic exposition of the methods for analyzing, modeling, and forecasting time series. Emphasizes underlying ideas and methods rather than detailed mathematical derivations, using SAS, BMDP, IMSL, and Fortran. May be repeated up to 3 credits.
Prerequisite(s): A ST 503 and A ST 505, or consent of instructor.

A ST 550. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

A ST 551. Introduction to Statistical Consulting
1 Credit
Consideration of published material in the consulting process. Restricted to majors. Graded S/U.
Prerequisite: consent of instructor.

A ST 552. Advanced Statistical Consulting
1 Credit
Continuation of A ST 551 with emphasis on dealing with clients in order to identify statistically relevant features of a research study. Restricted to majors. Graded S/U.
Prerequisite: A ST 551.

A ST 553. Practicum in Statistical Consulting
1 Credit
Supervised experience under the guidance of senior faculty. May be repeated for a maximum of 2 credits. Restricted to majors. Graded S/U.
Prerequisite: A ST 552.

A ST 555. Applied Multivariate Analysis
3 Credits
Multivariate analysis of linear statistical models, including MANOVA and repeated measures. Analysis of correlation and covariance structures, including principal components, factor analysis, and canonical correlation. Classification and discrimination techniques.
Prerequisite(s): A ST 506 and A ST 504 or consent of instructor.

A ST 565. Statistical Analysis I
4 Credits (3+2P)
An analytic introduction to the theory and methods of statistical inference. Sampling, frequency distributions (z, t, x², F), estimation, testing, and simulation.
Prerequisite: MATH 291G or consent of instructor.

A ST 566. Statistical Analysis II
4 Credits (3+2P)
Continuation of A ST 565.
Prerequisite: A ST 565 or consent of instructor.

A ST 567. Applied Linear Models I
3 Credits
The mean model, including constraints, approach to linear models; nonidentity variance-covariance matrices. Some emphasis on computational aspects and relation to statistical packages.
Prerequisite: A ST 565 or consent of instructor.

A ST 568. Applied Linear Models II
3 Credits
The relation of full to less-than-full rank linear models; complex data structures, including messy data, empty cells, and components of variance: extensions to categorical data analysis and nonparametric methods. Continues some emphasis on computational aspects.
Prerequisite: A ST 567.

A ST 596. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval by department head. May be repeated for a maximum of 3 credits.
Prerequisite: consent of instructor.

A ST 598. Special Research Problems
1-6 Credits
Individual analytical or experimental projects. Restricted to majors. Graded S/U.

A ST 599. Master's Thesis
1-6 Credits
Thesis.

ACCT-ACCOUNTING (ACCT)

ACCT 101. Supplemental Instruction to ACCT 221
1 Credit
Collaborative workshop for students in ACCT 221 – Financial Accounting. Course does not count toward departmental degree requirements. May be repeated up to 2 credits. Restricted to Las Cruces campus only.
Corequisite(s): ACCT 221.

ACCT 200. A Survey of Accounting
3 Credits
Emphasis on financial statement interpretation and development of accounting information for management. For engineering, computer science, and other non business majors. Community Colleges only.
Prerequisite: one C S course or consent of instructor.
ACCT 221. Financial Accounting
3 Credits
Interpretation and use of financial accounting information for making financing, investing, and operating decisions.

ACCT 222. Management Accounting
3 Credits
Development and use of accounting information for management decision making.
Prerequisite(s): ACCT 221.

ACCT 301. Financial Accounting I
3 Credits
Concepts, principles, and practices of financial accounting, stressing the determination of income and financial position. A student who does not pass the class within three attempts will not be allowed to take class for a fourth.
Prerequisite(s): C or better in ACCT 221 and ACCT 222.

ACCT 302. Financial Accounting II
3 Credits
A continuation of ACCT 301.
Prerequisite(s): C or better in ACCT 301.

ACCT 351. Accounting Systems
3 Credits
Covers accounting information systems as processors of data for financial reporting and control of economic organizations.
Prerequisite(s): ACCT 221 and ACCT 222.

ACCT 353. Cost Accounting
3 Credits
The development and use of cost accounting information for inventory valuation, income determination, and cost control. A student who does not pass the class within three attempts will not be allowed to take class for a fourth.
Prerequisite(s): C or better in both ACCT 221 and ACCT 222.

ACCT 403. Federal Taxation I
3 Credits
Basic federal income tax laws; emphasis on determination of taxable income of individuals. A student who does not pass the class within three attempts will not be allowed to take class for a fourth.
Prerequisite(s): A "C" or better in ACCT 221 and ACCT 222.

ACCT 451. Auditing Theory and Practices
3 Credits
Auditing standards, audit evidence, auditors reports and opinions, and professional responsibilities.
Prerequisite(s): ACCT 351 and C or better in ACCT 302.

ACCT 455. Federal Taxation II
3 Credits
Federal income tax laws applicable to partnerships, corporations, fiduciaries, tax research, tax planning.
Prerequisite(s): C or better in ACCT 403 or consent of instructor.

ACCT 456. Accounting for Nonprofit Organizations
3 Credits
Control and reporting problems unique to governmental units and other nonprofit organizations. Fund accounting principles, procedures, and reports.
Prerequisite(s): C or better in ACCT 302.

ACCT 460. Fraud Examination and Prevention
3 Credits
Covers business fraud as it occurs in American society. Emphasis is on occupational fraud and financial statement fraud. Examines various types of fraud, its symptoms and effective investigation techniques. Effective fraud prevention measures are discussed throughout the course. Emphasizes case studies and the application of principles to actual fraud cases.
Prerequisites: a C- or better in ACCT 451 or concurrent enrollment.

ACCT 490. Selected Topics
1-3 Credits
Current topics in accounting. Prerequisites vary according to the seminar offered. May be repeated for a maximum of 12 credits under different subtitles.

ACCT 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

ACCT 500. Concepts in Accounting
1 Credit
Development, interpretation, and use of accounting information for financing, investing, operating, and managerial decision making.
Prerequisite(s): Admitted to MBA program.

ACCT 503. Accounting for Managers
3 Credits
Concepts and principles of financial and managerial accounting. Presents techniques used to measure business transactions, prepare financial statements, techniques for management decision-making, planning, and control. Not open to MAcc students.
Prerequisite(s): B or better in both ACCT 221 and ACCT 222.

ACCT 510. Technical and Professional Communication for Accountants
3 Credits
Effective writing strategies for professional communications. Students will learn to write with a professional style and proper English usage and to work with a variety of technical and lay audiences. Emphasis on initiation, planning, composition, and evaluation of business and accounting workplace scenarios to develop communication skills used in a business environment. Restricted to: Master of Accountancy majors.

ACCT 525. Advanced Cost-Managerial Accounting
3 Credits
Advanced cost-managerial concepts with a quantitative emphasis. Integrates cost-managerial concepts, quantitative tools, organization theory, behavioral concepts and computer methodology. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 353.

ACCT 530. Advanced Accounting
3 Credits
This course is designed to provide in-depth study of current financial accounting concepts related to business combinations, financial statement consolidations, and foreign currency transactions and translations. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 302 with a grade of C or better.
ACCT 544. Financial Statement Analysis and Valuation
3 Credits
Valuation of firms using financial information, financial statement analysis, and the valuation of individual assets and liabilities. Restricted to: Master of Accountancy majors.
Prerequisite(s): Acct 302; Graduate students only.

ACCT 550. Special Topics
3 Credits
Seminars in current topics in various areas of accounting including financial, managerial, auditing, taxation, systems, and fund accounting. Prerequisites vary according to topic being offered.

ACCT 551. Advanced Auditing Theory and Practice
3 Credits
Understanding and evaluating internal control in an EDP environment. Statistical sampling applications and current issues in auditing. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 451.

ACCT 554. Accounting Theory
3 Credits
Prerequisite(s): ACCT 302.

ACCT 555. Federal Tax Research
3 Credits
Tax research methodology including case materials, critical judicial decisions, journal articles, and research services. Emphasis on tax planning. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 403.

ACCT 559. Ethics and Professionalism in Accounting
3 Credits
Introduction to ethical reasoning, integrity, objectivity, independence, and professional accounting issues. Students will apply the concepts and theories to accounting-specific cases. Restricted to: Master of Accountancy majors.
Prerequisite(s): C or better in ACCT 451.

ACCT 560. Taxation of Corporations and Shareholders Advanced
3 Credits
Effects of taxation on the organization, operation, and reorganization of corporations and on their shareholders. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 403.

ACCT 564. Financial Accounting Research
3 Credits
Interpretation and application of accounting principles to financial reporting issues of business and nonbusiness organizations. Consent of Instructor required. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 302.

ACCT 570. Taxation of Partnerships
3 Credits
Taxation of partnership contributions and distributions, transfer of partnership interests, and allocations of partnership income. Also includes taxation of S corporations. Restricted to: Master of Accountancy majors.
Prerequisite(s): ACCT 403.

ACCT 580. Professional Accountancy
3 Credits
Prepares students for the accounting profession and professional certification through study of a wide range of topics similar to those a student might encounter in their first year of employment. Restricted to: Master of Accountancy majors.

ACCT 598. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval of the department head. A maximum of 3 credits may be earned.
Prerequisite: consent of instructor.

ACCT 599. Master's Thesis
15 Credits
Thesis.

ACES-AGRI, CONSUMER & ENV SCIE (ACES)

ACES 101. Agricultural Leadership Development
1-3 Credits (1-3)
This course will introduce the student to skill sets necessary to engage in the process of leadership through an applied project. A broad spectrum of principles and applications associated with the College of Agricultural, Consumer and Environmental Sciences will be employed. The development of a specific project through a collaborative process will be required. Students will be engaged in hands-on, real-time experiences applicable to agriculture. Course may be repeated once. Student must have a 3.5 GPA and above. Consent of Instructor required.

ACES 111. Freshman Orientation
1 Credit
Orientation to University life, including the understanding and utilization of resources that promote University success. Designed to promote success in achieving a career objective and perseverance for degree completion. Promotes a recognition of changes required in moving from high school to the University. Eight weeks in length, required for all freshmen in the College of Agricultural, Consumer and Environmental Science.

ACES 121. Financial Fitness for College Students
1 Credit
An introduction to personal financial practices in post high school and/ or college lives. Emphasis is placed on budgeting, savings, investment, college debt, student loans, credit cards, scams and consumer protection.

ACES 199. Academic Excellence
1-3 Credits (1-3)
Academic curriculum of excellence that includes the development of collaborative learning and student success environment, learning diverse learning styles and multiple intelligences, and developing multi-contextual academic communication styles. Restricted to: Open to all ACES majors. Restricted to Las Cruces campus only.
ACES 201. Agricultural Leadership Development
1-3 Credits (1-3)
This course will introduce the student to skill sets necessary to engage in the process of leadership through an applied project. A broad spectrum of principles and applications associated with the College of Agricultural, Consumer and Environmental Sciences will be employed. The development of a specific project through a collaborative process will be required. Students will be engaged in hands-on, real-time experiences applicable to agriculture. Course may be repeated once. Student must have a 3.5 GPA and above. Consent of Instructor required.

ACES 301. Agricultural Leadership Development
1-3 Credits (1-3)
This course will introduce the student to skill sets necessary to engage in the process of leadership through an applied project. A broad spectrum of principles and applications associated with the College of Agricultural, Consumer and Environmental Sciences will be employed. The development of a specific project through a collaborative process will be required. Students will be engaged in hands-on, real-time experiences applicable to agriculture. Course may be repeated once. Student must have a 3.5 GPA and above. Consent of Instructor required.

ACES 305. Advanced Leadership and Communication in Agricultural Sciences
1-3 Credits (1-3)
Theory and application of advanced communication techniques, focusing on public speaking and public relations, are emphasized in this course for current and potential college ambassadors. May be repeated to a maximum of 8 credits. Consent of instructor required.

ACES 401. Agricultural Leadership Development
1-3 Credits (1-3)
This course will introduce the student to skill sets necessary to engage in the process of leadership through an applied project. A broad spectrum of principles and applications associated with the College of Agricultural, Consumer and Environmental Sciences will be employed. The development of a specific project through a collaborative process will be required. Students will be engaged in hands-on, real-time experiences applicable to agriculture. Course may be repeated once. Student must have a 3.5 GPA and above. Consent of Instructor required.

AECC-AGRICULTURAL ECON/ECON (AECC)

AECC 501. Microeconomic Theory
3 Credits
A rigorous re-examination of the pricing mechanism in the goods and factor markets. Development of theoretical tools of general applicability. Prerequisite(s): ECON 371 and ECON 457, or consent of instructor.

AECC 502. Macroeconomic Theory
3 Credits
Contemporary aggregate theory regarding the interrelationships among national income, employment, the price level, money supply and interest rates, and implications of this theory for public policy in a mixed economy.

AECC 511. Advanced Futures and Options Markets
3 Credits
Advanced hedging and speculating strategies using futures and options contracts. Coverage includes interest rates, stock indexes, metals, currencies, livestock, and grains. Concepts of price analysis (technical and fundamental) and basis analysis; technical paper is required. Same as AG E/FIN 311 with additional coursework required at the graduate level. Cannot receive credit for both AG E/FIN 311 and AECC/FIN 311. Crosslisted with: FIN 511.

AECC 520. International Agricultural Trade Theory and Policy
3 Credits
Review and analysis of international trade models. Analysis of the effects of trade instruments such as tariffs, quotas, and subsidies on welfare and income distribution. Analysis of bilateral, regional, and multilateral trade agreements and their effect on the agricultural sector from both country-specific and global perspectives. Prerequisite: ECON 371.

AECC 522. Public Sector Economics I
3 Credits
Introduction to the economic rationale for government intervention in the economy and the effects of that intervention on economic agents and the economy in general. Emphasis on the expenditure side of government policies. Same as GOVT 522.

AECC 523. Public Sector Economics II
3 Credits
A continuation of AECC 522. Concentrates on the economic effects of taxation. Same as GOVT 523.

AECC 526. Global Food Supply Chain Management
3 Credits
This course aims to provide students a basic understanding of supply chain management issues, and encourages them to analyze problems from a systems perspective, and introduce them to a number of decision tools that are currently being used by the industry such as process analysis, product design, waiting line management, quality control, just-in-time, and inventory management.

AECC 528. Economic Development
3 Credits
A graduate-level exposition of microeconomic and macroeconomic theory of why and how nations allocate resources to grow and develop. Strong emphasis is given to understanding the economic problems facing developing nations.

AECC 540. Econometrics I
3 Credits
An integration of quantitative and statistical techniques for research and management in economics and business. Prerequisite(s): ECON 457 and ECON 405 or A ST 505.

AECC 545. Advanced Agricultural Policy
3 Credits
Historical and cultural background of food and agricultural policy in the United States. Analysis of food and agricultural problems, policy-making and implementation. Economic evaluation of specific U.S. food and agricultural policy instruments, their domestic and international impacts. Same as AG E 445V with additional work required at the graduate level. Cannot receive credit for both AG E 445V and AECC 545. Prerequisite: consent of instructor.
AECC 550. Advanced Microcomputer Applications in Agriculture  
3 Credits (2+2P)  
An advanced course in electronic spreadsheets and the concepts and tools of database management emphasizing agricultural applications. Taught with AG E 450 with additional coursework required at the graduate level. Cannot receive credit for both AG E 450 and AECC 550.  
Prerequisite(s): AG E 250G or consent of instructor.  

AECC 551. Advanced Agribusiness Marketing  
3 Credits  
Applications course in which self-managed teams apply marketing theory in the development and presentation of marketing plans for food and agribusiness firms. Course includes analysis of marketing problems with emphasis on strategic marketing issues changing trade policies, and global competitiveness.  
Prerequisite: consent of instructor.  

AECC 556. Advanced Agribusiness Management  
3 Credits  
Integration of production, marketing, accounting, finance, agricultural policy, human behavior, and business environment concepts in management of agricultural businesses using a decision case approach.  

AECC 575. Economics of Water Resource Management and Policy  
3 Credits  
Focuses on issues, approaches and methods used in the assessment of water resource management and policy problems. Extends and further develops student understanding and comprehension of specific economic concepts and methods that are useful in the assessment and management of water resources, including cost-benefit analysis, welfare economics, non-market valuation, watershed management, and consideration of equity and ethical concerns. Students will develop critical reasoning, communication and analytic skills through active class discussions and assignments that emphasize both quantitative and written products. May be repeated up to 3 credits.  

AECC 585. Production Economics  
3 Credits  
Application of microeconomic theory to problems and decisions of food and agricultural firms. The theoretical foundation of production economics and the theory of the firm are developed.  
Prerequisites: MATH 142G, ECON 371, and ECON 457.  

AECC 590. Special Topics  
3 Credits  
Seminars in selected current topics in the various areas of agricultural economics and economics. Offerings will carry a subtitle.  
Prerequisite: consent of instructor.  

AECC 593. Internship  
1-6 Credits  
Supervised professional on-the-job training experience in policy analysis.  

AECC 594. Internship  
1-6 Credits  
One semester to six months internship with a regulated firm or public utility commission. A faculty member will direct and evaluate the internship. For AECC regulatory option students only.  

AECC 595. Internship  
3 Credits  
Supervised professional on-the-job learning experience.  
Prerequisite(s): Consent of instructor.  

AECC 596. Individual Study  
1-3 Credits  
Individual study programs. Each offering will carry a subtitle. Maximum of 3 credits in a semester and 6 credits in a program.  
Prerequisite: consent of instructor.  

AECC 597. Non-Thesis Research Project  
1-3 Credits (1-3)  
Individual investigations, either analytical or experimental. Maximum of 3 credits per semester. No more than 3 credits toward a degree.  

AECC 598. Creative Component Project  
3-6 Credits (3-6)  
Individual investigations, either analytical or experimental. A minimum of 3 to 6 credits per semester. No more than 6 credits toward degree. Consent of instructor required. Restricted to AECC majors.  
Prerequisite(s): Consent of Instructor.  

AECC 599. Master’s Thesis  
15 Credits  
Thesis.  

AERO-AEROSPACE STUDIES (AERO)  

AERO 121. The Air Force Today I  
2 Credits (1.25+2P)  
Survey course on the USAF and AFROTC. Includes mission and organization of the Air Force, officer ship and professionalism, military customs and courtesies, as well as basic communication skills. Leadership Lab practicum, AERO 000 is included.  

AERO 122. The Air Force Today II  
2 Credits (1.25+2P)  
Continuation of AERO 121, with emphasis on Air Force officer opportunities, group leadership problems, and further development of communication skills (oral and written). Includes Leadership Lab practicum, AERO 000.  

AERO 221. The Air Force Way I  
2 Credits (1.25+2P)  
Topics include: Air Force heritage, Air Force leaders, an introduction to ethics and values, and an application of communication skills. Facilitates the transition from Air Force ROTC cadet to Air Force ROTC candidate. Includes Leadership Lab practicum, AERO CID.  

AERO 222. The Air Force Way II  
2 Credits (1.25+2P)  
Continuation of AERO 221, including an introduction to leadership, quality Air Force, and continued application of communication skills. Includes Leadership Lab practicum, AERO 000.  

AERO 223. Air Force Leadership Development  
1 Credit  
This course prepares cadets to excel in field training. Cadets are prepared in all facets of field training, including: leadership competency evaluations, the Cadet’s Guide to Field Training, individual drill evaluations, attention to detail, dining hall procedures, maintenance of living areas, and the group problem solving process. Restricted to: Main campus only.
AERO 301. Air Force Leadership and Management I  
4 Credits (3+2P)  
Study of the leadership and quality management fundamentals, professional knowledge, Air Force doctrine, leadership ethics, and communication skills required of an Air Force junior officer. Includes Leadership Lab practicum, AERO 000.  
Prerequisites: Completion of AERO 121/122 and 221/222, or permission of instructor.  

AERO 302. Air Force Leadership and Management II  
4 Credits (3+2P)  
Continuation of AERO 301, with case studies used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts studied. Continued emphasis on developing communication skills. Includes Leadership Lab practicum, AERO 000. May be repeated up to 4 credits.  
Prerequisite(s): Completion of AERO 121/122 and 221/222, or permission of instructor.  

AERO 401. Preparation for Active Duty I  
4 Credits (3+2P)  
Examines the national security process, regional studies, and Air Force doctrine. Special topics focus on the military as a profession, officership, and civilian control of the military. Communication skills (oral and written) are refined. Includes Leadership Lab practicum, AERO 000.  
Prerequisites: Completion of AERO 121/122, 221/222, and 301/302, or permission of instructor.  

AERO 402. Preparation for Active Duty II  
4 Credits (3+2P)  
Continuation of AERO 401, concentrating on advanced leadership ethics, military justice, preparation for active duty, and current issues affecting military professionalism. Continued emphasis on communication skills necessary to succeed as a junior Air Force officer. Includes Leadership Lab practicum, AERO 000. May be repeated up to 4 credits.  
Prerequisite(s): Completion of AERO 121/122, 221/222, and 301/302, or permission of instructor.  

AERT-AEROSPACE TECHNOLOGY (AERT)  

AERT 105. Aerospace Engineering PLTW  
4 Credits (2+4P)  
Introduce the student to Aerospace Engineering (AE) concepts and history. Studied topics include History of Flight, Aerodynamics, Rocket Science, Orbital Physics, Systems Engineering and Life Support/Environmental Systems. Restricted to: Community Colleges only.  

AERT 111. Basic Electricity and Electronics  
3 Credits (2+2P)  
Fundamentals of electricity and electronics, basic circuit devices, meters, transistors, integrated fiber optics, and industrial application topics. Minimum math proficiency of CCDM 103 or CCDM 104 required or math placement into CCDM 114 or higher. Restricted to: Community Colleges only. Crosslisted with: ELT 160  

AERT 121. Introduction to the Aerospace Workplace  
4 Credits (2+4P)  
The course covers space history, regulations, controls, aerospace industry terminology and acronyms as well as hands-on activities related to tools, procedures, and standard practices. Restricted to: Community Colleges only.  

AERT 122. Aerospace Safety and Quality  
3 Credits (2+2P)  
Covers identification of hazards, personal protective equipment, safe practices, and protection of personnel, property, and equipment in the aerospace environment. Basic principles of quality assurance engineering and quality control relating to work processes will be discussed. Restricted to: Community Colleges only.  

AERT 211. Electromechanical Devices  
4 Credits (2+4P)  
Theory and application of electromechanical devices and digital control circuits. Includes AD and DA converters, pneumatics, hydraulics, programmable logic controllers, DC, AC and stepper motors, and servomechanisms. Crosslisted with: MAT 240.  
Prerequisite(s): ELT 160.  

AERT 212. Materials and Processes (Basic Metallurgy)  
3 Credits (2+2P)  

AERT 213. Aerospace Fluid Systems  
3 Credits (2+2P)  
This course includes a familiarization of fluid system components, characteristics, and applications. Cryogenic and hypergolic materials and high pressure systems are also covered. Restricted to: Community Colleges only.  

AERT 214. Aerospace Systems  
3 Credits (2+2P)  
This course provides an introduction to expendable and reusable spacecraft systems including hydraulic, pneumatic, electrical, propulsion, mechanical, HVAC, and ECLSS (Environmental Control and Life Support System). How systems interact with computer and data acquisition systems is also covered. Restricted to: Community Colleges only.  

AERT 221. Inspection Requirements and Planning Metrology  
3 Credits (2+2P)  
Course teaches the benefits of inspection, quality control, material conditions. Also covers measurements, including temperature, ultrasonic, vibration and more. Restricted to: Community Colleges only.  

AERT 222. Electromechanical Systems  
3 Credits (2+2P)  
Principles and applications of preventive and corrective maintenance procedures on industrial production machines using systems technical and maintenance manuals to develop troubleshooting procedures using systems block and schematic diagrams. Pre/ Crosslisted with: MAT 245.  
Prerequisite(s)/Corequisite(s): AERT 221 or MAT 240. Prerequisite(s): ELT 160.  

AERT 224. Aerospace Tests and Measurements  
3 Credits (2+2P)  
This course covers electrical and mechanical testing procedures (primarily non-destructive testing), equipment, measurements, and instrumentation involved in aerospace systems. Verification of tool and equipment calibration is also covered. Pre/ Restricted to: Community Colleges only.  
Corequisite(s): AERT 221.
AG E 100. Introductory to Food and Agribusiness Management
3 Credits
Orientation to agricultural supply businesses, farm and ranch production, food markets, food processing and distribution, and food consumption. Microeconomic principles for managers. May be repeated up to 3 credits.

AG E 101. Careers in Food and Agribusiness
Orientation to agribusiness management. Students will learn about agricultural production and marketing in New Mexico, the United States, and the world. Students will be introduced to faculty and staff within the department, learn about career opportunities available to AEAB graduates, and develop a greater appreciation of agricultural management issues. May be repeated up to 1 credits. Restricted to Las Cruces campus only.

Prerequisite(s): Freshman status only or obtain consent of instructor.

AG E 200. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. Consent of instructor required.

AG E 210G. Survey of Food and Agricultural Issues
3 Credits
Survey of food and agricultural issues, including: geography of food production and consumption; human-agricultural-natural resource relations; agriculture in the United States and abroad; modern agribusiness; food safety; food, agriculture, and natural resources policy; ethical questions; role and impact of technology. Crosslisted with: FSTE 210G.

AG E 236. Principles of Food and Agribusiness Management
3 Credits
Description and application of management and financial principles, market planning, and organization theory in small business situations. May be repeated up to 3 credits.

AG E 250. Technology and Communication for Business Management
3 Credits (2+2P)
Understanding and improving skills for data analysis, information management and communication is the focus of this course. Drawing examples from a variety of management, business, technological and research situations, students discover the versatility and variety of uses of computer applications such as spreadsheet, database, presentation and document software. Emphasizing a 'hands-on' approach students learn the foundations of these tools and their use.

AG E 260. Introduction to Food and Agribusiness Accounting
3 Credits
Purpose and methods of keeping and analyzing farm and ranch records. Net worth and income statements, efficiency measures, analysis of the business, and tax computations. May be repeated up to 3 credits.

AG E 300. Internship
1-4 Credits (1-4)
Professional work experience under the supervision of a faculty member. May be repeated up to 6 credits. Consent of Instructor required. S/U Grading (S/U, Audit). Restricted to Las Cruces campus only.

Prerequisite(s): Consent of instructor.

AG E 305. Marketing and Food Agricultural Products
3 Credits
Description of agricultural processes and functions; food production and consumption patterns; agricultural product prices; nature of competition in agricultural product markets; commodity market. May be repeated up to 3 credits. Crosslisted with: MKTG 305.

Prerequisite(s): ECON 201G or ECON 252G.

AG E 311. Financial Futures Markets
3 Credits
Emphasis on financial instruments, currencies, and stock index futures. Principles of hedging, arbitrage, speculation, technical and fundamental price analysis, and trading strategies. Simulated computer trading game. Same as AEEC/FIN 511 with additional coursework required at the graduate level. Cannot receive credit for both AG E/FIN 311 and AEEC/FIN 511. Same as FIN 311.

AG E 313. Food and Agricultural Sales
3 Credits
Techniques of salesmanship including application of sales techniques. Identification and classification of buyer type and different approaches to sales based on client base. Improving oral communication skills through individual and/or group sales presentations. May be repeated up to 3 credits.

Prerequisite(s): Junior or above standing.

AG E 314. Agricultural and Natural Resource Law
3 Credits
Relationship of common-law principles, statutory law and regulatory law to problems involving agriculture with an emphasis on New Mexico issues. Legal problems relevant to agribusiness, torts, fencing laws, liability for agricultural pollution, irrigation water rights, corporations and partnerships, land tenure, farm and ranch tenancy, agricultural labor, farm and ranch management and taxation. May be repeated up to 3 credits.

AG E 315V. World Agriculture and Food Problems
3 Credits
Survey of food and agricultural issues in the U.S. and other countries. Covers: role of agriculture in economic development; trade in food and agricultural products; global food production, consumption, and marketing patterns; economics of technical change and food assistance; agriculture and the environment. Same as GEOG 315V.
AG E 325. Food and Agribusiness Finance and Planning
3 Credits
Understanding, using, and constructing financial statements for agribusiness analysis. Learn how to produce integrated pro forma financial statements first on paper and then on a spreadsheet. Prepare and link revenue, cost, and financing input assumptions formulas to the financial outcomes on the spreadsheet. May be repeated up to 3 credits. Crosslisted with: ANSC 325.
Prerequisite(s): AG E 250 or equivalent experience using spreadsheets.

AG E 337V. Natural Resource Economics
3 Credits
Gain insight into important natural resource problems of our time. Apply economic principles to problems in the preservation, use, and development of agricultural, range, mineral, water, forestry, fishery, and environmental resources. Understand the use of cost-benefit analysis for government natural-resource projects, policies, and programs. Same as ECON 337V.
Prerequisite: ECON 201G or ECON 252G.

AG E 340. Economics of Food and Agricultural Markets
3 Credits
Focuses on the analysis of supply and demand characteristics of commodities with particular attention to agricultural products. Pays special attention to empirical analysis. Includes institutional aspects of pricing, temporal and spatial price relationships, price forecasting, and the economic consequences of pricing decisions. May be repeated up to 3 credits.
Prerequisite(s): ECON 252G, MATH 142G, and A ST 311 or A ST/STAT 251G.

AG E 342. Economic Analysis of Food and Agribusiness
3 Credits
A discussion and application of economic, managerial, and financial considerations in agricultural business. May be repeated up to 3 credits.
Prerequisite(s): ECON 251G, ECON 252G.

AG E 384V. Water Resource Economics
3 Credits
Use of economic principles to evaluate current and emerging issues in water resources. Applications focus on use of economic methods of analysis to current policy decisions surrounding agricultural, municipal, industrial, and environmental uses of water. Same as ECON 384V.
Prerequisite: AG E 100 or ECON 252G.

AG E 385. Applied Production Economics
3 Credits
Analysis of economic principles of agricultural production and planning, emphasizing marginal principles. Practical application in budgeting and analyzing profit maximizing agricultural-production strategies. May be repeated up to 3 credits.
Prerequisite(s): ECON 252G, MATH 142G, and A ST 311 or A ST/STAT 251G.

AG E 400. Seminar
1 Credit
Prerequisite(s): Senior standing.

AG E 406. The Economics of Sports
3 Credits
Applying the tools of economic analysis to a particular industry and gaining an in-depth knowledge of the interaction of professional sports teams and leagues with the economy and society. Same as ECON 406.

AG E 420. Special Problems
1-3 Credits
Special problems in agricultural economics or agricultural business of particular interest to the individual student. Maximum of 3 credits per semester. No more than 6 credits toward degree. Consent of instructor required.

AG E 425. Food and Agribusiness Financial Management
3 Credits
Description and application of techniques and principles of financial management to problem situations faced by agricultural businesses, including financial statement development and analysis, capital budgeting, sources and costs of capital. May be repeated up to 3 credits.
Prerequisite(s): ECON 252G and ACCT 221.

AG E 440. Ranch Economics
3 Credits
Economic principles related to western ranch business. Business management, economic characteristics of ranches, ranch land problems and values, and economics of rangeland use.
Prerequisite: ECON 201G or ECON 252G.

AG E 445V. Agricultural Policy
3 Credits
Historical and cultural background of food and agricultural policy in the United States. Analysis of food and agricultural problems, policy-making and implementation. Economic evaluation of specific U.S. food and agricultural policy instruments, their domestic and international impacts.
Prerequisites: ECON 251G and ECON 252G.

AG E 450. Spreadsheet Applications in Food and Agriculture
3 Credits (2+2P)
An advanced course in electronic spreadsheets and the concepts and tools of database management emphasizing agricultural application. Same as AECE 550 with additional work for graduate credit. Cannot receive credit for both AG E 450 and AECE 550. May be repeated up to 3 credits.
Prerequisite(s): AG E 250 or consent of instructor.

AG E 451. Food and Agribusiness Market Assessment and Research
3 Credits
Applications course in which self-managed teams develop and present marketing plans for agribusiness firms. Emphasis on integrating the marketing mix, particularly promotional elements. May be repeated up to 3 credits. Crosslisted with: MKTG 451.
Prerequisite(s): AG E 305 or MKTG 305 or consent of instructor.

AG E 452. Food and Agribusiness Marketing Plan Development
3 Credits
This course focuses on learning marketing research methods applicable to developing new food and agricultural products and repositioning existing products for new markets. Students will be required to prepare precise written and oral marketing plans to industry standards and will have opportunities to present written and oral plans at national competitions. May be repeated up to 3 credits.
AG E 456. Case Studies in Food and Agribusiness Management
3 Credits
Integration of production, marketing, accounting, finance, agricultural policy, human behavior, and business environment concepts in management of agricultural businesses using a decision case approach. May be repeated up to 3 credits.
Prerequisite(s): Senior standing.

AG E 458. Economics of Making and Marketing Wine
3 Credits
Economics of making and marketing wine for small commercial wineries and amateurs. The class starts with selecting, crushing, and fermenting grapes and all the steps required through bottling the wine. Students must be 21 to enroll in the class. Consent of instructor required.

AG E 470. Real Estate Appraisal
3 Credits (2+2P)
This course addresses issues influencing the value of real estate with some emphasis upon rural properties. Topics include courthouse records, property taxes, appraisal methodology, expert courtroom testimony, condemnation, and legal issues. Students will take field trips and write appraisals. Course material is relevant to students in Finance, Accounting, and Pre-Law, as well as Agriculture. Accredited for hours to apply to both pre-licensing and continuing education requirements of the New Mexico Real Estate Commission for both Appraisers and Real Estate Brokers. Crosslisted with: FIN 470
Prerequisite(s): Junior or above standing.

AG E 499. Senior Thesis
3 Credits
Develop a thesis project with a faculty advisor. The senior thesis requires students to work creatively to apply business and economic principles to address a problem of concern. Restricted to AEAB majors.
Prerequisites: consent of department head and have senior standing.

AGRO-AGRONOMY (AGRO)

AGRO 100G. Introductory Plant Science
4 Credits (3+2P)
Introduction to the physical, biological, and chemical principles underlying plant growth and development in managed ecosystems. In the laboratory portion of the class, students perform experiments demonstrating the principles covered in lecture. The course uses economic plants and agriculturally relevant ecosystems to demonstrate basic principles. Appropriate for nonscience majors. Same as HORT 100G.

AGRO 200. Special Topics
1-4 Credits (1-4)
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

AGRO 250. Plant Propagation
3 Credits (2+2P)
Practical methods of propagating horticultural plants by seed, cuttings, layering, grafting, division and tissue culture. Examination of relevant physiological processes involved with successful plant propagation techniques. Crosslisted with HORT 250.

AGRO 257. Introduction to Meteorology
4 Credits (3+3P)
Introduction to Earth's atmosphere and the dynamic world of weather as it happens. Working with current meteorological data delivered via the Internet and coordinated with learning investigations keyed to the current weather; and via study of select archives. Consent of instructor required. Crosslisted with: GEOG 257 and SOIL 257.

AGRO 300. Special Topics
1-4 Credits (1-4)
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

AGRO 303V. Genetics and Society
3 Credits
Relates the science of genetics with social ramifications. Ways in which genetics and evolution interact with social, political, and economic issues. Includes genetic engineering, gene therapy, DNA finger-printing, ancient DNA, plant and animal improvement, and future prospects. Students required to formulate value judgments on contemporary biological issues that will impact society. Crosslisted with: GENE 303V.

AGRO 305. Principles of Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals. Crosslisted with: ANSC 305, BIOL 305, HORT 305 and GENE 305.
Prerequisite(s): BIOL 111G, BIOL 211G and either CHEM 111G or CHEM 115.

AGRO 311. Introduction to Turfgrass Management
4 Credits (3+3P)
Introduction to turfgrass with emphasis on turfgrass varieties. Consent of instructor required. Crosslisted with: HORT 311
Prerequisite: junior standing or consent of instructor and CHEM 111G and BIOL 211G.

AGRO 315. Crop Physiology
3 Credits
Whole plant physiological processes as related to growth, development, yield, quality and post harvest physiology of crop plants within the environment of the crop community. Crosslisted with: HORT 315
Prerequisite(s): EPWS/BIOL 314 or consent of instructor.

AGRO 365. Principles of Crop Production
4 Credits (3+3P)
Basic principles of crop production including environmental and physiological factors limiting production, plant nutrition and soil science, soil-water management, cropping systems and management, pest management, and economic factors influencing crop production. Crosslisted with: HORT 365
Prerequisite(s): AGRO/HORT 100, CHEM 111G or equivalent and MATH 120 or equivalent.

AGRO 377. Introduction to Turfgrass Management
4 Credits (3+3P)
 Establishment and maintenance of turfgrass with emphasis on seeding methods, soil and water management, mowing, disease, insects and turfgrass varieties. Consent of instructor required. Crosslisted with: HORT 377
AGRO 391. Internship
1-6 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 6 credits toward a degree. Consent of Instructor required. S/U Grading (S/U, Audit).
Prerequisite(s): Consent of instructor.

AGRO 447. Seminar
1 Credit
Organization, preparation, and presentation of current topics in agronomy, horticulture, and soil science. Same as HORT 447 and SOIL 447.

AGRO 449. Special Problems
1-3 Credits (1-3)
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and a grand total of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

AGRO 450. Special Topics
1-4 Credits (1-4)
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

AGRO 462. Plant Breeding
3 Credits
Principles and practices involved with the genetic improvement of plants. Same as HORT 462.
Prerequisites: ANSC/AGRO/BIOL/HORT 305.

AGRO 471. Plant Mineral Nutrition
3 Credits
Basic and applied aspects of plant requirements for soil-derived minerals and the processes whereby minerals are acquired, absorbed, translocated, and utilized throughout the plant. Same as HORT 471 and EPWS 471.
Prerequisite: EPWS/BIOL 314, or concurrent enrollment, or consent of instructor.

AGRO 483. Sustainable Production of Agronomic Crops
4 Credits (3+2P)
Characteristics and objectives of sustainable agricultural systems with application to the production, utilization, and improvement of cereal grain, fiber, forage and oilseed crops.
Corequisite(s): AGRO 365 or HORT 365.

AGRO 485. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: HORT 486, E S 485, SOIL 485 and CHME 485.
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

AGRO 492. Diagnosing Plant Disorders
3 Credits (2+3P)
Systematic diagnosis of the physiological, pathological, and entomological causes of plant disorders. Same as EPWS 492 and HORT 492.
Prerequisites: EPWS 303 and EPWS 310.

AGRO 471. Plant Mineral Nutrition
3 Credits
Basic and applied aspects of plant requirements for soil-derived minerals and the processes whereby minerals are acquired, absorbed, translocated, and utilized throughout the plant. Same as HORT 471 and EPWS 471.
Prerequisite: EPWS/BIOL 314, or concurrent enrollment, or consent of instructor.

AGRO 483. Sustainable Production of Agronomic Crops
4 Credits (3+2P)
Characteristics and objectives of sustainable agricultural systems with application to the production, utilization, and improvement of cereal grain, fiber, forage and oilseed crops.
Corequisite(s): AGRO 365 or HORT 365.

AGRO 485. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: HORT 486, E S 485, SOIL 485 and CHME 485.
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

AGRO 492. Diagnosing Plant Disorders
3 Credits (2+3P)
Systematic diagnosis of the physiological, pathological, and entomological causes of plant disorders. Same as EPWS 492 and HORT 492.
Prerequisites: EPWS 303 and EPWS 310.

AGRO 500. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

AGRO 505. Research Orientation
4 Credits (3+2P)
Training in writing research proposals, presentation of research results, and interpretation of research results. Crosslisted with: HORT 505 and SOIL 505

AGRO 506. Plant Genetics
3 Credits
Advanced treatment of the principles of classical genetics and heredity with emphasis on the nature and action of the gene including molecular analysis. CHEM 345 recommended. Same as HORT 506.
Prerequisite: AGRO 305 or consent of instructor.

AGRO 511. Introduction to Weed Science (f)
4 Credits
Covers the principles of weed science with emphasis on characteristics of invasive plants, methods of integrated weed management, and current issues impacting weed management. Includes identification of local weeds. Research paper required for graduate credit. Same as EPWS 511. 
Prerequisites: CHEM 111G and BIOL 190 or BIOL 211G, or consent of instructor.

AGRO 514. Soil-Plant Relationships
3 Credits
Physical, chemical, and biological soil environment as it affects plant and crop growth. Same as HORT 514 and SOIL 514.
Prerequisites: BIOL 314, SOIL 252.

AGRO 515. Crop Physiology
3 Credits
Whole plant physiological processes as related to growth, development, yield, quality and post harvest physiology of crop plants within the environment of the crop community. Crosslisted with: HORT 515
Prerequisite(s): EPWS/BIOL 314 or consent of instructor.

AGRO 516. Molecular Analysis of Complex Traits
3 Credits
Provide a comprehensive overview of molecular genetic analysis of complex phenotypes, including case histories/experiments in plants, animals and humans. Emphasize technological developments in DNA marker technologies and their application to molecular quantitative genetics. Explore the efficient application of these technologies in the future to complex genetic systems, breeding, and other areas of life sciences. Same as HORT 516.
Prerequisite: AGRO 305 or consent of instructor.

AGRO 525. Scientific Writing– How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Crosslisted with: HORT 525, EPWS 525, SOIL 525, AGRO 625, HORT 625 and SOIL 625.

AGRO 533. Environmental Physiology of Plants
3 Credits
Integral responses of plants and crop productivity to naturally occurring and modified environmental factors such as radiation, temperatures, water vapor, carbon dioxide, and air flow. Same as BIOL/HORT 533.
Prerequisite: BIOL 314 or consent of instructor.
AGRO 590. Graduate Seminar
1 Credit
Current research discussions presented by masters level graduate students. Not more than one credit toward the degree. Same as HORT/SOIL 590. Crosslisted with: HORT 590 and SOIL 590.

AGRO 595. Internship
1-6 Credits
Supervised professional on-the-job learning experience. Limited to Master of Agriculture candidates. Not more than 6 credits toward the degree.

AGRO 596. Masters Proposal
1 Credit
Current research proposal written by masters level graduate students. Consent of instructor required. Crosslisted with: Masters HORT; Masters PLEN majors.
Prerequisite(s): Master level graduate students.

AGRO 597. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Restricted to: Main campus only. Restricted to Agronomy and Horticulture Graduate Students. Crosslisted with: HORT 597 and SOIL 597

AGRO 598. Special Research Programs
1-6 Credits
Individual investigations, either analytical or experimental. Maximum of 6 credits per semester. No more than 9 credits towards degree. Same as SOIL 598.

AGRO 599. Master’s Thesis
15 Credits
Thesis.

AGRO 600. Doctoral Research
1-15 Credits
Research.

AGRO 609. Breeding for Plant Disease Resistance
3 Credits
A practically-oriented course of lectures and discussion on concepts and principles of breeding for disease and pest resistance. Labs familiarize students with preparation, quantification, and application of inoculum to hosts. Same as HORT 609.

AGRO 610. Advanced Crop Breeding
4 Credits (3+3P)
Applications of breeding principles to crop improvement. Emphasis on breeding methodologies using modern techniques, including biotechnology. Same as HORT 610.
Prerequisite: AGRO 462 or consent of instructor.

AGRO 620. Instrumentation in Agronomy
3 Credits
Use of instruments used in research in all areas of agronomy including gas chromatography, high performance liquid chromatography, neutron soil moisture probe, and other instruments. Same as HORT/SOIL 620.

AGRO 625. Scientific Writing- How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Students in the 600-level course will be required to perform additional research than those students in the 500-level cross-listing Crosslisted with: AGRO 525, HORT 525, EPWS 525 and SOIL 525.

AGRO 670. Biometrical Genetics and Plant Breeding
3 Credits
A statistical approach to gene action and population parameters as applied to plant improvement. Same as HORT 670.
Prerequisite: AGRO 462 or consent of instructor.

AGRO 694. Doctoral Seminar
1 Credit
Current research discussions presented by doctoral level graduate students. Not more than 2 credits toward the degree. Same as SOIL 694.
Prerequisite: doctoral level graduate students.

AGRO 696. Doctoral Proposal
1 Credit
Current research proposal written by doctoral level graduate students. Not more than 1 credits toward the degree. May be repeated up to 1 credits. Crosslisted with: E S 696, AGRO 696, HORT 696 and SOIL 696.
Prerequisite(s): Doctoral level graduate students.

AGRO 697. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: HORT 697 and SOIL 697

AGRO 698. Topics in Agronomy
1-6 Credits
Topics of current interest, designated by title and credit. Maximum of 6 credits per semester. No more than 9 credits toward a degree.

AGRO 700. Doctoral Dissertation
15 Credits
Dissertation.

AHS-ALLIED HEALTH SCIENCE (AHS)

AHS 102. Careers in the Health Fields
1-3 Credits (1-3)
This course will provide students with a broad understanding of health careers as well as emerging issues in health. This will also include the study of the functional roles of practice, education, administration, and research in health fields. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

AHS 108. Disabilities Support Services
4 Credits (3+2P)
Beginning level preservice preparation for providing in-home care for individuals with disabilities. Restricted to: Community Colleges only. Crosslisted with: NA 108
AHS 115. Dietary Guidelines & Meal Planning  
4 Credits  
A combination of the science of nutrition and the current Dietary Guidelines for Americans with practical application to meal planning and preparation. Strategies and techniques used to plan and prepare healthful and appetizing meals are explored. Evidenced-based dietary guidelines are provided to meet the needs of individuals and groups with chronic diseases. Menu development, modification and analysis are reviewed. Restricted to Community Colleges campuses only.

AHS 116. Math for Health Occupations  
3 Credits  
Principles of math and pharmacology necessary for administration of medications. Restricted to: Community Colleges only.  
Prerequisite(s): CCDM 114N or equivalent.

AHS 120. Medical Terminology  
3 Credits  
Study of medical terminology as it relates to understanding diseases, their causes and effects, and the terminology used by the medical specialties. Stress is placed on medical terms, their use, spelling, English translation, and pronunciation. Same as NURS 150 and BOT 150.

AHS 140. Essentials of Anatomy and Physiology  
4 Credits (3+3P)  
Essentials of anatomy and physiology for those considering a career in health as well as those interested in understanding their own body and the basics of health.

AHS 153. Introduction to Anatomy and Physiology I  
4 Credits (3+3P)  
Survey of human anatomy and physiology.  
Prerequisite: high school biology or high school chemistry, or CHEM 110G, or consent of instructor.

AHS 155. Special Topics  
1-6 Credits  
Topics to be announced in the Schedule of Classes. May be repeated for a maximum of 6 credits.

AHS 165. Foundations to Allied Health Science  
3 Credits (1+4P)  
A foundational course which will cover a multidisciplinary focus on success in the Allied Health care environment. Topics included, but not limited to: the health care system, personal and professional qualities of a health care worker, legal and ethical responsibilities, cultural diversity, nutrition and diets, medical math, infection control, preparing for the world of work, core measures and quality assurance, the prospective payment system, customer service, current trends in health care and communication, and promotion of safety. Laboratory time will cover library and library resource use, promotion of safety, vital sign, CPR & AED use, job interviewing practice, and 16 hours of job shadowing participation located in a healthcare facility. Open to all students seeking to pursue an Allied Health or Healthcare career pathway. Restricted to Community Colleges campuses only.

AHS 190. Clinical Skills & Concepts for Medical Assisting I  
6 Credits (3+6P)  
A core course designed to provide an introduction to the theory, concepts, and skills needed for entry-level medical assisting positions. Content includes basic theory and concepts designed to support safe and effective practice as a medical assistant in ambulatory care settings. Includes a skills laboratory for hands-on practice and 96 hours of supervised clinical in the work environment. Restricted to Community Colleges campuses only.  
Prerequisite(s): (BIOL 225 and 226) or (AHS 153 and 154).

AHS 202. Legal and Ethical Issues in Health Care  
3 Credits  
Consideration of legal and ethical issues in modern health care delivery.

AHS 220. Essentials of Counseling  
3 Credits  
Provides students interested in human services professions with theoretical and practical tools and strategies to establish and develop a helping relationship with clients in a diversity of helping settings. Class covers emotional, cognitive, socio-cultural, and spiritual aspects of the human being, that help clients identity and deal with issues that affect their functioning and development. Restricted to Community Colleges only.

AHS 250. SPANISH FOR HEALTH PROFESSIONALS  
3 Credits  
Spanish for Health Professionals is a 3 credit course geared toward individuals working or majoring in health related areas. The course focus is on conversation and vocabulary needed for the workplace and task based practical skills. Restricted to: Community Colleges only.

AHS 253. Microbiology for Health Occupations  
4 Credits (3+3P)  
Study of the relationship between pathogenic organisms and disease processes.  
Prerequisites: high school biology and high school chemistry, CHEM 110G, and OEHO 153 or equivalent or consent of instructor.  
Corequisite: OEHO 154 or equivalent.

AHS 290. Clinical Skills & Concepts for Medical Assisting II  
6 Credits (3+6P)  
A core course designed to provide the theory, concepts, and skills needed in preparation for entry-level medical assisting positions. Content includes theory and concepts related to specialty areas of healthcare practice, as well as consideration for conditions affecting persons throughout the life span. The course includes a skills laboratory for hands-on practice and 96 hours of supervised clinical in the work environment with specialized populations and procedures in both ambulatory and acute care settings. Restricted to Community Colleges campuses only.  
Prerequisite(s): AHS 190.

AHS 295. Introduction to Allied Health  
1 Credit  
An introductory course that covers a multidisciplinary focus needed for success in the allied health care environment. Topics include health care delivery systems and allied health careers, history of health care, law and ethics pertaining to health care, personal qualities of health care workers, confidentiality and reportable incidents. This course will also cover an orientation into safety and infection control, core measures and quality assurance, perspective payment system, customer service, current trends in health care and communication, skills to be a patient/client educator and a member of the Health Care team. Open to all students wanting to explore the allied health care industry. Restricted to Community Colleges campuses only.

ANSC-ANIMAL SCIENCE (ANSC)

ANSC 100. Introductory Animal Science  
3 Credits  
Orientation and survey of livestock industry in the United States; introduction to feeding, breeding, and management practices for producing farm animals and select companion animals.
ANSC 100 L. Introductory Animal Science Laboratory
1 Credit
Students will observe and participate in activities related to farm animal management and will include areas of livestock selection, nutrition, reproductive physiology, animal ID and animal health. This lab is required for animal science majors. Pre/Corequisite(s): ANSC 100.

ANSC 103. Introductory Horse Science
3 Credits (2+2P)
The light horse industry; breeds; introduction to feeding, breeding, marketing and management; handling and selecting horses for breeding and performance.

ANSC 112. Companion Animals in Society
3 Credits
Examination of the historical, current, and potential future roles of companion animals in human society. Topics include animal domestication, breeds, exotic companion animals, the companion animal industry, and competitions and sports involving companion animals. Emphasis is on canine and feline species. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

ANSC 190. Western Equitation I
2 Credits
Basic principles of Western riding, including care and management of the riding horse, equitation equipment, and development of riding skills.

ANSC 200. Introduction to Meat Animal Production
3 Credits (2+2P)
Production and utilization of beef cattle, sheep and swine; emphasis on feeding, breeding, management problems and marketing; selection of animals for breeding and marketing.

ANSC 201. Introduction to Genetics for Animal Production
3 Credits
Introduction to genetics and inheritance relative to livestock production. Introduction to procedures for collection and use of performance information in livestock improvement programs.
Prerequisites: BIOL 111G.

ANSC 220. Animal Science Career Development
1 Credit
Introduction to scientific disciplines and career options in animal-agriculture career skill development, including resume preparation, networking, importance of internships, and leadership experiences in animal agriculture.

ANSC 250. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

ANSC 261. Introduction to Animal Metabolism
3 Credits
Principles underlying the mechanisms of animal metabolism as they relate to production, maintenance, and health of animals.
Prerequisite: CHEM 111G.

ANSC 262. Introduction to Meat Science
3 Credits (2+3P)
Fundamental aspects of the red meat industry. Lecture topics and laboratory exercises include the nutrient value of meat, meat preservation, meat safety, muscle structure and contraction, slaughter and processing of beef, lamb, and pork, sausage manufacture, meat curing, meat cookery, and muscle and bone anatomy.

ANSC 263. Animal and Carcass Evaluation
3 Credits (2+2P)
Selection, classification, grading, and judging of livestock, meat, and wool.

ANSC 264. Therapeutic Horseback Riding I
2 Credits
Intermediate principles of Western riding, including reading horse behavior, limbering-up exercises, and developing riding skills.
Introduction to rollbacks, turnarounds and stops.
Prerequisite: consent of instructor.

ANSC 285. Introduction to Companion Animal Science
3 Credits
Introduction to the care of common companion animal species. Species specific housing and nutrition are covered in the context of maximizing animal health and well-being and reducing disease. May be repeated up to 3 credits.

ANSC 288. Horse Fitting and Selling
3 Credits
Preparation of horses for sale; planning and conduct of auction sale; application of marketing principles relating to selling horses.
Prerequisite: ANSC 103 or consent of instructor.

ANSC 289. Management of Equine Operations
3 Credits
Introduction and application of business skills necessary to effectively manage the equine operation. Students will learn how to use strategic thinking and sound business management practices to succeed in the demanding equine industry.
Prerequisite(s): ANSC 103 or consent of instructor.

ANSC 290. Western Equitation II
2 Credits
Intermediate principles of Western riding, including reading horse behavior, limbering-up exercises, and developing riding skills.
Introduction to rollbacks, turnarounds and stops.
Prerequisite: consent of instructor.

ANSC 295. Team Competition in Animal Science
1-2 Credits
Training in team competition in the animal sciences. May be repeated for a maximum of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

ANSC 301. Animal and Carcass Evaluation
3 Credits (2+2P)
Determination of the market value of meat animals by relating live animal and carcass traits. Topics include the identification of economically important traits, grading, growth and development, wholesale and retail pricing, and futures and options markets.

ANSC 302. Therapeutic Horseback Riding I
3 Credits
Basic principles and understanding of horsemanship and therapeutic riding, including equipment, safety, how to be an effective volunteer, side walker, and horse handler. Consent of instructor required.

ANSC 303. Livestock, Meat and Wool Evaluation
4 Credits (3+2P)
Selection, classification, grading, and judging of livestock, meat, and wool.

ANSC 304. Feeds and Feeding
3 Credits (2+2P)
Digestibility of feeds, their nutritive values, grades, and classes, principles of ration formulation and computer ration formulations, and practical feeding of farm animals.
Prerequisite(s): CHEM 111G, General Chemistry I.

ANSC 305. Principles of Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals. Crosslisted with: AGRO 305, BIOL 305, HORT 305 and GENE 305
Prerequisite(s): BIOL 111G, BIOL 211G and either CHEM 111G or CHEM 115.
ANSC 308. Horse Evaluation
4 Credits (2+4P)
Students will acquire a working knowledge of selection and classification of horses, learn criteria for evaluation and selection of breeding and show animals, gain a broad understanding of judging conformation and performance in the horse, and learn effective oral and written communication skills through defense of class placings. This course is considered an introduction to the NMSU Horse Judging Team.

ANSC 310. Exhibiting Livestock
3 Credits (1+4P)
Fitting and showing beef cattle, dairy cattle, sheep and swine.

ANSC 312V. Companion Animals and the Human-Animal Interaction
3 Credits
The science behind human-animal interactions (HAI). An examination of the interactions between humans and companion animals and the effects on human and animal health and wellness. Cultural differences in HAI will be explored. Topics will include Animal Assisted Activity (AAA), Animal Assisted Therapy (AAT), and service animals. Emerging and future uses of companion animals in HAI will be discussed.

ANSC 320. Equine Behavior and Training
3 Credits
Basic principles, methods and philosophies of handling, breaking and training the two-year-old Western horse. May be repeated up to 6 credits.
Prerequisite(s): ANSC 290 or consent of instructor.

ANSC 321. Advanced Equine Behavior and Training
3 Credits
Continuation of ANSC 320. Further development of skills required to advance the training of the two-year-old Western horse. Emphasis will be placed on lateral work, lead changes, turn-arounds, obstacles, and making the horse accustomed to ranch and trail riding situations.
Prerequisite(s): ANSC 320 or consent of instructor.

ANSC 325. Food and Agribusiness Finance and Planning
3 Credits
Same as AG E 325. May be repeated up to 3 credits. Crosslisted with: AG E 325.

ANSC 350. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

ANSC 351V. Agricultural Animals of the World
3 Credits
Global study of the development and use of animals for production of food and nonfood products. Climatic, cultural, and economic influences on systems of livestock production and species and breeds of livestock utilized will be evaluated.

ANSC 353. Advanced Livestock Evaluation
2 Credits
Advanced selection, classification and grading of livestock. May be repeated up to 2 credits. Consent of Instructor required.

ANSC 363. Meat Technology
3 Credits
Structure function and composition of muscles; factors influencing conversion of muscle to meat; buying, palatability and nutritive value of meat and meat products.

ANSC 370. Anatomy and Physiology of Farm Animals
4 Credits (3+2P)
Structure and function of the animal body. Includes studies of the horse, cow, sheep, pig, and comparisons with the human body.
Prerequisite(s): CHEM 111G and BIOL 111G or BIOL 211G.

ANSC 383. Equine Reproductive Management
3 Credits (1+4P)
Anatomy, physiology, and endocrinology of reproduction of the mare and stallion; training in modern reproductive techniques employed in the horse industry.
Prerequisites: ANSC 103, ANSC 289, and ANSC 370.

ANSC 390. Internship
1-3 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 3 credits toward a degree. Graded S/U.
Prerequisite: consent of instructor.

ANSC 391. Undergraduate Research Experience
1-3 Credits (1-3)
Formal laboratory, library, or field study of problems related to animal sciences, emphasizing hypothesis development, testing, and reporting results. Projects are preplanned, reviewed, and approved. Students submit periodic written reports and final written and oral reports. May be repeated for a maximum of three credits. Consent of Instructor required.
Prerequisite(s): Consent of Instructor.
Corequisite(s): NO.

ANSC 392. Animal Sciences Teaching/Extension Experience
1-3 Credits (1-3)
Formal teaching experience related to animal sciences supervised by a faculty member. May involve classroom instruction, educational material development, and/or student evaluation and assessment. Students may also be involved in development, implementation, or assessment of adult or youth educational programs related to animal sciences, supervised by a faculty member. Students submit periodic written reports and a final written and oral report. May be repeated for a maximum of three credits. Consent of Instructor required.

ANSC 395. Team Competition II
1-2 Credits
Advanced training in team competition in the animal sciences. May be repeated for a maximum of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

ANSC 402. Animal Science Seminar
1 Credit
Review of the current literature in animal sciences. Oral and written reports.

ANSC 411. Canine and Feline Behavior and Training
3Credits
The influence of domestication, breeds, genetics, and physiology on the behavior of canine and feline species. Training methods and modification of problem behaviors are examined. The impact of the pet parent on their animal's behavior is addressed. May be repeated up to 3 credits.
Prerequisite(s): Junior or Senior status or consent of the instructor.
ANSC 412. Canine and Feline Health and Diseases
3 Credits
A review of common infectious and non-infectious diseases and the basics of the immune response. Pathophysiology and treatment of these diseases and the role the pet parent plays in pre-disposing their animals to disease. May be repeated up to 3 credits.
Prerequisite(s): ANSC 285 or consent of instructor.

ANSC 421. Physiology of Reproduction
4 Credits (3+2P)
Fertility and the role of hormones, nutrition, selection, management and environment in the maintenance of high reproductive rate.
Prerequisite(s): ANSC 370.

ANSC 422. Animal Nutrition
3 Credits
Nutrient utilization and measurement and nutrient requirements for the various body functions.
Prerequisite(s): CHEM 211 or CHEM 313 or ANSC 261.

ANSC 423. Animal Breeding
3 Credits (2+2P)
Mating systems, and selection procedures; calculation of inbreeding coefficients, genetic relationships, and gene frequency.
Prerequisite(s): ANSC 201 or 305.

ANSC 424. Swine Production
3 Credits (2+2P)
Breeding, feeding, and care of swine.
Prerequisite(s): ANSC 304.

ANSC 425. Horse Science and Management
3 Credits (2+2P)
Senior level course requiring students to apply basic knowledge acquired in the previous courses to solve typical problems encountered in the horse industry. Specific topics include genetics and animal breeding, business and legal issues, reproduction, health, nutrition and exercise physiology.
Prerequisite(s): ANSC 304 and ANSC 370 or concurrent registration.

ANSC 426. Beef Production: Cow-Calf Management
3 Credits (2+2P)
Senior level course examining management practices for the cow-calf producers. Specifically focusing on nutrition, reproduction, genetics, marketing, and health. May be repeated up to 3 credits.
Prerequisite(s): ANSC 304 and (ANSC 201 or ANSC 305) or concurrent registration.

ANSC 427. Dairy Production
3 Credits (2+2P)
Breeding, nutrition, physiology and management of dairy cattle.
Prerequisite(s): ANSC 304 and (ANSC 201 or ANSC 305) or concurrent registration.

ANSC 428. Sheep and Wool Production
3 Credits (2+2P)
Genetics, nutrition, physiology and management of sheep. Wool grading, shearing, and disease control.
Prerequisite(s): ANSC 304 and junior status.

ANSC 429. Beef Production: Feedlot Management
3 Credits
Senior level course in feedlot management of beef cattle. Topics of interest include cattle handling and processing, health and nutrition, intake management, and growth. Feed mill operation, marketing strategies, and regulatory concerns associated with finishing cattle production may also be discussed.
Prerequisite(s): ANSC 304 or Consent of Instructor.

ANSC 448. Problems
1-4 Credits
Individual investigation in a specific area of animal science. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

ANSC 458. Livestock Behavior, Welfare and Handling
3 Credits (2+3P)
Principles of animal behavior and evaluation of management practices on animal welfare in confined and rangeland livestock operations. Low stress livestock handling techniques. Design of livestock handling facilities. Crosslisted with: RGSC 458
Prerequisite(s): RGSC 294 or ANSC 100.

ANSC 462. Parasitology
3 Credits
Same as EPWS 462.

ANSC 462 L. Parasitology Lab
1 Credit
Classification, biological effects, and management of animal parasites of man, domestic animals, and wildlife. One-hour lab is optional. Same as EPWS 462.

ANSC 468. Advanced Dairy Herd Management
3 Credits
The course is offered through the Southern Great Plains Dairy Consortium in Clovis, NM, and will include breeding, nutrition, physiology, health and management of large herd dairies of the Southwest. Students must apply for the course through the Consortium, and can take it more than once, as topics vary. Consent of instructor required.
Prerequisite(s): ANSC 304.

ANSC 480. Environmental Physiology of Domestic Animals
3 Credits
Influence of environmental factors on physiological processes of domestic animals.
Prerequisite: ANSC 370.

ANSC 484. Ruminant Nutrition
3 Credits
Energy, nitrogen, and mineral nutrition of ruminants with special emphasis on digestive physiology and metabolism of nonprotein nitrogen compounds.
Prerequisite: ANSC 422.

ANSC 488. Equine Nutrition and Exercise Physiology
3 Credits (2+2P)
Students will gain an in-depth understanding of nutrition and exercise physiology in the horse. Students will investigate the response of major physiological systems to exercise, conditioning and training, gastrointestinal physiology, nutrition requirements and clinical nutrition of the horse.
Prerequisite(s)/Corequisite(s): Junior standing or consent of instructor.
ANSC 501. Advanced Animal Nutrition (so)
3 Credits
Emphasis on digestive physiology and metabolism. Basic mechanisms involved in the intake, digestion, and absorption of nutrients studied. Crosslisted with: HNDS 501
Prerequisite(s): CHEM 211 or consent of instructor.

ANSC 504. Animal Physiology Techniques (se)
4 Credits
Radioimmunoassay procedures. Methods and procedures for conducting reproductive physiology research in livestock. Includes animal preparation, sample collection, laboratory and cell culture procedures. Prerequisite: consent of instructor.

ANSC 507. Laboratory Techniques in Nutrition (f)
4 Credits (2+6P)
Methodology and experimental procedures in measuring nutrient requirements and value of diets. Same as HNDS 507.
Prerequisite(s): ANSC 422 or consent of instructor.

ANSC 509. Endocrinology of Domestic Animals (f)
3 Credits
The role of hormones in growth, development, metabolism, temperature regulation, lactation, and reproduction of domestic animals, including commercial applications.

ANSC 510. Range Nutrition Techniques (se)
3 Credits
Animal and plant methods of determining quantity and quality of range forage. Same as RGSC 510.
Prerequisite: ANSC 484 or consent of instructor.

ANSC 512. Research Methods in Animal Science (s)
4 Credits (3+2P)
Procedures used in animal science research, including planning and conduct of investigations and interpretation of results. Same as HNDS 512.

ANSC 515. Graduate Seminar
1 Credit
Current topics. Same as HNDS 517.

ANSC 521. Advanced Nutritional Management I: Feedlot (se)
3 Credits
Emphasis on feeding systems for beef cattle from weaning to slaughter. Primary focus on feedlot nutrition and management.
Prerequisite: ANSC 484 or consent of instructor.

ANSC 522. Animal Nutrition (f)
3 Credits
Nutrient utilization and measurement; nutrient requirements for the various body functions. Taught with ANSC 422 and same as HNDS 522 with additional requirements for graduate students. Recommended for nonmajors. Crosslisted with: HNDS 522
Prerequisite(s): CHEM 211.

ANSC 560. Rumen Microbiology (so)
3 Credits
Issues in ruminal and gastrointestinal microbiology. Includes physiological and genetic mechanisms in carbohydrate and nitrogen utilization. Same as FSTE 560.
Prerequisite(s): ANSC/HNDS 501 and CHEM 546.

ANSC 580. Environmental Physiology of Domestic Animals
3 Credits
Influence of environmental factors on physiological processes of domestic animals. Specific focus on fetal and developmental programming, heat and cold stress.

ANSC 588. Equine Nutrition and Exercise Physiology
3 Credits
Students will gain in-depth understanding of nutrition and exercise, conditioning and training, gastrointestinal physiology, nutrition requirements and clinical nutrition of the horse.

ANSC 589. Special Research Programs
1-4 Credits (1-4)
Individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

ANSC 599. Master's Thesis
15 Credits

ANSC 602. Advanced Reproductive Physiology (fo)
3 Credits
Mechanisms of reproductive function; research methodology.
Prerequisite(s): ANSC 421 or consent of instructor.

ANSC 602 L. Molecular Techniques in Reproductive Physiology (fo)
2 Credits
Molecular biology techniques used in the study of reproductive physiology in domestic animals. Extraction of RNA, DNA from endocrine tissues, northern analysis, culture of pituitary/ovarian tissue. Mechanisms of hormone action.
Prerequisite: consent of instructor.

ANSC 604. Hypothalamo-Hypophyseal-Pineal Endocrinology (fe)
1 Credit
Hormones and other neurochemicals synthesized and secreted by the hypothalamus, pituitary, and pineal glands. Neuroendocrinology of the hypothalamo-hypophyseal axis.
Prerequisite: ANSC 509.

ANSC 605. Gonadal and Uterine Endocrinology (fe)
1 Credit
Endocrinology of mammalian ovaries, testes, and uteri including developing trophoblasts.
Prerequisite: ANSC 509.

ANSC 606. Endocrinology of Pregnancy, Parturition, and Lactation (fe)
1 Credit
Hormones and other chemical messengers involved in maintenance of pregnancy, control of parturition, and initiation and maintenance of lactation in farm animals.
Prerequisite: ANSC 509.
ANSC 621. Metabolic Functions and Dysfunctions (fe) 3 Credits
Physiological chemistry of ruminants and other domestic animals, with attention to metabolic dysfunctions and nutritional toxicology. Same as HNDS 621.
Prerequisites: CHEM 345 and ANSC 501.

ANSC 625. Nutrient Metabolism I: Mineral, Vitamin, and Nitrogen Metabolism (fo) 4 Credits
Cellular metabolism, physiological function(s), toxicities, and deficiencies of minerals, vitamins and nitrogen in ruminants and nonruminants. Same as HNDS 625.
Prerequisite: ANSC/HNDS 501.

ANSC 626. Nutrient Metabolism II: Carbohydrates, Lipids, and Energetics (se) 4 Credits
Basic principles of carbohydrate, lipid, and energy metabolism; integration of metabolism with emphasis on nutritional and biochemical processes related to efficiency of nutrient use. Same as HNDS 626.
Prerequisite: ANSC 501 or HNDS 501.

ANSC 698. Special Research Programs 1-4 Credits
Advanced individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

ANSC 700. Doctoral Dissertation 15 Credits

ANTH-ANTHROPOLOGY (ANTH)

ANTH 110. North American Prehistory 3 Credits
Introduction to major prehistoric cultural developments and changes in North America from the first entry of people into the New World until prior to the arrival of European settlers. Restricted to Community Colleges campuses only.

ANTH 115. Native Peoples of North America 3 Credits
General survey of the ethnology of selected native American groups.

ANTH 116. Native Peoples of the American Southwest 3 Credits
Introduction to the early history and culture of native people of the Southwest.

ANTH 118. Introduction to Historic Preservation 3 Credits
Introduction to historic preservation, its history, goals, methods, legal basis, and economic importance. Explores public role in decision-making. Community Colleges only.

ANTH 120G. Human's Place in Nature: Introduction to Biological Anthropology 3 Credits
Examine cross-cultural diversity and human universals through the lens of anthropological inquiry. Explore human thought and behavior in contemporary world cultures covering kinship, economic patterns, power structures, and religious practices and beliefs. The impact of cultural influence on everyday life is emphasized.

ANTH 130G. Human's Place in Nature: Introduction to Biological Anthropology 3 Credits
This course uses scientific methods and principles to examine human evolutionary history and family tree relationships, as well as the biological foundations of human behavior. Through lectures, readings and laboratory assignments students are introduced to the history and development of modern evolutionary biology, molecular and population genetics, the primate and human fossil record and modern human biological diversity. By examining the social lives of apes and other primates, primitive and unique aspects of human behavior are identified and the lives of fossil ancestors are reconstructed.
Corequisite(s): ANTH 130GL.

ANTH 130GL. Human's Place in Nature Laboratory 1 Credit
This one credit laboratory course uses scientific methods and principles to examine evidence for human evolutionary history and family tree relationships, primate ecology and behavior, and modern human diversity.

ANTH 201G. Introduction to Anthropology 3 Credits
Exploration of human origins and the development of cultural diversity. Topics include biological and cultural evolution, the structure and functions of social institutions, belief systems, language and culture, human-environmental relationships, methods of prehistoric and contemporary cultural analysis, and theories of culture.

ANTH 202G. Introduction to Archaeology and Physical Anthropology 3 Credits
Provides an introduction to the methods, theories, and results of two subfields of anthropology: archaeology and physical anthropology. Archaeology is the study of past human cultures. Physical anthropology is the study of human biology and evolution.

ANTH 203G. Introduction to Language and Cultural Anthropology 3 Credits
Provides an introduction to the methods, theories, and results of two subfields of anthropology: linguistics and cultural anthropology. Linguistics is the study of human language. Cultural anthropology is the study of the organizing principles of human beliefs and practices.

ANTH 297. Elementary Special Topics 1-4 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

ANTH 301. Cultural Anthropology 3 Credits
Human concepts of culture and life processes.

ANTH 305V. Contemporary Native Americans 3 Credits
Introduction to contemporary native peoples and cultures of North America. Emphasis on sociocultural and socioeconomic history, sociocultural change and persistence, present day reservation life, and current social and economic goals.
ANTH 306V. Peoples of Latin America
3 Credits
Introduction to cultural patterns and diversity of Latin America with emphasis on indigenous groups, peasants, plantation workers, and urban residents throughout South America, the Caribbean, Mexico, and Central America.

ANTH 307. Anthropology of Mexico and Guatemala
3 Credits
This course focuses on ethnographic study of people in Mexico and Guatemala. Through reading and discussing a variety of ethnographic works, the course will examine some historical and contemporary issues facing different groups of people in this region and will include topics such as gender, indigenous movements, migration, urbanization, and tourism.

ANTH 312. The Ancient Maya
3 Credits
Archaeological evidence of culture change in the Maya civilizations of Mexico and Central America from 2000 BC to the Spanish Conquest.

ANTH 313. Ancient Mexico
3 Credits
Archaeological evidence of culture change among the Aztecs, Zapotecs, and their predecessors in Central Mexico and Oaxaca from 7,000 BC to the Spanish Conquest.

ANTH 315. Introduction to Archaeology
3 Credits
Concepts and methods for study of prehistoric cultures; history of archaeological research.

ANTH 316. Archaeology of the American Southwest
3 Credits
Introduction to the prehistoric peoples of the North American Southwest, a historical approach emphasizing the rise of method and theory in the region.

ANTH 318. Historical Archaeology in Latin America
3 Credits
Examination of theoretical and methodological issues in historical archaeology in Latin America from 1450 to present, including conquest, colonialism, capitalism, and modernity as anthropological processes. The contributions and limitations of historical, ethnohistorical, and archaeological evidence are emphasized.

ANTH 320. Anthropological Linguistics
3 Credits
The study of language and culture with particular emphasis on the cultural factors in the communication process.

ANTH 330V. Magic, Witchcraft and Religion
3 Credits
Provides an overview of old and new methods and theories for the study of religion. Exposure to the ways groups of people in diverse cultural systems construct and change their religious traditions to serve practical and meaningful ends. Crosslisted with: HIST 330V and SOC 330V.

ANTH 345. Introduction to Museology
3 Credits
Museum philosophy, history, administration, and collection management. Emphasis on cataloging, care, and exhibition, as well as ethics and public responsibility.

ANTH 348. Museums & Society
3 Credits
Examines theoretical frameworks that shape museum administration, exhibits and collections development. Examines themes of gender, space, place, multiculturalism, national and international politics in museum contexts.

ANTH 350. Anthropological Theory
3 Credits
This course introduces students to historical and contemporary theory in anthropology with a focus on understanding why theory matters in our discipline. Key questions the course explores include: How have anthropologists thought about the concept of culture in different ways throughout the history of anthropology? What is the relevance of anthropological theory, both inside and outside the discipline? What new and promising trajectories do we see in anthropological theory today?

ANTH 355. Physical Anthropology
3 Credits
An introduction to primate behavior, human evolution, and physical variation in modern human populations.

ANTH 357V. Medical Anthropology
3 Credits
This course examines ecology and current environmental studies from an anthropological perspective. Examines the traditional role of food in local economies, social relations, and identity around the world. Also examines the impact of globalization on traditional food systems and cultures.

ANTH 360V. Food and Culture Around the World
3 Credits
Study of the interaction between food and human culture from an anthropological perspective. Examines the traditional role of food in local economies, social relations, and identity around the world. Also examines the impact of globalization on traditional food systems and cultures.

ANTH 362. Environmental Anthropology
3 Credits
This course examines ecology and current environmental studies from an anthropological point of view. The class focuses on how cultural values mediate environmental management. The class will cover topics such as theoretical foundations of ecological anthropology, large scale development, biodiversity conservation, sustainable environmental management, indigenous groups, consumption and globalization.

ANTH 376. Lithic Technology Organization
3 Credits
Advanced seminars and laboratory exercises to learn and develop techniques and methods that will help us determine how to interpret behavioral and cultural information from lithic (stone tool) data. Prerequisite(s): ANTH 315.

ANTH 378. Introduction to Lab Methods in Archaeology
3 Credits
Laboratory techniques used in the analysis of archaeological materials.
ANTH 385. Internship in Anthropology
3-12 Credits (3-12)
Applied or field experience to gain professional expertise. Placements with public agencies, NGOs, or research organizations. Topical focus tailored to student's individual needs through consultation with instructor.
Prerequisite(s): Junior status, consent of instructor and GPA 2.8 or better.

ANTH 386. Anthropological Study Odyssey
3-6 Credits (3-6)
This course allows students to explore an anthropological topic, such as an archaeological tradition or culture, through classroom and field activities. Students are initially exposed to a topic during several days of intensive in class work and then pursue greater understanding of the topic through a field trip and possibly limited fieldwork. Readings, site tours, on-site lectures by specialists, and field exercises provide students an opportunity to develop an understanding of anthropological perspectives on the topic as well as to provide exposure to anthropological field and analytic methods. This course also allows students to experience other cultures, prehistoric sites, and/or locales firsthand. May be repeated for credit under a different odyssey title. Taught with ANTH 521. May be repeated up to 6 credits. Consent of Instructor required.

ANTH 388. Intermediate Archaeological Field School
2-6 Credits (2-6)
Training in archaeological field methods, including excavations of prehistoric sites, record keeping, mapping and analysis of data. Consent of Instructor required.

ANTH 389. Archaeological Mapping
3-6 Credits (3-6)
Techniques for mapping archaeological sites and recording spatial distributions of archaeological data using a variety of surveying equipment and computer mapping software.

ANTH 399. Professionalism & Practice in Anthropology
3 Credits
Capstone course for seniors designed to allow students to synthesize the anthropological knowledge they have acquired and connect theory to application in preparation for entry into a career. Restricted to: ANTH majors.

ANTH 401. Ethnography Seminar
3 Credits
A literature review of ethnographic field research, data gathering, and analysis. A wide variety of anthropological publications will be critically examined and discussed. Designed for ANTH and SOC majors.

ANTH 402. Contemporary Medical Anthropology
3 Credits
This advanced seminar in medical anthropology addresses contemporary issues in the field of medical anthropology through theoretical and ethnographic texts. Topics span a wide range of studies in medical anthropology and may include such issues as the social production of health and illness, medical pluralism, discourses of mental health, the practice of complementary and alternative medicine, health inequalities, and the political economy of infectious disease. Taught with ANTH 546.
Prerequisite(s): ANTH 201G or 357V.

ANTH 403. Cultural Anthropology
3 Credits
Explores the rich history and cultural diversity of the continent of Africa. The course first examines the historical processes that shaped modern Africa, including the evolution of modern humans in Africa, the origins of agriculture and pastoralism, the formation of indigenous African states, the slave trade, and European colonialism. The course also looks at contemporary African societies, including hunter-gatherer, pastoral, and farming/fishing peoples. In addition, contemporary issues facing modern Africa such as famine and agricultural policy, the status of women, and environmental challenges such as deforestation are discussed. Taught with ANTH 504. Crosslisted with: HIST 404

ANTH 415. Applied Anthropology
3 Credits
Examines the intellectual roots of applied anthropology and early case studies of anthropologists working as administrators. Examines the ethical and methodological approaches that applied anthropologists employ. Examination of case studies that show role of applied anthropologists in improving human service delivery, cultural preservation, planning and implementing programs of participatory change, advocacy, and economic development. Taught with ANTH 515.

ANTH 431. Nutritional Anthropology
3 Credits
Evolutionary and cross-cultural perspective on human nutrition.

ANTH 433. Women, Gender, and Culture
3 Credits
Survey of the history of ideas about women and gender in the discipline of anthropology and a comparison of gender roles, relations, and ideologies across a range of cultures. Same as W S 433.

ANTH 434. Human Evolution
3 Credits
Overview of human biological evolution from the emergence of Miocene apes to modern human diaspora. May be repeated up to 3 credits. Crosslisted with: BIOL 434.
Prerequisite(s): ANTH 355 or consent of instructor.

ANTH 434 L. Human Evolution Laboratory
1 Credit
Laboratory in human evolution, includes exercises and activities to learn the human fossil record. Crosslisted with: BIOL 434 L.
Prerequisite(s): ANTH 355 or consent of instructor.
Corequisite(s): ANTH 434.

ANTH 449. Directed Reading
1-6 Credits
Comprehensive directed reading on selected topics. May be repeated for a maximum of 6 credits.
Prerequisite(s): Upper division anthropology majors with consent of instructor.

ANTH 449 H. Directed Reading Honors
1-3 Credits
Same as ANTH 449. Additional work to be arranged. May be repeated for a maximum of 6 credits.

ANTH 455. Federal Indian Policy
3 Credits
Federal Indian policy and its impact on Native Americans. This course will provide basic understanding of how federal Indian policy impacts almost all activities and situations with Native Americans. Course will also look at issues such as sovereignty and how it impacts most interactions with tribal groups.
ANTH 458. Sex, Reproduction and Birth
3 Credits
This course examines pregnancy and birth practices cross-culturally, including such topics as gendered roles and responsibilities, pregnancy and birth as rites of passage, cultural concepts of personhood, global family planning initiatives, the medicalization of pregnancy and birth, and developing reproductive technologies.
Prerequisite(s): ANTH 201G, ANTH 357V or consent of instructor.

ANTH 459. Peru: From Incas to Inca Kola
3 Credits
Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalization, and the drug trade. Crosslisted with: HIST 459

ANTH 467. Archaeology of the American Southwest
3 Credits
Description and analysis of prehistoric archaeology of the American Southwest including paleo-environmental reconstruction, culture change, and relations with contemporary cultures.
Prerequisite: ANTH 315.

ANTH 472. Primate Behavior and Ecology
3 Credits
Survey of the social behavior and ecology of nonhuman primates. Crosslisted with: BIOL 472.

ANTH 473. Primate Adaptation and Evolution
3 Credits
Survey of the adaptations and evolutionary history of nonhuman primates. Crosslisted with: BIOL 423.
Prerequisite(s): ANTH 355 or consent of instructor.
Corequisite(s): ANTH 473 L when offered.

ANTH 474. Human Osteology
3 Credits
A survey of the functional, developmental, and evolutionary biology of the human skeleton. Identifying bones and teeth from hands-on experience with skeletal and dental material. Provides a foundation for human evolutionary studies, bioarchaeology and forensic anthropology. May be repeated up to 3 credits. Crosslisted with: BIOL 424.
Prerequisite(s)/Corequisite(s): Recommend ANTH 355 or equivalent.

ANTH 477. Zooarchaeology
3 Credits
Detailed study and analysis of taphonomic processes affecting animal bone recovered from archaeological and paleontological contexts.
Prerequisite(s): Either ANTH 315, ANTH 355, or BIOL 330.

ANTH 485. Special Research Project
1-3 Credits
Anthropological, archaeological, or museum field work or laboratory experience in academic, private, state, or federal agencies. Must spend 30 hours in a field, museum, or laboratory setting per credit hour earned. May be repeated up to 6 credits.
Prerequisite(s): Complete 12 ANTH credits and consent of instructor.

ANTH 486. Community Engagement and Service Learning
3 Credits
Course combines classroom instruction with a local community service project. Formal instruction component will examine social science research findings and perspectives on a locally relevant social issue or problem. In the service learning component, students will be trained and work on a local community service project. Students will develop field experience and methodological skills in community engagement. Projects and social issues may vary for different semesters.

ANTH 488. Archaeological Field School Advanced
1-6 Credits
Archaeological field methods, including excavations of prehistoric sites, record keeping, mapping and analysis of data. Consent of Instructor required.

ANTH 497. Special Topics
1-6 Credits (1-6)
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.
Prerequisite(s): Junior or above standing.

ANTH 500. Seminar in Anthropological Theory
3 Credits
Detailed focus on specific areas of anthropological theory. Course subtitled in the Schedule of Classes. Course may be repeated.
Prerequisite(s): graduate standing in Anthropology or consent of instructor.

ANTH 501. Concepts in Anthropology
3 Credits
Survey of concepts and theories central to the subdisciplines of anthropology.

ANTH 502. Fundamentals of Anthropology
1-4 Credits (1-4)
Review of fundamental knowledge and theories in biological, cultural, or linguistic anthropology or archaeology. Graded S/U.

ANTH 504. Cultures of Africa
3 Credits
Explores the rich history and cultural diversity of the continent of Africa. The course first examines the historical processes that shaped modern Africa, including the evolution of modern humans in Africa, the origins of agriculture and pastoralism, the formation of indigenous African states, the slave trade, and European colonialism. The course also looks at contemporary African societies, including hunter-gatherer, pastoral, and farming/fishing peoples. In addition, contemporary issues facing modern Africa such as famine and agricultural policy, the status of women, and environmental challenges such as deforestation are discussed. Taught with ANTH 404. Crosslisted with: HIST 504

ANTH 505. Issues in Anthropological Practice
3 Credits
Anthropological approaches to research design, implementation, and dissemination. Restricted to: Main campus only.

ANTH 506. Advanced Studies in Physical Anthropology
1-3 Credits
Lectures, seminars, or laboratory research in selected topics. May be repeated for a maximum of 12 credits.
Prerequisite(s): graduate standing in Anthropology or consent of instructor.
ANTH 507. Advanced Studies in Archaeology
1-3 Credits
Lectures, seminars, field or laboratory research in selected topics. May be repeated for a maximum of 12 credits.
Prerequisite(s): graduate standing in Anthropology or consent of instructor.

ANTH 508. Advanced Studies in Cultural Anthropology
1-3 Credits
Lectures, seminars, or field research in selected topics. May be repeated for a maximum of 12 credits.
Prerequisite(s): graduate standing in Anthropology or consent of instructor.

ANTH 509. Advanced Studies in Anthropological Linguistics
1-3 Credits
Lectures, seminars, or field research in selected topics. May be repeated for a maximum of 12 credits.

ANTH 510. Analytical Methods in Anthropology
3 Credits
Quantitative analytical methods of anthropology examined in detail. Applied problem sets include physical and cultural anthropology, linguistics, and archaeology.
Prerequisite: graduate standing or consent of instructor.

ANTH 511. Biological Anthropology
3 Credits
Examination of major theoretical and methodological issues in biological anthropology.

ANTH 512. Analytical Methods in Anthropology
3 Credits
Examines the intellectual roots of applied anthropology and early case studies of anthropologists working as administrators. Examines the ethical and methodological approaches that applied anthropologists employ. Examination of case studies that show the role of applied anthropologists in improving human service delivery, cultural preservation, planning and implementing programs of participatory change, advocacy, and economic development. Taught with ANTH 415.

ANTH 513. Biological Anthropology
3 Credits
Advanced topics in Southwestern archaeology including ritual architecture, environmental reconstruction, violence, site formation processes, and experiment and research.

ANTH 514. Advanced Topics in Mesoamerican Archaeology
3 Credits
Specific subjects in Mesoamerican archaeology to be announced in the Schedule of Classes. May be repeated for a maximum of 6 credits.
Prerequisite: graduate standing.

ANTH 515. Applied Anthropology
3 Credits
Advanced Historical Archaeology
3 Credits
Advanced methodological and theoretical concepts applicable to the archaeology of historic periods.

ANTH 516. Advanced Archaeology of the American Southwest
3 Credits
Archaeological traditions and cultures of the Southwestern United States.

ANTH 517. Advanced Topics in Southwestern Archaeology
3 Credits
Specific subjects in Southwestern archaeology to be announced in the Schedule of Classes. May be repeated for a maximum of 6 credits.
Prerequisite: graduate standing.

ANTH 518. Advanced Historical Archaeology
3 Credits
Advanced laboratory in human evolution, includes exercises and activities to learn the human fossil record. Crosslisted with: BIOL 534.

ANTH 519. Advanced Topics in Prehistoric Archaeology
3 Credits
Seminar on specialized research archaeology.
Prerequisite: graduate standing.

ANTH 520. Ethnographic Field Methods
3 Credits
Basic methodologies used in conducting qualitative ethnographic research. Projects in participant observation, ethnographic interviews, life history interviews, folk taxonomy construction, and coding of field notes.

ANTH 521. Advanced Anthropologist Study Odyssey
3-6 Credits (3-6)
This course allows students to explore an anthropological topic, such as an archaeological tradition or culture, through classroom and field activities. Students are initially exposed to a topic during several days of intensive in class work and then pursue greater understanding of the topic through a field trip and possibly limited fieldwork. Readings, site tours, on-site lectures by specialists, and field exercises provide students an opportunity to develop an understanding of anthropological perspectives on the topic as well as to provide exposure to anthropological field and analytic methods. This course also allows students to experience other cultures, prehistoric sites, and/or locales firsthand. May be repeated for credit under a different odyssey title. Taught with ANTH 386. May be repeated up to 6 credits. Consent of Instructor required.

ANTH 522. Archaeological Field School—Graduates
2-6 Credits
Techniques of archaeological data collection, analysis, and interpretation. Emphasis on archaeological field work in the Southwest.

ANTH 523. Archaeological Mapping
3-6 Credits (3-6)
Techniques for mapping archaeological sites and recording spatial distributions of archaeological data using a variety of surveying equipment and computer mapping software.

ANTH 524. Issues in Nutritional Anthropology
3 Credits
Evolutionary and cross-cultural perspective on human nutrition.

ANTH 525. Advanced Human Evolution
3 Credits
Advanced overview of human biological evolution from the emergence of Miocene apes to the modern human diaspora. May be repeated up to 3 credits. Crosslisted with: BIOL 534.

ANTH 526. Conquest and Colonialism
3 Credits
Examination of major theoretical and methodological issues in historical anthropology and archaeology of the Americas from AD1500 to present, including conquest, colonialism, capitalism, and modernity as anthropological processes. The contributions and limitations of historical, ethnohistorical, and archaeological evidence are emphasized.
Prerequisite(s): graduate standing in Anthropology or History or consent of instructor.

ANTH 527. Advanced Archaeological Linguistics
3 Credits
Lectures or laboratory in the application of linguistic methods to the study of archaeology.

ANTH 528. Applied Medical Anthropology
3 Credits
This course introduces students to applications of medical anthropological perspectives to health care, international development, public health, and health policy.

ANTH 529. Plants, Culture, and Sustainable Development
3 Credits
Study of role of indigenous cultures and indigenous knowledge systems in plant domestication, ethnoecology, and preservation of traditional crop diversity. Examination of issues related to conserving cultural diversity, food systems, food security and biodiversity.
ANTH 539. Culture and Foodways
3 Credits
Study of interaction between food and culture from anthropological perspective. Study of role of food in cultural history, social relations, ritual, and identity. Examination of impact of globalization of food systems on traditional cultures, local food systems, and food security.

ANTH 540. Cultural Resource Management
3 Credits
Study of federal and state of New Mexico historic preservation laws and regulations and their application in current Cultural Resource Management and a review of relevant case studies.

ANTH 541. Decolonizing Methodologies in Native American Studies
3 Credits
This course utilizes decolonizing methodologies and praxis to gain insight into the complex effects of oppression and colonization. Critical and indigenous concepts are used to identify and analyze hegemonic, ethnocentric, historic and contemporary human rights and social justice issues of indigenous people. Research theory and methodology such as community participatory action research that is collaborative, inclusive, and pragmatic to ethics, intellectual property, and cultural boundaries of indigenous people is emphasized.

ANTH 542. Cultural Resource Management II
3 Credits
Continuation of ANTH 540 to include the study of cultural resource management practices, research design, and completion of proposals in response to requests. Overview of management practices and budgeting of projects and specialized studies (geophysical investigations, National Register nominations).

ANTH 543. Indigenous Ways of Knowing
3 Credits
This course examines Indigenous knowledge and ways of knowing as a means to gain an appreciation of an epistemology and ontology that may be outside the boundaries of Eurocentric theory, concepts, and principles. Knowledge development through mythology and story telling is viewed from the nature of difference rather than comparative analysis.

ANTH 544. Advanced Museology I
3 Credits
Museum philosophy, history, administration, and collection management. Emphasis on collecting, cataloging, care, and exhibition, as well as ethics, public responsibility, and grantsmanship.

ANTH 545. Advanced Contemporary Medical Anthropology
3 Credits
This advanced seminar in medical anthropology addresses contemporary issues in the field of medical anthropology through theoretical and ethnographic texts. Topics span a wide range of studies in medical anthropology and may include such issues as the social production of health and illness, medical pluralism, discourses of mental health, the practice of complementary and alternative medicine, health inequalities, and the political economy of infectious disease. Taught with ANTH 402.

ANTH 546. Museum Field Methods
3 Credits
Basic methodologies used in conducting museum research away from the museum, including collections evaluation, collections acquisition, donor interviews, educational outreach, and development.

ANTH 547. Museums & Society
3 Credits
Examines theoretical frameworks that shape museum administration, exhibits and collections development. Examines themes of gender, space, place, multiculturalism, national and international politics in museum contexts.

ANTH 548. Advanced Primate Behavior and Ecology
3 Credits

ANTH 549. Advanced Primate Adaptation and Evolution
3 Credits
Advanced review of non-human primate adaption and evolution. Crosslisted with: BIOL 503.

ANTH 550. Field Work in Latin America
3 Credits
Covers anthropological field methods in Latin America that also incorporate in-field lab analysis. No S/U grading. Prerequisite: consent of instructor.
ANTH 596. Readings
1-6 Credits
Individual study of selected readings and topics. May be repeated for a maximum of 6 credits. Consent of instructor required.

ANTH 597. Internship
1-9 Credits
Anthropological or archaeological internship in private, state, or federal agency. May be repeated for a maximum of 18 credits. Consent of instructor required. Restricted to ANTH majors.
Prerequisite(s): graduate standing.

ANTH 598. Special Research Problems
1-6 Credits (6)
Individual analytic or experimental investigations. May be repeated under different subtitles for a maximum of 6 credits. Consent of instructor required. Restricted to ANTH majors.
Prerequisite(s): graduate standing.

ANTH 599. Master’s Thesis
15 Credits
Thesis. Consent of instructor required. Restricted to ANTH majors.
Prerequisite(s): graduate standing.

ARAB-ARABIC (ARAB)

ARAB 111. Elementary Arabic I
4 Credits
Arabic language for beginners.

ARAB 112. Elementary Arabic II
4 Credits
Arabic language for beginners.
Prerequisite: C- or better in ARAB 111.

ARAB 211. Intermediate Arabic I
3 Credits
Speaking, reading and writing.
Prerequisite: C- or better in ARAB 112.

ARAB 212. Intermediate Arabic II
3 Credits
Speaking, reading and writing.
Prerequisite: C- or better in ARAB 211.

ARCT-ARCHITECTURE (ARCT)

ARCT 101. Introduction to Architecture
3 Credits (2+2P)
This course provides students the tools and vocabulary to analyze, interpret, and discuss the built environment from the social, historical, perceptual, and technical determinants. Lectures and assignments will introduce students to the elements of current and likely future directions of architecture from experiential, aesthetic, structural, functional, and historical perspectives. The course will provide students with knowledge about the people and processes involved with professional issues of architectural practice. Students will be required to participate in individual and group presentations and projects, as well as compile a portfolio of their work completed in the course.

ARCT 104. Introduction to Architectural Drawing
4 Credits (2+4P)
This course is designed as an introduction to architectural drawing and design for students without prior experience in the fine arts. Students are guided through a series of spatial and analytical exercises that focus attention on not only how architects draw, but also the reasoning and processes embedded within the technique. Direct linkages with the Introduction to Architecture course provide exposure to a wide range of interconnected architectural concepts.

ARCT 111. Architecture World History I
3 Credits (2+2P)
A survey of the development of world architecture from the ancient era to the advent of the enlightenment in Europe. Major emphasis is on the visual, intellectual, cultural and technological aspects of the ancient and indigenous cultures of the classical and pre-modern world. Community Colleges only. Restricted to Alamogordo, Dona Ana and Grants campuses.

ARCT 124. Global Issues and Sustainability
3 Credits
This is a ‘critical thinking’ course. This course introduces students to global environmental issues (historic, present, and future), and the impact on tomorrow’s design and construction professions. Issues will include, but shall not be limited to global warming, energy consumption, population, natural resource consumption, air and water quality, waste management, facilities operation management, politics, and facilities design & construction. Through extensive readings, research, dialogue, and debates, students will establish a personal position (opinion) on each of the topics covered. Guest speakers will also be invited. Students will develop reports and presentations on various related issues, as well as develop ideas for solutions to problems related to environmental issues. The impact on the design and construction industry, including ‘Green Building’ and ‘LEED Accreditation and Certification/Criteria’ will also be addressed on each issue. Restricted to Community Colleges only.

ARCT 150. Orientation and Mentoring in Architecture-Construction-Engineering (ACE)
1-6 Credits (1-6)
This course is intended for high school dual credit students and college/university students wishing to explore careers in Architecture, Construction, and Engineering(ACE), which includes the specific fields of Architectural, Civil, Mechanical, Structural, Interior, Landscape, Sustainability, Environmental. Course is co-taught by a college instructor in conjunction with mentors who are local professionals in the fields of ACE. Students receive one-on-one mentoring, lectures, demonstrations, and attend field trips to construction sites, offices of Architects, Engineers and Designers, etc. Students also engage in hands-on activities such as Design (Architectural, Civil, Mechanical, Structural, Interior, Landscape, Environmental), analysis, model building, software, and research topics related to the ACE fields, as well as Sustainability, Interior Design, Landscape Design, Construction Materials and Fabrication processes. May be repeated up to 6 credits. Restricted to Community Colleges campuses only.
ARCT 154. Introduction to Architectural Design  
3 Credits (2+2P)  
This course provides students who possess a basic background in architecture and architectural drawing with an introduction to architectural design. Students are guided through a series of spatial and analytical exercises that focus attention on two dimensional, three dimensional, and four dimensional design. This course will build on direct linkages to ARCT 101 and ARCT 104 to further students’ exposure to interconnected architectural concepts of process, organizational strategies, and analysis of material methodology while utilizing abstract and practiced graphical architectural conventions. Consent of Instructor required. Restricted to Community Colleges campuses only.  
Prerequisite(s): ARCT 101 and ARCT 104.

ARCT 170. Computers in Architecture  
3 Credits (2+2P)  
Explore various software and photography techniques widely used in the architectural field. In addition to using industry standard CAD program as primary 2-d drafting tool, focus is to produce digital architectural models and renderings, presentation boards, and animations. Digital images will be produced and enhanced through basic techniques in photography and integration of various software. Both individual and group work will be required.

ARCT 204. Architectural Design Studio I  
5 Credits (1+8P)  
Enhancement of general graphic communication skills and introduction to fundamental design including exploration, development and defense of design concepts; structural order; 2D and 3D processes in manual and digital architectural graphic expression; model building; general communication and presentation techniques; and development of course portfolio. Course is Studio/critique-based with considerable amount of work/hours required. This course is designed to be taken during student’s last year in the Pre-Architecture program at DACC. Consent of Instructor required. Restricted to Community Colleges only.  
Prerequisite(s): Grade of B- or better in both ARCT 101 and ARCT 104.

ARCT 210. Architectural Delineation I  
3 Credits (2+2P)  
Introduction to visual literacy, architectural graphic communication, & basic analytical skills. Architectural concepts primarily explored through the application of technical drawing, descriptive geometry, & material manipulation; primarily black & white media.

ARCT 211. Architectural World History II  
3 Credits (2+2P)  
A survey of the development of world architecture from the enlightenment in Europe to the present. Community Colleges only. Restricted to Alamogordo, Dona Ana and Grants campuses.  
Prerequisite(s): ARCT 111 or consent of instructor.

ARCT 224. Sustainable Design in Architecture  
3 Credits  
This course provides students with hands-on opportunity to increase their awareness in, and respond to the issues of responsible environmentally friendly building design by engaging in an integrated design process combining ‘Traditional Design Process’ with ‘Sustainable Environmental Design’ strategies. Students will expand their awareness of global environmental impacts due to design and construction, and gain knowledge in the industry’s leading design ‘tool’ LEED (Leadership in Energy and Environmental Design) green building design rating system. LEED strategies will be utilized in the design of individual projects apply LEED in practical, individual design development, and develop an integrated building model utilizing the concept of BIM (Building Information Modeling). Such project development will require learning a basic design process and specific sequence including conceptual design, schematic design, design development and BIM (utilizing a BIM software such as REVIT, or AutoCad Architecture). Restricted to Community Colleges only.  
Prerequisite(s): DRFT 109 or DRFT 165 or consent of instructor.

ARCT 250. Construction Documents  
3 Credits (2+2P)  
Basic use of CAD to produce residential, commercial, and industrial architectural working drawings, including floor plans, sections, foundation plans and details, exterior and interior elevations, framing plans, and site plans. Use and application of building and zoning codes, typical construction methods and materials, and accessibility requirements. Basic 3-D modeling, AIA layering standards, sheet layout, and construction document coordination. Pre/ Restricted to: Community Colleges only.  
Corequisite(s): DRFT 109.

ARCT 254. Architectural Design Studio II  
5 Credits (1+8P)  
Advanced graphic communication, design, and 3D physical model representation. Focus on site analysis, programming and fundamental design issues of context, environment, program development and space planning, 2D and 3D design and presentation techniques. Course is ‘Studio/critique-based’ with considerable amount of outside work/hours required. This course is designed to be taken during student’s last year in the Pre-Architecture program at DACC. Restricted to Alamogordo, Dona Ana and Grants campuses.  
Prerequisite(s): Grade of C- or better in ARCT 204.

ARCT 260. Architectural Delineation  
3 Credits (2+2P)  
Continuation of ARCT 210 with an emphasis in color media.  
Prerequisites: ARCT 210.

ARCT 274. LEED Accreditation Exam Prep  
3 Credits  
This course is intended for anyone in the construction or architectural design fields who is interested in learning more about green building and the LEED (Leadership in Energy and Environmental Design) strategies, and are also interested in learning about how to become LEED accredited. Overview of the LEED rating systems utilized in the design and operation of buildings, the various LEED building certifications, and accreditation requirements for professionals. Highlights include interpretation of the LEED Reference Guides, accepted strategies for meeting LEED certification, sample practice exams, integrated project delivery methods, and a practical approach to problem solving through the use of design problems. Restricted to Community Colleges only.
ARCT 290. Special Topics
1-6 Credits
Topics subtitled in the Schedule of Classes. May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.

ARCT 291. Cooperative Experience
1-6 Credits
Supervised cooperative work program. Student employed in approved occupation; supervised and evaluated by employer and instructor. Student meets weekly with instructor. Graded S/U.
Prerequisite: consent of instructor.

ARCT 295. Professional Development and Leadership-AIAS
1-3 Credits
As members and/or officers of student professional organizations, architecture students gain experience through undertaking leadership roles, participating in team building, and becoming involved in service to the community. Students can also gain actual work experience involving skills related to their field of study. Graded S/U.

ART-ART (ART)

ART 101G. Orientation in Art
3 Credits (2+3P)
A multicultural examination of the principles and philosophies of the visual arts and the ideas expressed through them.

ART 110G. Visual Concepts
3 Credits (2+4P)
Introduction to the philosophies of art, visual thinking, and principles of visual organization. Designed to give students a broad view of aesthetic traditions, ideologies, and techniques basic to the creation and evaluation of art. Principles and concepts are taught in a common lecture and applied in parallel small studio sections. For non-art majors only.

ART 150. Drawing I
3 Credits (2+4P)
Introduction to the skill of seeing through exercises that emphasize careful drawing from the still life and utilize a range of drawing materials and techniques. Outside assignments required. Intended for non-art majors on main campus. May be repeated up to 3 credits.

ART 151. Drawing II
3 Credits (2+4P)
Continued emphasis on drawing from observation by focusing on still life and other subject matter. Covers a range of materials, techniques and concepts. Outside assignments. Restricted to ART and ANVE/DFM majors.
Prerequisite(s): ART 150.

ART 155. 2-D Fundamentals
3 Credits
Introduction to two-dimensional space emphasizing visual elements and design principles as they apply to composition. A variety of materials are used in the studio projects and sketchbook exercises. Developing knowledge in vocabulary, color theory and skill in translating ideas into design are encouraged. Restricted to Community Colleges campuses only.

ART 156. 3-D Fundamentals
3 Credits
Compositional organization of three-dimensional space explored through a broad range of visual exercises. Resourceful and creative problem solving encouraged. Restricted to Community Colleges campuses only.

ART 157. Color Theory
3 Credits (2+4P)
Various color theories as they relate to compositional organization. Required for art education majors.

ART 160. Computer-Based Illustration
3 Credits (2+4P)
Introduction to the principles of computerized drawing and design. Using the basic concepts, drawing tools, and vocabulary of Adobe Illustrator.
Prerequisite: ART 150, ART 155, or consent of instructor.

ART 161. Digital Imaging I
3 Credits (2+4P)
Work with basic concepts, tools, and vocabulary of Adobe Photoshop to create effective visual communication. Includes selection tools, cloning, copying and pasting, color correction, image restoration, filters, and special effects. Community Colleges only.

ART 163. Digital Graphics
3 Credits (2+4P)
Importing and exporting images and text into various desktop publishing formats. Exploring imaging, drawing, and page layout applications. Introduction to typography.
Prerequisite: ART 161.

ART 165. Web Page Design
3 Credits (2+4P)
Introduction to the creation of well-designed and organized Web sites. Emphasis on building creative but functional user-friendly sites. Introduction to HTML, Flash, Java Script, and Web-authoring software. Community Colleges only. Same as OEPT 165.
Prerequisite: ART 161.

ART 250. Introduction to Drawing
3 Credits (2+4P)
Introduction to drawing with a focus on technical, structural, and methodological skills. Subjects include still life and live figure models.

ART 252. Aspects of Drawing
2-3 Credits
Continued work in drawing with emphasis on personal creative endeavor. Community Colleges only.
Prerequisites: ART 150, ART 151, and ART 250.

ART 255. Introduction to Graphic Design
3 Credits (2+4P)
Introduction to the principles of visual communication and digital media, letterforms, typography and identity marks. Projects produced using conventional and digital tools.

ART 256. Introduction to Letter Forms and Typographic Design
3 Credits (2+4P)
Introduction to letter forms, typography and identify marks. Projects produced using conventional and digital graphic designer tools.
Prerequisite(s): ART 155.

ART 260. Introduction to Painting
3 Credits (2+4P)
Introduction to basic skills of painting through various exercises that emphasize working from observation, images and imagination. May be repeated up to 3 credits.
Prerequisite(s): ART 250 or ART 150.
ART 261. Painting Methods, Techniques and Applications
3 Credits (2+4P)
The investigation of formal aspects of painting, an examination of painting techniques, and an exploration of various methodologies regarding form and content as applied to critical thinking skills through medium of paint.
Prerequisite(s): ART 150, ART 260.

ART 262. Aspects of Painting
2-3 Credits
Varied painting media: continued development of painting skills.
Prerequisites: ART 150, ART 155 (for art majors), ART 260, or consent of instructor.

ART 265. Introduction to Sculpture
3 Credits (2+4P)
Beginning sculpture students "explore space" while learning new processes and skills, including mold making, welding and woodworking.

ART 266. Go Figure: The Body in Contemporary Art
3 Credits (2+4P)
Cultivation of individual direction through constant creative action. Emphasis on self-styled assignments. Rotating themes pertinent to contemporary sculpture supplement aesthetic and conceptual awareness. Restricted to: Main campus only.

ART 267. Art Portfolio Preparation
3 Credits (2+4P)
Refine general marketing strategies, personal portfolio and resumes. Define, target, and penetrate personal target markets. Students develop individual promotional packages.
Prerequisites: ART 163, ART 269, and ART 272, or consent of instructor.

ART 269. Advanced Computer-Based Illustration
3 Credits (2+4P)
Design custom graphics and create special effects with filtering, special effects on type, graphing, technical illustrations, and three-dimensional drawing using Adobe Illustrator.
Prerequisites: ART 157, ART 160, and ART 161, or consent of instructor.

ART 270. Introduction to Photography
3 Credits (2+4P)
Introduction to the production of digital images within the context of contemporary art. Utilizes digital SLR cameras with an emphasis on basic camera operation, picture composition, image processing and digital workflow. A DSLR camera is required. May be repeated up to 3 credits.

ART 271. Introduction to Film and Darkroom
3 Credits (2+4P)
Introduction to silver based photographic materials, film development, enlargement printing and darkroom work. Students will work with a range of cameras including: medium format, toy and pinhole. Emphasis on understanding the syntax of silver halide photographic materials. Development of conceptual vocabulary and the creation of images with thematic unity. May be repeated for a maximum of 6 credits.
Prerequisite(s): ART 270.

ART 272. Digital Imaging II
3 Credits (2+4P)
Refining of individual creative styles and technical skills using Adobe Photoshop. Emphasis on input and output predictability, and working with large file productions. Community colleges only. Restricted to: Community Colleges only.
Prerequisite(s): ART 161.

ART 274. Digital Capture and Output
3-9 Credits (3-9)

ART 275. Introduction to Ceramics
3 Credits (2+4P)
Introduction to the technical processes and conceptual concerns of working with the ceramic material. Students will explore various methods of forming with earthenware to make both functional and expressive works out of clay.

ART 276. Ceramics I, B
3 Credits (2+4P)
Beginning ceramics, complementary half to ART 275. (ART 275 and ART 276 do not need to be taken consecutively.) Basic building techniques of coil, slab, and throwing are introduced. High-fire and low-fire clays are used.

ART 280. Introduction to Printmaking
3 Credits (2+4P)
Introduction to the field of printmaking through projects that focus on specific processes, such as relief, intaglio, collography, paper lithography, and a variety of transfer and stencil techniques. Students engage in several assignments that are collaborative, as well as individual projects designed for development of personal aesthetics.

ART 281. Printmaking II
3 Credits (2+4P)
Printmaking materials and techniques, with emphasis in intaglio and relief procedures.
Prerequisites: ART 150, ART 156 (for ART majors) and 280. Corequisite: ART 150.

ART 285. Introduction to Metals and Jewelry
3 Credits (2+4P)
Introduction to fundamental processes, design, and conceptual development for metal fabrication of jewelry and functional/non-functional objects.

ART 286. Stained Glass
3 Credits (2+4P)
Instruction in the fundamental fabrication and design techniques for stained glass. Introduction to visual decision making skills, historical, and critical issues of the medium. Community Colleges only.

ART 294. Special Topics in Studio
1-3 Credits
Specific subjects and credits to be announced in the Schedule of Classes. No more than 9 credits toward a degree.
Prerequisite: consent of instructor.

ART 295G. Introduction to Art History I
3 Credits
An introduction to the principles of art history within a chronological framework of the art of the Western World. All media will be discussed. From prehistoric times to the fourteenth century.

ART 296G. Introduction to Art History II
3 Credits
Continuation of ART 295, Art of the Western World from Late Gothic to the present. May be repeated up to 3 credits.
ART 298. Writing in Art
3 Credits
This reading- and writing-intensive course will introduce students to various approaches of writing about historical art.

ART 300. Special Topics in Art History
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits. May be repeated up to 12 credits. Restricted to Las Cruces campus only.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 305. Medieval Art
3 Credits
History of painting, stained glass, sculpture, architecture and manuscript illumination in Europe from the Early Christian period to the end of the Gothic period; taught with ART 505.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 310. Native American Art
3 Credits
Cross-cultural introduction to art of the prehistoric and historic native people of the North, Central, and South Americas. Considers the artistic expression and the function of art in diverse cultural and environmental contexts.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of the instructor.

ART 311. Art of China I: Neolithic to Song Dynasty
3 Credits
Survey of the art of China from the neolithic period to the end of the Song dynasty. Non-majors welcome. May be repeated up to 3 credits. Crosslisted with: ART 511.
Prerequisite(s): ART 295G, 296G, and 298 or HIST 211G and HIST 212G or consent of instructor.

ART 320. Art and Architecture in Pre-Columbian Meso-America
3 Credits
Analysis of the art and culture of the Mesoamerican peoples before the arrival of Columbus in the New World. Includes an in-depth formal and historical analysis of architecture, sculpture, painting, pottery, and metal works of Mixtec, Toltec, Aztec, Maya, and other cultures and civilizations.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 321. Pre-Columbian Art and Architecture of the Andes
3 Credits
Examines the arts and history of pre-Columbian Andean cultures in a cultural context. Analysis of architecture, sculpture, pottery, jewelry, textiles, and feather work.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 323. Italian Renaissance Art
3 Credits
History of painting, sculpture and architecture in Italy from the 14th century to the end of the 16th century; taught with ART 523.
Prerequisite(s): ART 295G, ART 296G and ART 298 or consent of instructor.

ART 325. Northern Renaissance Art
3 Credits
History of painting, manuscript illumination and graphics in Northern Europe from the late 14th century to the mid-16th century; taught with ART 525.
Prerequisite(s): ART 295G, 296G, and 298 or consent of instructor.

ART 328. Baroque Art and Architecture in Northern Europe
3 Credits
Study of architecture, painting sculpture in Flanders, Holland, France, England, and Germany as indigenous developments and as reflections of the Italian Baroque.
Prerequisite(s): ART 295G, ART 296G, ART 298, or consent of instructor.

ART 329. Survey of Western Architecture
3 Credits
Survey of history of Western architecture from prehistoric time to the present.
Prerequisite(s): ART 295G, ART 296G, and ART 298 or consent of instructor.

ART 330. Modern Architecture
3 Credits
A survey of the history of Modern Architecture with focus given to major architects, monumental buildings, and building groups stressing construction techniques and style from the 18th century to the present.
Prerequisite(s): ART 295G, ART 296G, ART 298, or consent of instructor.

ART 333. Baroque Art and Architecture in Italy, Spain, and Hispanic Latin America
3 Credits
Concentration of Italian Baroque architecture, painting, and sculpture; and on Spanish painting, sculpture, and architecture, as well as the art and architecture of Spanish vice-royalties of the Americas.
Prerequisite(s): ART 295G, ART 296G, ART 298, or consent of instructor.

ART 337. American Art to 1900
3 Credits
Examines painting, sculpture, architecture and other arts in the United States from the colonial period to 1900 and places them within conceptual and historical contexts.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 338. Late Eighteenth- and Nineteenth-Century European Art
3 Credits
History of painting, sculpture, architecture, and other arts created in Europe from 1789 to 1900.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 339. History of Photography
3 Credits
Course studies history, theory and use of photographic practices in art, especially from formal introduction of the process in 1839 to the present.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 342. Twentieth-Century Art I, 1900-1945
3 Credits
Examines themes and monuments of the Western world created between 1900 and 1945 and emphasizes the growth of modern and avant garde cultural practices.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 343. Twentieth-Century Art II, 1945-Present
3 Credits
History of painting, sculpture, and other arts in Europe, the United States, and elsewhere from 1945 to the present.
Prerequisite(s): ART 295G, ART 296G, and ART 298.
ART 350. Intermediate Drawing and Painting
3 Credits (2+4P)
Intermediate drawing and painting course focusing on the following topics: Realism, Color, Narrative, and Abstraction. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 12 credits.
Prerequisite(s): ART 250 and ART 260.

ART 354. History of Graphic Design
3 Credits
This course introduces students to the history of graphic design and evolution of visual communication. Course will involve writing and design projects.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 355. Special Topics in Graphic Design
3 Credits (2+4P)
Intermediate graphic design course focusing on the following topics: production, packaging, layout, identity and interactive design. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 12 credits.
Prerequisite(s): ART 255.

ART 356. Graphic Design and Multicolor Digital Production
3 Credits (2+4P)
Design and production of multicolor projects using conventional and digital techniques.
Prerequisite(s): Grades of B or higher in each of ART 255 and ART 256; prior passage of ART 355 with a grade of C- or higher.

ART 357. Digital Graphic Design and Illustration
3 Credits (2+4P)
Graphic illustrations and icons using vector and bitmap software programs. Emphasis on editorial, information and cultural applications. May be repeated for a maximum of 6 credits.
Prerequisite(s): ART 150, ART 255, ART 256.

ART 359. Digital Image-Making for Graphic Designers
3 Credits
Creation of graphic icons, stylizations and archetypes. Projects produced using vector-based computer programs. Some computer experience required.
Prerequisite(s): ART 150, ART 255, ART 256, and CMT 145.

ART 360. The Figure
3 Credits (2+4P)
Introduction to working from live models, anatomical skeletons, source images and the imagination in a variety of two-dimensional media, including painting and drawing. An emphasis is placed on anatomical accuracy and with a focus on the figure as an expressive subject. May be repeated up to 3 credits.
Prerequisite(s): ART 150, 250 or consent of instructor.

ART 361. Painting IIIIB
3 Credits (2+4P)
Media, materials and technical problems of contemporary painting continued. May be repeated for a maximum of 6 credits.
Prerequisite(s): ART 295G and ART 360.

ART 365. Intermediate Sculpture Special Topics
3 Credits (2+4P)
Intermediate sculpture students will expand their fabrication skills in metal, wood and mixed media. Assignments incorporate topics such as Pop art, Process Art, and The Body in Contemporary Art. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 6 credits.
Prerequisite(s): ART 265.

ART 370. Intermediate Digital Photography
3 Credits (2+4P)
Intermediate digital photography course addressing techniques and production of photo media within the context of contemporary art. Course focuses on the following rotating topics: Networks, Photo-book and Video art. May be repeated up to 12 credits.
Prerequisite(s): ART 270, or consent of instructor.

ART 373. Intermediate Analog Photography
3 Credits (2+4P)
Introduction to skills and techniques of black and white film photography within the context of contemporary art. Emphasis on analog camera work and darkroom procedures. 35 mm SLR or rangefinder film camera required for course. May be repeated up to 6 credits.
Prerequisite(s): ART 270, or consent of instructor.

ART 374. Intermediate Ceramics: Multiples (Design and Production)
3 Credits (2+4P)
Intermediate ceramics course focusing on an introduction to the technical processes of throwing, prototyping, mold making, glaze calculation, and alternative firing. May be repeated up to 6 credits.
Prerequisite(s): ART 275.

ART 375. Intermediate Ceramics: Sculptural Concerns
3 Credits (2+4P)
Intermediate ceramics course focusing on the refinement of technical skills with an emphasis on conceptual development related to materiality.
Prerequisite(s): ART 275 or consent of instructor.

ART 376. Museum/Gallery Research Internship
1-9 Credits
Research internship in museum or gallery. Requirements determined by instructor in cooperation with supervising museum/gallery professional. May be repeated up to 9 credits. Consent of Instructor required.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 380. Intermediate Printmaking
3 Credits (2+4P)
Intermediate printmaking course with emphasis on further investigation of a variety of materials and techniques associated with the print processes of intaglio and relief. Stone lithography, serigraphy and mixed media will be introduced. May be repeated up to 6 credits.
Prerequisite(s): ART 280, or consent of instructor.

ART 385. Intermediate Metals: Special Topics
3 Credits (2+4P)
Intermediate Metals/Jewelry course focusing on the following topics: design and production, materiality and sculptural concern. Techniques may include casting, complex construction, forming, and mix media. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 6 credits.
Prerequisite(s): ART 285.

ART 387. Exhibition Studies
3 Credits
Exhibition theory through practice. Gallery operations and management: collecting, conversation, exhibiting, and public responsibility.
ART 390. Visual Culture of the 1960s
3 Credits
Focus on major cultural trends and historical events in 1960's America. Offers analysis of art, films, and pop culture phenomena of the period.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 392. Visual Culture of the 1980s
3 Credits
Focus on major cultural trends and historical events in 1980's America. Offers analysis of art, films, and pop culture phenomena of the period.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 394. Special Topics in Studio
3 Credits
Specific subjects and credits to be announced in the Schedule of Classes. No more than 9 credits toward a degree.

ART 401. Museum Conservation Techniques I
3 Credits (2+3P)
Introduces the student to conservation theory and the basic principles of conservation for cultural objects. The course integrates the history, philosophy and technologies of art conservation with knowledge of the properties of materials used in conservation. The student will learn and develop conservation skills including learning about the most frequent kinds of deterioration that can occur in various types of art objects, symptoms and causes as well as preventative and restoration techniques. Although this course provides practical experience, it also seeks to provide a broad understanding of the field of conservation. This course also includes how to document the condition of an object during the conservation process. Crosslisted with: ART 501.

ART 402. Museum Conservation Techniques II
3 Credits (2+3P)
Continues conservation theory and the basic principles of conservation for cultural objects. The course integrates the history, philosophy and technologies of art conservation with knowledge of the properties of materials used in conservation. The student will learn and develop conservation skills including learning about the most frequent kinds of deterioration that can occur in various types of art objects, symptoms and causes as well as preventative and restoration techniques. Although this course provides practical experience, it also seeks to provide a broad understanding of the field of conservation. Crosslisted with: ART 501.

ART 403. Preventative Conservation/Collections Care
3 Credits
Introduces the student on how to mitigate the deterioration and damage of cultural property in a museum setting through the formulation and implementation of policies and procedures. The course addresses most aspects of collections management and care for objects in storage, exhibitions and during transportation. Crosslisted with: ART 503.

ART 444. Art and Life in Renaissance Italy
3 Credits
Examines how Italian Renaissance textural and visual culture offered Europe new ways of seeing and portraying itself. 1350-1550. Topics include: Florence, Venice, Rome, Leonardo, Michelangelo, titian, humanism, the Medici, and republican and courtly culture.
Prerequisite(s): ART 295G, ART 296G, and ART 298.

ART 450. Advanced Drawing and Painting: Special Topics
3-6 Credits (2-4+4P)
Advanced drawing and painting course focusing on the following topics: Identity, Place, Spirituality, and Body. Topics will be announced in the course schedule. May be repeated up to 12 credits.
Prerequisite(s): 12 credits of ART 350.

ART 455. Advanced Graphic Design Special Topics
3-6 Credits (3-6)
Advanced graphic design course focusing on the following topics: visual communication, system graphics, typography, portfolio preparation, art of the book and professional practice. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 18 credits.
Prerequisite(s): 6 credits of ART 355.

ART 458. The New Mexico Studio of Design
3 Credits
An advanced graphic design studio providing a design service for nonprofit community organizations. Client-based projects produced by students from concept to completion. May be repeated for a maximum of 6 credits.
Prerequisite(s): ART 355.

ART 460. Painting Workshop
3 Credits
Media, materials and advanced technical problems of contemporary painters. May be taken up to 6 credits.
Prerequisite(s): ART 350 and ART 361.

ART 461. Painting Workshop II
3 Credits (2+4P)
Advanced issues in contemporary painting. May be repeated for a maximum of 6 credits. Restricted to majors.
Prerequisite(s): ART 460.

ART 465. Advanced Sculpture Special Topics
3-6 Credits (2-4+4P)
Thematic classes deepen students' knowledge of contemporary sculpture and extended media through a series of interpretive assignments that culminates in a unified body of work. Course topics include: "Artists' Maps", Installation Art/Land Art", "Sculpture and the 1960s", "Sculpture and the 1970's". Topics will be announced in the course schedule. May be repeated up to 18 credits.
Prerequisite(s): 3 credits of ART 365 or permission of the instructor.

ART 470. Advanced Digital Photography
3 Credits (2+4P)
Advanced digital photography course addressing technique and production of photo media within the context of contemporary art. Course focuses on the following rotating topics: Temporality, Photo-installation and Video Art. Each topic may only be taken once. May be repeated up to 12 credits.
Prerequisite(s): ART 370, ART 373 or consent of instructor.

ART 473. Advanced Analog Photography
3 Credits (2+4P)
Advanced photography course focused on skills and techniques of black and white film within the context of contemporary art. Course focuses on the following rotating topics: Large Format Tableau, Experimental Processes and Materials. May be repeated up to 12 credits.
Prerequisite(s): ART 370 and ART 373, or consent of instructor.

ART 474. Advanced Ceramics Design and Production
3-6 Credits (3-6)
Advanced ceramics course focusing on the technical processes of throwing, prototyping, mold making, glaze calculation, and alternative firing. Discussions may also include issues of professional practice, marketing, and branding. May be repeated up to 6 credits.
Prerequisite(s): ART 374 and ART 375, or consent of instructor.
ART 475. Advanced Ceramics Sculptural Concerns
3-6 Credits (2-4+4P)
Advanced ceramics course focusing on conceptual development as it relates the creation of a unified body of work. Topics may include discussions of advanced techniques, professional practices, and contemporary issues in ceramics. May be repeated up to 15 credits.
Prerequisite(s): ART 374 and ART 375, or consent of instructor.

ART 477. Independent Research Problems in Art History
1-9 Credits
Advanced research on special problems to be conducted under supervision of art history faculty. May be taken up to 12 credits. Consent of instructor required.
Prerequisite(s): ART 295G, ART 296G, ART 298 and one 300 level art history course and consent of instructor.

ART 478. Seminar: Selected Topics in Art History
3 Credits
Reading, research, and discussion of advanced problems. Topics will be announced in the course schedule. Each topic may be only taken once. Non-art/art history majors, contact instructor for consent. May be repeated up to 12 credits.
Prerequisite(s): ART 295G, ART 296G and ART 298, and one 300 level art history course.

ART 479. Art Theory, Criticism, and Historiography
3 Credits
Theories and methodologies in art history and art criticism. May be repeated up to 3 credits.
Prerequisite(s): ART 295G, ART 296G, ART 298 and one 300 level art history course and consent of instructor.

ART 480. Special Topics in Printmaking
3-6 Credits (3-6)
Special topics in printmaking. Emphasizing conceptual approaches to printmaking and development of individual content. Topics will be announced in the course schedule. May be repeated up to 18 credits.
Prerequisite(s): 6 credits of ART 380.

ART 485. Advanced Metals: Special Topics
3-6 Credits (2-4+4P)
Advanced Metals/Jewelry course focusing on the following topics: conceptual development and personal aesthetic and style, professional practices, contemporary issues in Metals/Jewelry, and senior exhibition. Techniques may include enameling, coloring, historical processes, and digital technology. Topics will be announced in the course schedule. Each topic may only be taken once. May be repeated up to 18 credits.
Prerequisite(s): 6 credits of ART 385.

ART 490. Museum Conservation Internship
1-6 Credits (1-6)
The goal of this internship is to provide a student with a practical learning experience in preventative conservation techniques and policies so that they can relate what they have learned in the classroom from ART 403 Preventative Conservation/Collections Care to applied situations. It will provide the student an opportunity to learn skills and knowledge needed in working with museum collections. Tasks and projects will be assigned by the instructor. 3 credits required for BFA in Museum Conservation. May be repeated up to 6 credits.
Prerequisite(s): ART 403.

ART 494. Special Topics in Studio
3 Credits
Specific subjects and credits to be announced in the Schedule of Classes. No more than 9 credits toward a degree.

ART 495. Undergraduate Studio Thesis
3-6 Credits (3-6)
Special research and independent study leading to undergraduate thesis exhibition. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

ART 496. Fundamentals of Studio Management
1 Credit
Advanced studio course designed to introduce students to the fundamentals of studio management. Includes training in proper tools use and maintenance; safety procedures; and practical experience with studio oversight. Concurrent registration in advanced level studio course of the same media area required. May be repeated for a maximum of 3 credits. Restricted to majors. Graded S/U.
Prerequisite: consent of instructor.

ART 497. Readings in Art History
3 Credits
In-depth study of art historical writing. May be taken up to 12 credits. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): ART 295G, ART 296G, ART 298 and one 300 level art history course.

ART 499. Problems in Studio Art
1-6 Credits (1-6)
Individualized study in specialized studio areas not covered by other advanced courses. May be repeated up to 9 credits. Consent of Instructor required.

ART 500. Special Topics in Art History Advanced
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.
Prerequisite: graduate status.

ART 501. Museum Conservation Techniques I
3 Credits (2+3P)
Introduces the student to conservation theory and the basic principles of conservation for cultural objects. The course integrates the history, philosophy and technologies of art conservation with knowledge of the properties of materials used in conservation. The student will learn and develop conservation skills including learning about the most frequent kinds of deterioration that can occur in various types of art objects, symptoms and causes as well as preventative and restoration techniques. Although this course provides practical experience, it also seeks to provide a broad understanding of the field of conservation. This course also includes how to document the condition of an object during the conservation process. May be repeated up to 3 credits. Crosslisted with: ART 401.

ART 502. Museum Conservation Techniques II
3 Credits (2+3P)
Continues conservation theory and the basic principles of conservation for cultural objects. The course integrates the history, philosophy and technologies of art conservation with knowledge of the properties of materials used in conservation. The student will learn and develop conservation skills including learning about the most frequent kinds of deterioration that can occur in various types of art objects, symptoms and causes as well as preventative and restoration techniques. Although this course provides practical experience, it also seeks to provide a broad understanding of the field of conservation. Crosslisted with: ART 402.

Prerequisite(s): ART 501.
ART 503. Preventive Conservation/Collections Care
3 Credits
Introduces the student on how to mitigate the deterioration and damage of cultural property in a museum setting through the formulation and implementation of policies and procedures. The course addresses most aspects of collections management and care for objects in storage, exhibitions and during transportation. Crosslisted with: ART 403.

ART 505. Medieval Art
3 Credits
History of painting, stained glass, sculpture, architecture and manuscript illumination in Europe from the Early Christian period to the end of the Gothic period; taught with ART 305. Consent of instructor required. 
Prerequisite(s): ART 295G; Graduate Standing.

ART 510. Advanced Native American Art
3 Credits
Cross-cultural introduction to art of the prehistoric and historic native people of the North, Central, and South Americas. The artistic expression and the function of art considered in diverse cultural and environmental contexts.
Prerequisite: graduate standing.

ART 511. Art of China I: Neolithic to Song Dynasty
3 Credits
Survey of the art of China from the neolithic period to the end of the Song dynasty. May be repeated up to 3 credits. Crosslisted with: ART 311.
Prerequisite(s): Graduate Standing.

ART 520. Art and Architecture in Pre-Columbian Mesoamerica
3 Credits
Analysis of the art and culture of the Mesoamerican peoples before the arrival of Columbus in the New World. Includes an in-depth formal and historical analysis of architecture, sculpture, painting, pottery and metal works of Mixtec, Toltec, the Aztec, Maya, and other cultures and civilizations.
Prerequisite: graduate standing.

ART 521. Pre-Columbian Art and Architecture of the Andes
3 Credits
Examines the arts and history of pre-Columbian Andean cultures in a cultural context. Analysis of their architecture, sculpture, pottery, jewelry, textiles, and featherwork.
Prerequisite: graduate standing.

ART 523. Italian Renaissance Art
3 Credits
History of painting, sculpture and architecture in Italy from the 14th century to the end of the 16th century; taught with ART 323. Consent of instructor required.
Prerequisite(s): Graduate standing.

ART 525. Northern Renaissance Art
3 Credits
History of painting, manuscript illumination and graphics in Northern Europe from the late 14th century to the mid-16th century; taught with ART 325. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Graduate Standing.

ART 530. Modern Architecture
3 Credits
Study of the architecture of the later eighteenth, nineteenth and twentieth centuries in the context of technological, social and stylistic changes. Focus on the works of Louis Sullivan, Frank Lloyd Wright, and European architects of the International Style, and the current reaction.
Prerequisite: graduate standing.

ART 533. Baroque Art and Architecture in Italy, Spain, and Hispanic Latin America
3 Credits
Concentration on Italian and Spanish Baroque architecture, painting, and sculpture, as well as the art and architecture of Spanish vice-royalties of the Americas.
Prerequisite: graduate standing.

ART 537. American Art to 1900
3 Credits
Covers the history of painting, sculpture, architecture, and other arts in the United States from colonial period to 1900.
Prerequisite: graduate standing.

ART 539. Advanced History of Photography
3 Credits
Course studies history, theory and use of photographic practices in art, especially from formal introduction of the process in 1839 to the present.
Prerequisite(s): ART 295G, ART 296G, and ART 297; Graduate standing.

ART 542. Twentieth-Century Art I, 1900-1945
3 Credits
History of painting, sculpture, and other arts in Europe, the United States, and elsewhere from 1900 to 1945.
Prerequisite: graduate standing.

ART 543. Twentieth-Century Art II, 1945-Present
3 Credits
History of painting, sculpture, and other arts in Europe, the United States, and elsewhere from 1945 to the present. Comprehensive research paper required.
Prerequisite: graduate standing.

ART 550. Drawing and Painting Workshop
3-9 Credits (2-4+4P)
Graduate level drawing and painting course focusing on the development of concepts, expression and visual form. May be repeated up to 27 credits. Restricted to: ART majors.

ART 555. Graphic Design
3 Credits
May be repeated up to 27 credits.

ART 560. Painting Workshop
3-9 Credits
Advanced work with painting skills. Emphasis on critical analysis and development of body of work. Restricted to graduate art students. May be repeated up to 27 credits.
Prerequisite(s): Graduate standing.

ART 565. Sculpture Media
3-9 Credits
May be repeated up to 27 credits.

ART 570. Advanced Introduction to Photography
3-9 Credits
Graduate students develop and implement a research program using photographic media and processes. Outcomes and program developed in consultation with photography faculty. May be repeated up to 30 credits. Consent of Instructor required. Prerequisite(s): .

ART 573. Non-Silver Photographic Processes
3 Credits
Advanced work with historic photographic processes. Emphasis on creation of an extended body of work. Taught with ART 373. Consent of instructor required. Restricted to ART majors.
Prerequisite(s): ART 270, ART 271, ART 274.
ART 575. Ceramic Arts
3-9 Credits
May be repeated up to 27 credits.

ART 576. Museum/Gallery Research Internship
1-9 Credits
Research internship in museum or gallery. Requirements determined by instructor in cooperation with supervising museum/gallery professional. For art history credit. May be repeated for a maximum of 9 credits.
Prerequisite: graduate standing.

ART 577. Independent Research Problems in Art History
1-9 Credits
Advanced research on special problems to be conducted under supervision of art history faculty. May be repeated for a maximum of 9 credits. Consent of instructor required.
Prerequisite(s): Graduate standing.

ART 578. Seminar: Selected Topics in Art History
3 Credits
Reading, research, and discussion of advanced problems. May be repeated for a maximum of 9 credits.
Prerequisite: graduate standing.

ART 579. Graduate Seminar: Art Theory, Criticism, Historiography
3 Credits
Theories and methodologies in art history and art criticism.
Prerequisite: graduate standing.

ART 580. Printmaking Workshop
3-6 Credits
May be repeated for a maximum of 33 credits.
Prerequisite(s): Graduate standing.

ART 585. Metals and Jewelry Design
3-9 Credits
May be repeated up to 27 credits.

ART 590. Visual Culture of the 1960s
3 Credits
Focuses on major cultural trends and historical events in 1960s America. Offers analysis of art, films, and pop culture phenomena of the period. Fulfill all requirements of ART 390 plus graduate-level research. Graduate standing.
Prerequisite(s): Either ART 297, ART 343, or consent of instructor.

ART 591. Visual Culture of the 1970s
3 Credits
Focuses on major cultural trends and historical events in 1970s America. Offers analysis of art, films, and pop culture phenomena of the period. Fulfill all requirements of ART 391 plus graduate-level research. Graduate standing.
Prerequisite(s): Either ART 297, ART 343, or consent of instructor.

ART 592. Visual Culture of the 1980s
3 Credits
Focuses on major cultural trends and historical events in 1980s America. Offers analysis of art, films, and pop culture phenomena of the period. Fulfill all requirements of ART 392 plus graduate-level research. Graduate standing.
Prerequisite(s): Either ART 297, ART 343, or consent of instructor.

ART 595. Projects in Studio
1-6 Credits
Individualized study in specialized studio areas not covered by other advanced courses. May be repeated up to 12 credits. Consent of Instructor required.

ART 596. Graduate Studio Seminar
3 Credits
Explores issues in contemporary art making and their relationship to personal work. Presentation of research in oral, visual, and written form. May be repeated for a maximum of 18 credits. Restricted to majors.
Prerequisite(s): Graduate standing.

ART 597. Readings in Art History
3 Credits
In-depth study of historical writing about art. May be repeated for a maximum of 9 credits.
Prerequisite: graduate standing.

ART 598. Studio Thesis
1-15 Credits
Special research in studio, leading to an exhibition and written thesis statement.

ART 599. Art History Thesis
15 Credits
Art history master’s thesis research. May be repeated for unlimited credit. Restricted to masters level art history students. Consent of instructor required.
Prerequisite(s): Graduate standing.

ASTR-ASTRONOMY (ASTR)

ASTR 105G. The Planets
4 Credits (3+2P)
Comparative study of the planets, moons, comets, and asteroids which comprise the solar system. Emphasis on geological and physical processes which shape the surfaces and atmospheres of the planets. Laboratory exercises include analysis of images returned by spacecraft. Intended for non-science majors, but some basic math required. This lecture/lab course satisfies the New Mexico Common Core Area III: Lab Sciences requirement.

ASTR 110G. Introduction to Astronomy
4 Credits (3+2P)
A survey of the universe. Observations, theories, and methods of modern astronomy. Topics include planets, stars and stellar systems, black holes and neutron stars, supernovas and gaseous nebulae, galaxies and quasars, and cosmology. Emphasis on physical principles involving gravity, light and optics (telescopes). Generally non-mathematical. Laboratory involves use of the campus observatory and exercises designed to experimentally illustrate principles of astronomy. This lecture/lab course satisfies the New Mexico Common Core Area III: Lab Sciences requirement.

ASTR 199. Introduction to Astronomy Lab, Special
1 Credit
This lab-only listing exists only for students who may have transferred to NMSU having taken a lecture-only introductory astronomy class, to allow them to complete the lab requirement to fulfill the general education requirement. Consent of Instructor required. (e.g.)
ASTR 301V. Revolutionary Ideas in Astronomy
3 Credits
Examines recent fundamental scientific revolutions that have shaped our view of Earth and the universe. Topics in astronomy range from exoplanets to black holes to dark energy and raise questions about the very nature of how we use the scientific method to see the unseen, and how this shapes science research today.
Prerequisite(s): Any general education science course.

ASTR 305V. The Search for Life in the Universe
3 Credits
Use of information from several of the sciences to explore the likelihood that life exists elsewhere in the universe. Subjects include an overview of historical ideas about the possibility of life elsewhere in the universe, the chemistry and biology of life on Earth, recent explorations for life within our solar system, and current search strategies for life in the universe and their scientific basis.

ASTR 308V. Into the Final Frontier
3 Credits
Exploration of space: a brief review of the history of space flight, the Apollo program, joint U.S.-Soviet space missions, and unstaffed exploration of the planets. Emphasis on knowledge gained through these efforts. Includes new space initiatives. Same as HON 308V.

ASTR 330V. Planetary Exploration
3 Credits
A current planetary exploration mission is studied within the context of the solar system. The data acquired and principles involved in executing the mission, as well as political and economic implications of planetary exploration, are examined. Same as ASTR 330V. Main campus only

ASTR 400. Undergraduate Research
1-3 Credits
Supervised individual study or research. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

ASTR 401. Topics in Modern Astrophysics
3 Credits
This course is designed for students interested in astrophysics who have some background in math and physics and want to learn about basic astrophysics and interesting current topics. The course will cover basic astrophysical concepts such as orbital mechanics, light, and radiative processes and transfer. These concepts will be applied to the discussion of exciting modern topics involving planets, exoplanets, stars, galaxies, and/or cosmology, with topical emphasis determined by the instructor.
Prerequisite(s): MATH 192G and (PHYS 213 or PHYS 215G).

ASTR 402. Introduction to Astronomical Observations and Techniques
3 Credits
Designed for students interested in astrophysics who have some background in math and astronomy and want to learn about techniques for obtaining and analyzing astronomical data. This course will review the properties of light and discuss the process of experimental design. The course will describe basic observational tools such as telescopes and detectors. It will discuss how data is obtained, and how features of the detector and the Earth’s atmosphere can be corrected for. Some topics in basic astronomical data analysis will be discussed, with topical emphasis determined by the instructor. Some simple data analysis projects will be assigned.
Prerequisite(s): MATH 191G and (PHYS 214 or PHYS 216G) and (ASTR 105, ASTR 110, or ASTR 401).

ASTR 405. Astronomy and Astrophysics I
3 Credits
Application of physical principles to problems in modern astronomy. Emphasis on radiation mechanisms and radiation transfer in astronomical systems. No S/U grading. Same as ASTR 505 with less advanced work.
Prerequisite: consent of instructor.

ASTR 406. Stellar Dynamics and Hydrodynamics
3 Credits
Undergraduate cross-listing of graduate class on basic stellar dynamics and principles of hydrodynamics. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

ASTR 435. Observational Techniques I
3 Credits
Up-to-date introduction to modern observational astronomy. Includes computers, data analysis, optical telescopes, optical and infrared photometry, image processing, and detection. No S/U grading. Same as ASTR 535 with less advanced work.
Prerequisite: consent of instructor.

ASTR 500. Seminar
1 Credit
Organized group study treating selected topics.

ASTR 505. Astronomy and Astrophysics I (f)
3 Credits
Application of physical principles to problems in modern astronomy. Emphasis will be on radiation mechanisms and radiation transfer in astronomical systems.
Prerequisite: consent of instructor.

ASTR 506. Stellar Dynamics and Hydrodynamics
3 Credits
Graduate level course on basic stellar dynamics and fundamentals of hydrodynamics.

ASTR 535. Observational Techniques I (f)
3 Credits
Up-to-date introduction to modern observational astronomy in a two-semester sequence. Topics include: introduction to computers, error analysis in data, the different types of optical telescopes, and optical and infrared photometry, image processing, and detectors.

ASTR 536. Observational Techniques in Astronomy II (s)
3 Credits
Sequel to ASTR 535. The second half of the course emphasizes observational techniques in spectroscopy, radio astronomy, and high energy astrophysics.
Prerequisite: ASTR 535.

ASTR 545. Stellar Spectroscopy
3 Credits
This course covers the physics of stellar atmospheres with emphasis on using spectra as a diagnostic tool for understanding the properties of stars. Topics include spectral classification, radiative transfer, gas equilibrium physics, line and continuum opacities, adiabatic and superadiabatic convection, and extraction of observed quantities from spectra for deducing physical conditions of the source.

ASTR 555. Galaxies I
3 Credits
Fundamentals of the properties of galaxies and the components that they are made of stars and stellar populations, gas and dust, central black holes, and dark matter. Introduction to basic concepts of galaxy formation.
ASTR 565. Stellar Interiors
3 Credits
Internal constitutions of stars, computation of stellar models, and stellar evolution.

ASTR 575. Computational Astrophysics
3 Credits
Scientific programming for astronomical applications. Explore key algorithms and standard techniques for astronomical data analysis. Topics may include pointers, data structures, dynamic memory allocation, least squares fitting, grid and iterative search methods, LCG random number generators, Monte Carlo simulations, numerical integration, and astronomical image and spectrum manipulation. Applications to real astronomical datasets are emphasized.

ASTR 598. Special Research Programs
1-6 Credits
Individual investigations, either analytical or experimental.

ASTR 599. Master's Thesis
15 Credits
Master's level research in astrophysics or observational astronomy.

ASTR 600. Pre-dissertation Research
1-15 Credits
Research.

ASTR 605. Interstellar Medium
3 Credits
Problems associated with gas and dust in the galaxy and with diffuse and planetary nebulae.

ASTR 610. Radio Astronomy
3 Credits
Techniques and observations stressing the operational approach to measurement and how the observations are intimately interwoven throughout modern astrophysics.

ASTR 616. Galaxies II
3 Credits
Advanced topics in galaxies. Includes a detailed description and understanding of the Milky Way and topics in galaxy formation and evolution.

ASTR 620. Planetary Science I
3 Credits
Evaluation and analysis of observational data on solar system objects to determine their nature and physical conditions, with emphasis upon atmospheres (composition, structure, thermodynamics, evolution, etc.)

ASTR 621. Planetary Science II
3 Credits
The physical processes involved in planetary system formation are addressed. Specific foci include molecular cloud collapse, disk processes, and competing theories of planet formation within disks. Additional topics to be discussed may include: the solar wind, planetary magnetic fields, planetary ring processes, and mineralogy.

ASTR 625. Cosmology
3 Credits
Discussion of our current knowledge of the structure of the universe and current research methods. Topics include the distance scale, clustering of galaxies, large-scale structure, metrics, dark matter, and cosmological probes such as distant quasars, radio galaxies, and gravitational lenses.

ASTR 630. Methods of Statistical Analysis for Modern Astronomy
3 Credits
Graduate class for students interested in applying statistical techniques to modern astrophysical data sets. Topics include a review of probability and probability distribution functions, implications of techniques for statistical inference, regression and multivariate analysis, data smoothing, data mining, survival analysis and time domain analysis. Applications to real astronomical data sets will be emphasized with all topics.

ASTR 670. Heliophysics
3 Credits
Explore the Sun and its processes, the heliopshere, and its interactions with the planets. Topics include: A introductory description of space weather and its physics; energy interaction with the space environment; the quiet Sun and its interactions with planetary atmospheres (with an emphasis on Earth); Magnetohydrodynamics; frozen-in flux; the solar wind; magnetized fluid dynamics; the active Sun (flares and coronal mass ejections); the effects of Space Weather.

ASTR 698. Special Topics.
1-9 Credits
Special topics.

ASTR 700. Doctoral Dissertation
15 Credits
Dissertation.

AUTO-AUTOMOTIVE TECHNOLOGY (AUTO)

AUTO 102. Electrical Measuring Instruments
2 Credits (1+2P)
Selection, operation, and care of electrical measuring instruments.

AUTO 103. Auto Mechanics Fundamentals
4 Credits (2+4P)
Theory and operation of all areas of auto mechanics. Basic repair and maintenance operations.

AUTO 105. Welding
4 Credits (2+4P)
Set-up and adjustment of oxyacetylene and arc welding equipment, identification of metals and rod application. Skill development in laying weld beads and different weld positions.

AUTO 111. Automotive Mechanics Basics
4 Credits
Basic maintenance procedures of the major components of the automobile using service repair manuals, hand and power tools, precision measurement equipment, fasteners and chemicals. Restricted to: Community Colleges only.

AUTO 112. Basic Gasoline Engines
5 Credits (2+6P)
Principles of gasoline engine operation. Identification, design, function of engine components; engine disassembly and reassembly; trouble shooting, and rebuilding heads.

AUTO 113. Automotive Electricity and Electronics PT I
4 Credits (2+4P)
Topics include mastery of DC electricity, use of digital multimeters, troubleshooting electrical problems in starting, charging and accessory systems. Restricted to Community Colleges only.
AUTO 114. Automotive Electricity and Electronics PT II
4 Credits (2+4P)
Advanced AC and DC automotive electronic circuits. Troubleshooting electronically controlled components including supplemental restraint systems and convenience accessories. Restricted to Community Colleges only.

AUTO 115. Automotive Engine Repair
5 Credits (2+6P)
Principles of gasoline engine operation. Identification of engine parts, operation, and function. Disassembly and reassembly. Engine problem diagnoses (cooling system, lubrication system, engine noises). Restricted to Community Colleges only.

AUTO 117. Electronic Analysis and Tune-Up of Gasoline Engines
5 Credits (2+6P)
Theory and operation of ignition and emission control systems and fuel system. Use of troubleshooting equipment and diagnostic equipment.
Prerequisite: AUTO 120 or consent of instructor.

AUTO 118. Technical Math for Mechanics
3 Credits (2+3P)
Mathematical applications for the automotive trade.

AUTO 119. Manual Transmission/Clutch
5 Credits (2+6P)
Manual transmission, transfer cases, and clutch operating principles. Students will diagnose problems, remove and replace, disassemble, repair, and assemble units.

AUTO 120. Electrical Systems
4 Credits (2+4P)
Troubleshooting and repair of starters, alternators, and associated circuits. Reading electrical diagrams, diagnosis and repair of electrical accessories.
Prerequisite: consent of instructor.

AUTO 122. Automotive Brakes
4 Credits (2+4P)
Focus is on theory, diagnosis, and service of drum, disc, and anti-lock braking systems, brake component machining, hydraulic component reconditioning, friction and hardware replacement. Restricted to Community Colleges only.

AUTO 124. Automotive Heating and Air Conditioning
4 Credits (2+4P)
R12 and R134A air conditioning systems maintenance diagnosis and repair. R12 to R134A conversion procedures. Troubleshooting automatic temperature controls and leak detection. Restricted to Community Colleges only.

AUTO 125. Brakes
5 Credits (2+6P)
Theory of operation, diagnosis, repair, and maintenance of disc and drum brakes; safety and use of special tools.

AUTO 126. Suspension, Steering, and Alignment
5 Credits (2+6P)
Types of steering systems, suspension maintenance and repair, four-wheel alignment procedures.

AUTO 127. Basic Automatic Transmission
4 Credits (2+4P)
Theory and operation of the automatic transmission; maintenance, troubleshooting, diagnosis, and repair of components.

AUTO 129. Automotive Steering and Suspension
4 Credits (2+4P)
Diagnosis/service of suspension components including shocks, springs, ball joints, manual and power steering systems and four wheel alignment are some areas covered. Restricted to Community Colleges only.

AUTO 130. Introduction to Transportation Industry
3 Credits
State and national traffic statutes that relate to the trucking industry. A Commercial Driver’s License Learner’s Permit will be obtained through successful completion of the course.
Prerequisites: Must be 18 years of age, have a current driver’s license and consent of instructor.

AUTO 131. Class A CDL
3 Credits (1+4P)
Instruction in how to perform proper pre-trip inspection; hands-on training with a tractor-trailer unit on the backing range and street driving to develop skills necessary to pass Class A DCL exam. Restricted to Community Colleges campuses only.
Prerequisite(s): Class A CDL restricted license (permit) and either restriction of D.O.T.

AUTO 132. Automotive Air-Conditioning and Heating Systems
4 Credits (2+4P)
Theory and operation, reading schematic diagrams, troubleshooting, repair, and replacement operations performed.

AUTO 137. Fuel Systems and Emission Controls
4 Credits (2+4P)
Covers theory and operation of fuel system and emission control. Troubleshooting, vacuum diagrams, overhaul, repair and adjustment of carburetion and fuel injection.
Prerequisites: AUTO 117 or consent of instructor.

AUTO 139. Automotive Computer Controls
4 Credits (2+4P)
Same as OEPM 139.

AUTO 155. Bio-Diesel Fuels
5 Credits (2+6P)
Covers theory and operation of Bio-Diesel fuel powered vehicles. Blends of bio-diesel and conventional hydrocarbon-based diesel products most commonly distributed for use in the retail diesel fuel marketplace will be discussed. Production, installation, services, and repair will be discussed in detail. Pre/ Restricted to: Community colleges.
Prerequisite(s): AUTO 107, AUTO 112, and AUTO 139.
Corequisite(s): AUTO 117 and AUTO 119.

AUTO 160. Hybrid Electric Vehicles
4 Credits (2+4P)
Covers theory and operation of electrically powered vehicles. Troubleshooting, reading and interpretation of electrical diagrams will be discussed in full detail. Repair and operation procedures will also be covered. Pre/ Restricted to: Community colleges.
Prerequisite(s): AUTO 107, AUTO 112, and AUTO 139.
Corequisite(s): AUTO 117 & AUTO 119.

AUTO 161. Non-Structural Repair
4 Credits (2+4P)
This basic auto body course is designed to develop the students understanding of general shop safety using hand tools, pneumatic tools and power tools. This course will also cover straightening fundamentals, plastic and composite repair, panel replacement, and adjustments.
Prerequisite(s): AUTO 190.
AUTO 162. Advanced Non-Structural Repair I
4 Credits (2+4P)
This course will involve the students in all phases of minor non-structural collision damage repairs. It will encompass sheet metal repair, advanced panel replacement and alignment.
Prerequisite(s): AUTO 161.

AUTO 163. Advanced Non-Structural Repair II
4 Credits (2+4P)
This course is a continuation of AUTO 162 with emphasis in all phases of minor non-structural damage repair. The student will be instructed in sheet metal repair and panel alignment as well as the R&I of automotive glass and related components.
Prerequisite(s): AUTO 162.

AUTO 164. Automotive Industry Collision Repair I
4 Credits (2+4P)
This advanced course is a continuation of AUTO 161, 162, and 163. This course will incorporate all areas of major non-structural collision damage repair. Through practical application the student will learn how to effectively repair all heavy collision damage using current I-CAR repair standards and procedures.
Prerequisite(s): AUTO 161.

AUTO 164. Automotive Industry Collision Repair II
4 Credits (2+4P)
This advanced course is a continuation of AUTO 164 with emphasis on time efficiency. This course will involve the student in all areas of major collision damage repair. The student will be exposed to all applicable I-CAR industry procedures and standards involved in sheet metal and composite panel repair.
Prerequisite(s): AUTO 164.

AUTO 172. Introduction to Automotive Refinishing
4 Credits (2+4P)
This course is designed to incorporate all aspects of surface preparation, paint safety, refinishing materials, and refinishing fundamentals. Students will receive instructions for the application of acrylic enamel and base coats/clear coat refinishing systems.

AUTO 174. Intermediate Automotive Refinishing
4 Credits (2+4P)
This course encompasses all areas of surface preparation, damage repair and refinishing procedures that are necessary for achieving a proper spot repair. Students will also be exposed to safe work habits in the refinishing area and correct automotive detailing procedures.
Prerequisite(s): AUTO 172.

AUTO 175. Automotive Color Adjustment & Blending
4 Credits (2+4P)
This course will help develop the skills needed to match any type of paint. It will expose the student to color theory, color evaluation, color matching, and other color adjustment factors. The student will be instructed in multiple panel paint blending techniques as well.
Prerequisite(s): AUTO 174.

AUTO 176. Automotive Overall Refinishing
4 Credits (2+4P)
This course encompasses all areas of automotive refinishing. This advanced course is a continuation of AUTO 176 with emphasis in achieving industry refinishing times and standards consistent with that of I-CAR. The student will be exposed to surface preparation and refinishing techniques involved with overall coat/clear coat refinishing system.
Prerequisite(s): AUTO 176.
AUTO 208. Introduction to Alternative Fueled Vehicles  
3 Credits  
Course will familiarize student with conditions that are resulting in the alternative fueled vehicle movement as well as the design and safety precautions unique to each alternative fuel. Propulsion systems covered include electric vehicles, bio-fueled vehicles, hybrid-electric vehicles and hydrogen powered vehicles, along with other emerging technologies as appropriate. Restricted to: Community Colleges only.  
Prerequisite(s): AUTO 113 and AUTO 114.

AUTO 209. Hybrid Vehicle Service Techniques  
3 Credits  
Designed for experienced automotive technicians, this course will cover safety procedures, design, operational overview and service techniques as well as minor diagnosis and repair of all classifications of hybrid-electric vehicles. Each student must possess legal Class '0' high voltage gloves and liners to attend this class. Restricted to: Community Colleges only.  
Prerequisite(s): AUTO 113 and AUTO 114.

AUTO 221. Cooperative Experience I  
1-6 Credits  
Supervised cooperative work program. Student is employed in an approved occupation and supervised and rated by the employer and instructor. Student will meet in a weekly class. Graded S/U.  
Prerequisite: consent of instructor.

AUTO 255. Special Problems in Automotive Technology  
1-5 Credits  
Individual studies in areas directly related to automotive technologies. May be repeated for a maximum of 12 credits.  
Prerequisite: consent of instructor.

AUTO 295. Special Topics  
1-6 Credits  
Topics to be announced in the Schedule of Classes.

AXED-AGRICULTURAL EXTN EDUC (AXED)  

AXED 100. Introduction to Agricultural, Extension, and Technology Education  
3 Credits  
Orientation to programs, philosophies, competencies and leadership skills needed by professionals in agricultural and technology education, extension education, agricultural communications, and related career opportunities in industry, governmental agencies, and international organizations.

AXED 105. Techniques in Agricultural Mechanization  
3 Credits (2+2P)  
Development of competencies in agricultural mechanics including safety, tool identification, operation and maintenance of hand and power tools, cold metal, drafting, and plumbing procedures. Designed for any major wishing to improve mechanical skills needed in agriculturally related occupations in education and industry.

AXED 200. Special Topics  
1-4 Credits  
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 6 credits toward degree.

AXED 201G. Effective Leadership and Communication in Agricultural Organizations  
3 Credits (2+2P)  
Theory and practice in leadership and communication for professionals who must work effectively in leadership and supervisory roles with people in agricultural business, industry, government agencies, and education. Course focuses on contemporary leadership theories. Oral communication skills in informative and persuasive speaking, parliamentary procedure, and for small groups are developed.

AXED 205. Metal Technology-Fabrication  
3 Credits (2+4P)  
Processes and procedures of metal fusion, including gas and electric welding techniques and safety. Designed for any major wishing to improve mechanical skills needed in agriculturally related occupations in education and industry.

AXED 230. Early Field-Based Experience in Extension and Industry  
2 Credits (2)  
First Hand view of the roles of professional educators through field experiences with Cooperative Extension or other government agencies. Includes 4 weeks of classroom instruction and 30 hours of observation in a work setting. Consent of Instructor required. Restricted to Las Cruces campus only.

AXED 232. Early Field-Based Experience in Agricultural and Technology Education  
2 Credits  
First-hand view of the roles of professional educators through field experiences in a secondary agricultural or technology education setting. Includes 4 weeks of classroom instruction and 30 hours of observations in a classroom setting. Consent of Instructor required.

AXED 240. Introduction to Agricultural Communication  
3 Credits  
Students will learn about the history and theories of agricultural communications, be introduced to the degree program, explore careers in the field, and examine the role of media in agricultural communications.

AXED 300. Special Topics  
1-4 Credits  
Course addresses specific subjects and issues as identified by department. Topics and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 6 credits may be applied to a degree.

AXED 303. Small Engine Technology  
3 Credits (2+2P)  
Development of competencies in small gasoline engines; theory, operation, design, maintenance and safety. Designed for any major wishing to improve mechanical skills needed in agriculturally related occupations in education and industry.

AXED 331. Agricultural Structures  
3 Credits (2+3P)  
AXED 348. Advanced Technology in the Agricultural Mechanization
3 Credits (2+3P)
Students will construct a project in the area of agricultural mechanization under the direction of instructor. Project must be completed within a semester and of sufficient complexity for 3 credits.
Prerequisite(s): AXED 105 and 205 or consent of instructor.

AXED 360. Agricultural Communications
3 Credits
Principles and practical experience in news writing, radio production, newsletter design, public meeting presentations, video productions, graphics, and public relations activities, especially as related to the fields of agriculture and family and consumer sciences.

AXED 380. Philosophy and Methods of Contests
3 Credits
Covers the roles that career development events (contests) play in agricultural and technology education and in extension programs. Topics include competition and cooperation, winning and losing, ethics, use of community resources, and academic and employability skills taught through contests. Coaching as a teaching method is introduced and expanded. Students will assist with the coordination of various career development events. May be repeated up to 3 credits.

AXED 400. The Diffusion and Adoption of Agricultural Innovations
3 Credits
Factors that influence the rates of diffusion and adoption of innovations. Consequences of adopting or rejecting innovations. Processes by which change agents influence introduction and adoption of innovations. Same as AXED 500.

AXED 415. Youth Program Development and Management
3 Credits
Designed for professionals involved in youth group activities. Basic concepts in planning, conducting, and managing educational youth programs in a variety of organizations.

AXED 430. Teaching Adults in Nonformal Settings
3 Credits
The adult and postsecondary learner; adult learning styles and principles; use of community resources and problem-solving techniques; and learning strategies for adults in formal and nonformal education.

AXED 436. Keys for Agricultural and Rural Development
3 Credits
Introduction to concepts of development, the process of change, key factors that contribute to agricultural and rural development in a community, and strategies employed to effect change with implications for international students or domestic students planning to work internationally.

AXED 443. Curriculum Development and Assessment in Agricultural Education
3 Credits
This course prepares students to develop curriculum, design lessons, and prepare appropriate assessments in an agricultural education setting. An emphasis will be placed on the developing curriculum using the currently established resources that are available to agriculture teachers. Restricted to: AXED majors.
Prerequisite(s): 2.5 GPA.

AXED 444. Planning and Methods in Nonformal Education
3 Credits
Identifying trends and resources of a community and planning community-based extension and nonformal education programs. Preliminary methods for teaching and evaluating nonformal education programs.

AXED 445. Developing Excellent Programs in Career and Technical Education
3 Credits
Students learn to develop excellence in the three components of a successful secondary school program in career and technical education: classroom and laboratory instruction, career and technical student organizations, and career development activities. Community-based program planning, utilizing partners, program marketing, and professional development are addressed as strategies for achieving excellence. Methods of obtaining financing and maintaining accountability for the program are discussed.

AXED 446. Methods for Teaching Agricultural and Technology Education
3 Credits
Methods of instruction and presentation, selection of teaching aids and support materials, classroom management, development of a complete educational program, and microteaching experiences. Restricted to AXED Majors
Prerequisite: GPA of 2.5 or above.

AXED 447. Directed Teaching in Agricultural or Technology Education
15 Credits
Semester-long off-campus professional experience in directed teaching and observation provided in selected centers under secondary agricultural or technology education supervising teachers. Consent of Instructor required. Restricted to: AXED majors.
Prerequisite(s): AXED 445, 446 and consent of instructor.

AXED 448. Directed Teaching in Extension Education
3-12 Credits (3-12)
Four-to-fourteen-week, professional experiences in directed teaching and observation provided in cooperative extension at the county, regional, or state level. Consent of instructor required.

AXED 449. Directed Field Experience in Agricultural or Technology Education
3-12 Credits (3-12)
Four-to-fourteen-week, supervised learning experience in an approved teaching setting with application to educational, agricultural, technological, communications, public relations, or environmental practices. Consent of instructor required.

AXED 456. Introduction to Research Methods
3 Credits
Introduction to research design and methodology in education and behavioral sciences. Overview of common research designs and data collection strategies. Prepares students to critique published research and understand basic skills including hypothesis development and conducting a literature search.
Prerequisite: junior standing.

AXED 460. Methods in Career and Technical Laboratory Instruction
2 Credits
For students planning to teach agricultural or technology education at a secondary or postsecondary level. Focus on planning, delivering, and evaluating instruction in laboratories; and on CPR, first aid, and NCCER certifications. Laboratory safety and tool, equipment, and laboratory management systems are also emphasized. Restricted to AXED Majors.
AXED 466V. John Muir: Lessons in Sustainability
3 Credits
This course examines the life of John Muir in the context of sustainability. Muir was a farmer, inventor, explorer, botanist, glaciologist, conservationist, and noted nature author. He was influential in the National Parks movement and in starting the Sierra Club. Living in the natural world influences his faith and philosophy. By examining his life and the themes that shaped it, students will develop an understanding of what it means to live sustainably and to contribute beyond their personal lives to a sustainable past.

AXED 475. Leadership On Agricultural and Natural Resource Issues
3 Credits
Investigates leadership concepts and group dynamics as they relate to a changing world and complex agricultural and natural resource issues. Topics include emotional intelligence, leading change, political leadership, facilitating agreement, team building, and managing conflict in agricultural and natural resource settings.

AXED 480. International Agricultural Development
3 Credits
Introduction to Agricultural topics (products, people, environment, culture, etc) that affect international development. Topics provide students with awareness, knowledge and understanding of teaching, research and service opportunities for those seeking experience or careers in international agricultural development. Taught with AXED 580.

AXED 484. Methods of Teaching Biological, Earth and Physical Sciences in Agriculture
3 Credits
Students learn to set up and teach in a modular agriscience laboratory, utilizing a variety of technologies. Modules covered focus on incorporating biological, earth and physical sciences into agricultural instruction and may include: Tissue culture, animal anatomy, hydroponics microscopy, electrophoresis, microbiology, soils and plant nutrients, water quality, water systems, entomology, integrated pest management, and renewable energy applications. Students develop their own modules and/or experiments. May be repeated up to 3 credits.

AXED 486. Effective Management of Volunteer Programs
3 Credits
For individuals currently involved in, or interested in being involved in, the management and supervision of volunteer programs. Emphasis on practical application, utilizing a research and academic base. Explores the roles, functions, and tasks of volunteers and managers of volunteers including recruitment, orientation and training, supervision, evaluation, recognition and retention.

AXED 488. 4-H Youth Development
1 Credit
On-line course explores 4-H Youth Development as an integral part of the Cooperative Extension Service. Topics to be addressed include mission, philosophy, delivery modes, audiences and partnerships. Course is relevant for anyone interested in pursuing a career in Cooperative Extension.

AXED 489. The FFA Organization: An Overview
1 Credit
Online course addressing the history, mission, philosophy and structure of the New Mexico and National FFA Organizations and their relationship to supervised agriculture experiences and the agricultural education curriculum. Course is relevant for anyone interested in pursuing a career in agricultural education.

AXED 490. Independent Study in Agricultural, Extension, or Technology Education
1-3 Credits
Specific subjects are agreed upon by the student and instructor. May be repeated for a maximum of 6 credits.
Prerequisites: junior or senior standing and consent of instructor.

AXED 499. Undergraduate Research
1-4 Credits
Research experience in agricultural, extension, and technology education with applications to selected issues and problems.
Prerequisites: consent of instructor.

AXED 500. The Diffusion and Adoption of Agricultural Innovations
3 Credits
Factors that influence rates of diffusion and adoption of innovations. Consequences of adopting or rejecting innovations. Processes by which change agents influence introduction and adoption of innovations. Taught with AXED 400 with differential assignments for graduate students.

AXED 515. Youth Program Development and Management
3 Credits
Designed for professionals involved in youth group activities. Basic concepts in planning, conducting, and managing educational youth programs in a variety of organizations. Same as AXED 415 with differentiated assignments for graduate students.

AXED 525. Graduate Teaching Methods
3 Credits
Examines the teaching and learning process, emphasizing the use of appropriate methods for teaching career and technical education subjects to youth or adults in formal and nonformal educational settings. Includes principles of teaching and learning styles, levels of cognition, syllabus development, lesson planning, teaching using a variety of methods, and evaluating students. For students who have no prior education in teaching methods.

AXED 530. Teaching Adults in Nonformal Settings
3 Credits
The adult and postsecondary learner; adult learning styles and principles; use of community resources and problem-solving techniques; and learning strategies for adults in formal and nonformal education. Same as AXED 430 with differentiated assignments for graduate students.

AXED 536. Keys for Agricultural and Rural Development
3 Credits
Introduction to concepts of development, the process of change, key factors that contribute to agricultural and rural development in a community, and strategies employed to effect change with implications for international students or domestic students planning to work internationally.

AXED 543. Curriculum Development and Assessment in Agricultural Education
3 Credits
This course prepares students to develop curriculum, design lessons, and prepare appropriate assessments in an agricultural education setting. An emphasis will be placed on the developing curriculum using the currently established resources that are available to agriculture teachers. Restricted to: AXED majors.
Prerequisite(s): 2.5 GPA.
AXED 544. Planning and Methods in Nonformal Education
3 Credits
Identifying trends and resources of a community and planning community-based extension and nonformal education programs. Preliminary methods for teaching and evaluating nonformal education programs. Same as AXED 444 with differentiated assignments for graduate students.

AXED 545. Developing Excellent Programs in Career and Technical Education
3 Credits
Students learn to develop excellence in the three components of a successful secondary school program in career and technical education: classroom and laboratory instruction, career and technical student organizations, and career development activities. Community-based program planning, utilizing partners, program marketing, and professional development are addressed as strategies for achieving excellence. Methods of obtaining financing and maintaining accountability of the program are discussed. Same as AXED 445 with differentiated assignments for graduate students.

AXED 546. Methods for Teaching Agricultural and Technology Education
3 Credits
Methods of instruction and presentation, selection of teaching aids and support materials, classroom management, development of a complete educational program, and microteaching experiences. Same as AXED 446. Restricted to AXED Majors
Prerequisites: GPA of 3.0 or above.

AXED 547. Directed Teaching in Agricultural or Technology Education
4-9 Credits (4-9)
Semester-long off-campus professional experience in directed teaching and observation provided in selected centers under secondary agricultural and technology supervising teachers. Consent of instructor required. Restricted to: AXED majors.
Prerequisite(s): A teaching methods class and consent of instructor.

AXED 548. Directed Teaching in Extension Education
4-9 Credits (4-9)
Four- to fourteen-week professional experiences in directed teaching and observation provided in cooperative extension at the county, regional, or state level. Same as AXED 448 with reduced credit hours for graduate students. Restricted to majors. Main campus only.
Prerequisite: consent of instructor.

AXED 549. Directed Field Experience in Agricultural or Technology Education
4-9 Credits (4+9P)
A four-to-fourteen-week supervised learning experience in an approved teaching setting with application to educational, agricultural, technological, communications, public relations, or environmental practices. Same as AXED 449 with reduced credit hours for graduate students. Restricted to majors. Main campus only.
Prerequisite: consent of instructor.

AXED 556. Research Methods
3 Credits
Students learn the research process as it is applied to solving problems in the behavioral sciences. Prepares students to conduct and critique research and to diffuse research findings. Implications, applications, and ethics of research also stressed. Students develop a research proposal for a problem of their choice. Same as FCSC 556.

AXED 565. New Mexico Water Issues
3 Credits
Designed for agricultural and natural resource professionals who must educate others or provide leadership on complex water issues in New Mexico. Students will travel to four distinct geographic and cultural regions of the state and study water policies, issues, and delivery technologies in each region. Specific areas covered will be determined by resource professionals who will present past, current and future issues involved in the distribution of water. Urban impacts on water use will also be investigated.

AXED 571. Data Collection and Analysis
3 Credits
Introduction to basic concepts of data collection and analysis. Interpretations from observational studies and controlled experiments. Roles of descriptive and inferential statistics in a complete data analysis. Mean, median, standard deviation, and graphical summaries of data. Correlation and simple regression. One- and two-sample tests and confidence intervals. Chi-square tests and basic analysis of variance. Competency in arithmetic and algebra required. An undergraduate statistics course recommended.

AXED 575. Leadership on Agricultural and Natural Resource Issues
3 Credits
Investigates leadership concepts and group dynamics as they relate to a changing world and complex agricultural and natural resource issues. Topics include emotional intelligence, leading change, political leadership, facilitating agreement, team building, and managing conflict in agricultural and natural resource settings. Taught with AXED 475 with differential assignments for graduate students.

AXED 578. International Agricultural Development
3 Credits
Introduction to agricultural topics (products, people, environment, culture, etc.) that affect international agricultural development and education. Taught with AXED 480.

AXED 586. Effective Management of Volunteer Programs
3 Credits
Practical and ethical aspects of management of volunteers. Emphasis on the roles, functions, and tasks of volunteers and managers of volunteers including recruitment, orientation and training, supervision, evaluation, recognition and retention. Taught with AXED 486 with differentiated assignments for graduate students.

AXED 580. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 6 credits toward degree.

AXED 594. Workshops in Agricultural, Extension, and Technology Education
1-3 Credits
Workshop procedures applied to current trends in agricultural, extension, and technology education. Maximum of 7 credits toward a degree.
AXED 595. Internship/Cooperative Experience
1-6 Credits
Supervised professional on-the-job learning experience. Maximum of 6 credits toward a degree.
Prerequisite: Consent of instructor.

AXED 598. Creative Component
1-4 Credits
For nonthesis program. Individual investigations or projects, either qualitative or quantitative studies. Maximum of 6 credits toward a degree.
Prerequisite: consent of instructor.

AXED 599. Master’s Thesis
1-6 Credits
Thesis.

B A-BUSINESS ADMINISTRATION (BA)

B A 104. Introduction to Business
3 Credits
Survey and integration of functions in business organizations within their social and economic environment. Community Colleges only.

B A 105. Special Topics
1-3 Credits
Current topics in business and economics.

B A 202. Small Business Enterprise
3 Credits
Appraisal of business functions within the framework of a small business organization.

B A 291. Business Administration and Economics Internship and Cooperative Education I
1-3 Credits
Introduction and applications of the principles of business administration and economics. Registration in one course allowed per co-op work phase; a minimum of 12 work weeks is required. Open only to students in the College of Business. Option of S/U or a grade. The amount of academic credit (1-3 cr.) will be determined by the academic experience, and not by the work experience.

B A 305. Leadership Training for COB Ambassadors
1 Credit
Leadership development for volunteers serving as COB student ambassadors, focusing on COB undergraduate business degree programs, NMSU student services, public speaking and public relations.

B A 391. Business Administration and Economics Internship and Cooperative Education II
1-3 Credits
Applications of the principles of business administration and economics. Registration in one course allowed per co-op work phase; a minimum of 12 work weeks is required. Open only to students in the College of Business. Option of S/U or a grade. The amount of academic credit (1-3 cr.) will be determined by the academic experience, and not by the work experience.

B A 490. Selected Topics
3 Credits
Prerequisites vary according to the seminar being offered.

B A 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. A maximum of 3 credits may be earned.
Prerequisite: junior or above standing and consent of instructor.

B A 500. Macroeconomic Essentials
1 Credit
Macroeconomic theory and public policy, national income concepts, unemployment, inflation, economic growth and international payment problems. Restricted to: MBA Major majors majors.

B A 501. Quantitative Tools for the MBA
1 Credit
An overview of critical topics in math and statistics that will provide a quantitative foundation for students entering the Master of Business Administration program. Admission to the MBA program.

B A 550. Special Topics
3 Credits
Interdisciplinary seminar in selected current business topics.
Prerequisite(s): Prerequisites vary according to the seminar being offered.

B A 590. Professional Paper/Presentation
3 Credits
Paper written in close coordination with sponsoring professor and presented near the end of the student’s final semester in the M.B.A. program. The paper will consist of a professional business report, a case study of a business or organization or a research report. Restricted to: MBA majors.
Prerequisite(s): Minimum of 3.0 average in: ACCT 503, BLAW 502, FIN 503, and MKTG 503 or AE BC 551.

B A 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. A maximum of 3 credits may be earned.
Prerequisite: consent of instructor.

B A 599. Master’s Thesis
15 Credits
Thesis.

BCHE-BIOCHEMISTRY (BCHE)

BCHE 140. Introduction to Biochemistry
1 Credit
A description of the nature of inquiry in biochemistry, especially with respect to the interaction of chemistry and biology. Both historical development and topics of current interest will be discussed. Graded S/U.

BCHE 241. Introduction to Research in Biochemistry
1-3 Credits
Techniques and procedures of biochemical research. May be repeated for a maximum of 3 credits.
Prerequisites: 8 credits of chemistry and 3.0 GPA in chemistry.

BCHE 341. Survey of Biochemistry
4 Credits (3+3P)
Basic principles of biochemical processes and the structure/function of the major classes of biomolecules, with introductions to metabolism and the central dogma of biochemistry. The chemical and biological properties of major biomolecules (DNA, proteins, Prerequisite(s): C or better in CHEM 211 or CHEM 313.
BCHE 395. Biochemistry I
3 Credits
Principles governing chemistry and physics of life processes with emphasis on the relationships between molecular structure and cell function. Basic principles of biochemical processes, enzymology, and the structure/function of the major classes of biomolecules with introductions to metabolism. Introduction to catabolic metabolism.
Prerequisite(s): C or better in CHEM 314.

BCHE 396. Biochemistry II
3 Credits
Introduction to anabolic metabolism and hormonal regulation. Biochemical principles of the mechanism and regulation of replication, transcription, recombination and translation in prokaryotes and eukaryotes. Introduction to DNA-based information technology. Taught with BCHE 396 H.
Prerequisite(s): C or better in BCHE 395.

BCHE 396 H. Biochemistry II Honors
3 Credits
Taught with BCHE 396 with additional work required.

BCHE 397. Experimental Biochemistry Laboratory
3 Credits
Introduction to fundamental techniques used to explore structure and function of biological macromolecules such as proteins, carbohydrates, lipids, and nucleic acid. Course covers analyzing and reporting experimental data; enzymology; quantitative methods to determine biological molecules; basic principles of electrophoresis, chromatography, and spectroscopic immunoochemistry.
Prerequisite: C or better in BCHE 395.
Corequisite: BCHE 396.

BCHE 432. Physical Biochemistry
3 Credits
This course focuses on modern Biophysical techniques used in protein and nucleic acid research. Topics are covered in some detail at the theoretical level. The course content is delivered entirely by podcast. Podcast contributions are from several different faculty from within their particular area(s) of expertise. Topics covered include (but are not limited to): biomolecular NMR, atomic force microscopy, light scattering, circular dichroism, ultracentrifugation, isothermal titration calorimetry, positron emission tomography, computerized tomography, ultrasound, functional MRI, protein fluorescence, mass spec/proteomics, protein molecular dynamics simulations, and X-ray diffraction. Course credit qualifies for minor degree in chemistry as a physical-analytical chemistry emphasis. CHEM 431, or CHEM 433.
Prerequisite: One semester of undergraduate physical chemistry, e.g. CHEM 431.

BCHE 440. Biochemistry Seminar
1 Credit
Introduction to current literature in biochemistry and molecular biology. Selected topics in the field will be presented by the faculty. Students will present written and oral reports from literature searches. Restricted to: BCHE majors.
Prerequisite(s): BCHE 395.

BCHE 441. Advanced Research in Biochemistry
1-3 Credits
Investigation of biochemical problems and the development of special techniques. May be repeated for a maximum of 3 credits.
Prerequisites: consent of instructor, 16 credits of chemistry and 3.0 GPA in chemistry for nonmajors.

BCHE 446. Biochemistry III
3 Credits
Intermediary metabolism of carbohydrates, lipids, amino acids, and nucleic acids. Metabolic pathways discussed with emphasis on biochemical regulation and mechanistic, structural, functional, and evolutionary basis for existence.
Prerequisite(s): BCHE 395 and either BCHE 396 or consent of instructor.

BCHE 451. Special Topics
1-3 Credits
Same as CHEM 451. May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.

BCHE 455. Independent Studies
1-3 Credits
Independent studies directed by consulting faculty.
Prerequisite: consent of instructor.

BCHE 494. Biochemical Genetics Laboratory
3 Credits (1.25+6P)
Laboratory techniques required for experimentation with recombinant DNA such as nucleic acid isolation and purification, polymerase chain reaction (PCR), sequence analysis, and directed mutagenesis using genetic material from both prokaryotic and eukaryotic organisms. Consent of Instructor required.
Prerequisite(s): C or better in BCHE 395 and BCHE 396 or GENE 315, and consent of instructor.

BCHE 540. Seminar in Biochemistry
1 Credit
Formal seminar presentation in current topics in biochemical research. May be repeated for a maximum of 3 credits.

BCHE 542. Biochemistry I
3 Credits
Relationship between macromolecular structure and function. Basic enzymology. Energy metabolism.
Prerequisite(s): CHEM 314 and CHEM 431 or CHEM 433; or BCHE 395 or equivalent.

BCHE 544. Biochemistry II
3 Credits
Intermediary metabolism: catabolic and anabolic pathways of carbohydrates, lipids, amino acids, and nucleic acids, including their regulation.
Prerequisite: BCHE 542 or equivalent.

BCHE 545. Molecular and Biochemical Genetics
3 Credits
An accelerated treatment of the molecular basis of gene expression. Discussion of chemical, enzymological, and genetic techniques of molecular biology. Same as BIOL 545.
Prerequisite: BCHE 542 or equivalent.

BCHE 546. Biochemistry II
3 Credits
Intermediary metabolism: catabolic and anabolic pathways of carbohydrates, lipids, amino acids, and nucleic acids, including their regulation.
Prerequisite: BCHE 542 or BCHE 395 with consent of instructor.

BCHE 590. Discussions in Biochemistry
1 Credit
Current research problems in biochemistry. May be repeated for a maximum of 6 credits. S/U Grading (S/U, Audit).

BCHE 598. Special Research Programs
1-3 Credits
May be repeated for a maximum of 6 credits. Same as CHEM 598. Graded S/U.

BCHE 599. Master's Thesis
15 Credits
May be repeated for a maximum of 6 credits. Same as CHEM 599.
BCHE 600. Research
1-15 Credits
May be repeated for a maximum of 20 credits. PR/U grading. Same as CHEM 600.

BCHE 645. Nucleic Acid Metabolism
3 Credits
Study of the enzymology of proteins that act on nucleic acids as well as the effect of DNA and RNA structure on metabolic processes. Taught with BCHE 451.
Prerequisite(s): ‘C’ or better in BCHE 395 or BCHE 542.

BCHE 647. Physical Biochemistry
3 Credits
Fundamental applications of physical chemistry to the investigation of biological metabolites and biological macromolecules, including proteins, oligo-nucleotides, and molecular arrays with an emphasis on understanding biological functions based on chemical structures. Taught with BCHE 451.
Prerequisite(s): ‘C’ or better in CHEM 431 or CHEM 433 or BCHE 542.

BCHE 649. Topics in Biochemistry
1-3 Credits
Selected topics of current interest designated by title and credit. May be repeated for a maximum of 3 credits.

BCHE 650. Advanced Seminar
1 Credit
Discussion of biochemical research in progress that relates to a doctoral candidate’s thesis research. Intended for students who have earned a master’s degree or the equivalent and has made significant research progress for preparation of the doctoral dissertation. May be repeated for a maximum of 3 credits.

BCHE 700. Doctoral Dissertation
20 Credits
May be repeated for a maximum of 20 credits. Graded PR/U. Same as CHEM 700.

BCIS-BUSINESS COMPUTER SYSTEMS (BCIS)

BCIS 110. Introduction to Computerized Information Systems
3 Credits
Computerized information systems, their economic, and social implications. Introduction to microcomputer hardware, personal productivity software, and communications.

BCIS 322. Advanced Object-Oriented Programming
3 Credits
In-depth exposure to object-oriented programming techniques and preliminary enterprise-level programming.
Prerequisite: C- or better in BCIS 222.

BCIS 338. Business Information Systems I
3 Credits
Application, design and use of computerized information systems in a business environment.
Prerequisite(s): BCIS 110G or C S 110G or consent of instructor.

BCIS 350. Information Systems Analysis and Design
3 Credits
An introduction to the analysis and design of secure information systems.
Prerequisite(s): Concurrently with BCIS 338 or consent of instructor.

BCIS 450. Systems Design, Development and Implementation
3 Credits
Design, development and implementation of business information processing systems. Includes maintenance, evaluation and system management considerations.
Prerequisite: C- or better in BCIS 350.

BCIS 455. Design of On-Line Business Systems
3 Credits
Covers analysis, design, and development of on-line, real-time computerized business-information systems.
Prerequisite: C- or better in BCIS 350; and BCIS 322 or concurrent enrollment or consent of instructor.

BCIS 475. Database Management Systems
3 Credits
Design, development, and use of database management systems in the business environment.
Prerequisite(s): BCIS 338 or consent of instructor.

BCIS 480. E-Commerce Security
3 Credits
Introduction to securing network-based applications from internal and external threats. Fundamentals of network security, including TCP/IP, firewalls, intrusion detection, and vulnerability.
Prerequisite(s): BCIS 338 or consent of instructor.

BCIS 482. Management of Information Security
3 Credits
Provides management overview of information security and thorough examination of administration of information security. Surveys field of information security including planning, policy and programs, protection and people relative to information security.
Prerequisite(s): BCIS 338 or consent of instructor.

BCIS 485. Enterprise Resource Planning
3 Credits
This course covers concepts in enterprise resource planning (ERP). Topics include how ERP integrates business processes across functional areas–such as the procurement process and the sales order process–and how businesses use ERP information systems in day-to-day operations as well as for performance monitoring. SAP R/3 software will be used in several hands-on examples of ERP software as a real-world example of an ERP system.
Prerequisite(s): C- or better in BCIS 338 or BCIS 350 or ACCT 351.

BCIS 490. Selected Topics
1-3 Credits
Current topics in business systems analysis. Consent of Instructor required.

BCIS 495. Enterprise Information Portals
3 Credits
Enterprise information portal (EIP) is a framework for integrating information, people and processes across organizational boundaries using web-based technologies. In this class, you will explore the wide range of options (EIP’s) (e.g. SAP Netweaver Portal) provided to integrate ERP solutions, third-party applications, legacy systems, databases, unstructured documents, internal and external Web content, and collaboration tools. Taught with BCIS 565.
Prerequisite(s): BCIS 485.
BCIS 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval of the department head. May be repeated for a maximum of 3 credits.
Prerequisite(s): junior or above standing and consent of instructor.

BCIS 502. Business Information Systems
3 Credits
Analysis of information systems as integral parts of business organizations, including the responsibility of management to understand their capabilities and uses in handling the organization’s information flow and providing appropriate information for decision making.
Prerequisite: graduate students only.

BCIS 550. Information Systems Analysis and Design
3 Credits
Information systems development methodologies and the system life cycle. Justifying and managing systems development projects. Taught with BCIS 350 with differentiated assignments for graduate students.
Prerequisite(s): Graduate Students Only.

BCIS 575. Database Management Systems
3 Credits
Design, development, and use of database management systems in the business environment. Taught with BCIS 475 with differentiated assignments for graduate students. Consent of Instructor required.
Prerequisite(s): BCIS 350.

BCIS 580. E-Commerce Security
3 Credits
Introduction to securing network-based applications from both internal and external threats. Fundamentals of network security including TCP/IP, firewalls, intrusion detection and vulnerability discussed. Not open to students who have taken BCIS 480. Taught with BCIS 480 with differentiated assignments for graduate students. No S/U or audit option.
Prerequisite(s): C- or better in BCIS 460 or consent of instructor.

BCIS 582. Management of Information Security
3 Credits
Provides management overview of information security and thorough examination of administration of information security. Surveys field of information security including planning, policy and programs, protection and people relative to information security. Taught with BCIS 482 with differentiated assignments for graduate students.
Prerequisite(s): BCIS 110 or equivalent.

BCIS 585. Enterprise Resource Planning & Business Processes
3 Credits
Enterprise-wide information systems and their use in enterprise resource planning (ERP). This course will examine the many cross-functional business processes. Other topics include ERP implementation issues, change management, and business process re-engineering. Hands-on exercises use SAP/3 Enterprise software. Taught with BCIS 485 with differentiated assignments for graduate students.
Prerequisite(s): C- or better in ACCT 351 or BCIS 502 or consent of instructor.

BCIS 590. Special Topics
1-3 Credits (1-3)
Seminars in selected current topics in business computer systems. May be repeated up to 3 credits.
Prerequisite(s): Vary according to topic being offered.

BCIS 595. Enterprise Information Portals
3 Credits
Enterprise information portal (EIP) is a framework for integrating information, people and processes across organizational boundaries using web-based technologies. In this class, you will explore the wide range of options (EIP’s)(e.g. SAP Netweaver Portal) provide to integrate ERP solutions, third-party applications, legacy systems, databases, unstructured documents, internal and external Web content, and collaboration tools. Taught with BCIS 495 with differentiated assignments for graduate students.
Prerequisite(s): BCIS 485.

BCIS 598. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval of department head. A maximum of 3 credits may be earned.
Prerequisite: consent of instructor.

BCT-BUILDING CONSTRUCTION TECH (BCT)

BCT 100. Building Trades I
8 Credits (2+12P)
Equipment and general safety. Human relations, building construction surveying, footings, foundation form work, framing, sheathing, insulation. Basic electrical wiring and plumbing. Classroom instruction, on-the-job training, and problem solving.

BCT 101. Introduction to Construction I
2 Credits (2+1P)
Basic safety, including personal protective equipment, how to perform basic construction tasks safely, and what to do if an accident occurs. Includes basic construction methods. May be repeated up to 2 credits. Restricted to Community Colleges campuses only.
Corequisite(s): BCT 102 and BCT 103.

BCT 102. Introduction to Construction II
2 Credits (2+1P)
Introduction to power and hand tools, blueprints, and basic rigging hardware and techniques. May be repeated up to 2 credits. Restricted to Community Colleges campuses only.
Corequisite(s): BCT 101 and BCT 103.

BCT 103. Introduction to Construction Laboratory
3 Credits
Provides students the opportunity to practice skills they have acquired in BCT 101 and BCT 102. It includes task-oriented projects in which students can apply many of the skills and knowledge that have been presented throughout the National Center for Construction and Education Research (NCCER) Carpentry Program. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
Corequisite(s): BCT 101 and BCT 102.

BCT 104. Woodworking Skills I
3 Credits (1+4P)
Use and care of hand tools and elementary power tools, safety procedures, and supervised project construction.

BCT 105. Woodworking Skills II
3 Credits (1+4P)
Advanced woodworking skills to include use of advanced power tools, power tool safety, and supervised construction.
Prerequisite: BCT 104 or consent of instructor.
BCT 106. Woodworking Theory and Practice
3 Credits (2+2P)
History of wood manufacturing, industrial techniques, wood characteristics, stains and finishes. Design and construction of minor wood projects.

BCT 107. Painting I
4 Credits (2+4P)
Types and applications of paints and clear coatings. Use of fasteners, caulks, and sealants. Restricted to: Community Colleges only.

Prerequisite(s): BCT 107.

BCT 108. Painting Level II
4 Credits (2+4P)
Continuation of BCT 107: Painting failures and remedies, preparation, drywall patching and wood finishing. Restricted to: Community Colleges only.

Prerequisite(s): BCT 107.

BCT 109. Plumbing I
3 Credits (2+3P)
Covers orientation to the trade. Students will learn about materials used in the plumbing industry and the different types of plumbing fixtures. It includes task-oriented projects in which students apply many of the skills and knowledge that are presented through the National Center for Construction and Education Research (NCCER) Plumbing Program. May be repeated up to 3 credits.

Prerequisite(s)/Corequisite(s): BCT 101, BCT 102. Restricted to Community Colleges campuses only.

BCT 110. Blueprint Reading for Building Trades
4 Credits (2+4P)
Same as DRFT 151, OEET 101, OEPB 110.

BCT 111. Small Equipment Maintenance and Repair
4 Credits (2+4P)
Covers small engine theory, troubleshooting and repair, auto maintenance, hydraulic theory and repair lubricants, batteries and scheduled tool maintenance. Restricted to: Community Colleges only.

BCT 112. Basic Masonry
4 Credits (2+4P)
Covers use of brick and concrete blocks; basic techniques for mixing mortar and laying masonry units; describes the hand and power tools used in masonry, including safety; includes mathematics used to perform calculations related to masonry units; explains the types and properties of mortar and the materials used in mixtures. Restricted to: Community Colleges only.

BCT 114. Basic Carpentry
3 Credits (1+4P)
Covers orientation to the trade; wood building materials, fasteners, and adhesives; detailed description and explanations of hand-operated and power tools, including safety; framing basics including laying out and constructing of wood floors, walls and ceilings and includes roughing in of door and window openings. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

Corequisite(s): BCT 115 and BCT 116.

BCT 115. Carpenter Level I
3 Credits (1+4P)
Describes the various kinds of roofs and provides instructions for lay out of the different roofing systems. Describes the various types of windows, skylights, and exterior doors and provides instruction for installation. May be repeated up to 3 credits. Consent of Instructor required. Restricted to Community Colleges campuses only.

Corequisite(s): BCT 114 and BCT 116.

BCT 117. Plumbing 1A
3 Credits (2+2P)
This course will introduce students to the plumbing profession. Students will become familiar with the tasks and responsibilities of plumbing professionals in the construction industry and gain a basic knowledge of the plumbing field. Restricted to Community Colleges campuses only.

BCT 118. Math for Building Trades
3 Credits
Geometry, algebra, arithmetic, and basic trigonometry pertaining to mathematical applications in the building trades field. Same as OEET 118, DRFT 118, OEPB 118.

Prerequisite: CCDM 103N.

BCT 119. Plumbing 1B
3 Credits (2+2P)
This course continues the introduction of students to the plumbing profession. Students will become familiar with the tasks and responsibilities of plumbing professionals in the construction industry and gain a basic knowledge of the plumbing field. Restricted to Community Colleges campuses only.

Prerequisite(s): BCT 117.

BCT 121. Construction Law
3 Credits
Using the New Mexico Contractors Reference manual, this course covers licensing requirements and regulations, business, law and other important aspects of owning and running a construction business. Restricted to: Community Colleges only.

BCT 130. Professional Development and Leadership
1 Credit
As members and/or officers of various student professional organizations, students gain experience in leadership, team building, and community service. Students competing or participating in Skills USA are required to register for the course. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: BCT majors. S/U Grading (S/U, Audit). Restricted to: Community Colleges only.

BCT 150. Forklift Operation
1 Credit
Classroom instruction and hands-on practice to prepare students to operate a forklift safely in the workplace. Students will have the opportunity to earn a forklift operator’s permit. Consent of Instructor required. Restricted to Community Colleges campuses only.

BCT 200. Building Trades II
8 Credits (2+12P)
Continuation of BCT 100: roofing; exterior and interior finish; masonry; door, window, and cabinet installation.

BCT 206. Advanced Cabinetmaking
3 Credits (1+3P)
Advanced cabinetmaking skills, to include expert use of hand and power tools, professional construction and finishing techniques.

Prerequisites: BCT 105, BCT 106, or consent of instructor.
BCT 209. PLUMBING II
3 Credits (2+3P)
Continuation of BCT 109. Provides students the opportunity to gain more practice in the skills and knowledge learned in Plumbing I. Students will install fixtures and run the various plumbing supply lines from Plumbing Level I. The course includes hands on projects in which the students apply many of the competencies that have been presented through the National Center for Construction and Education Research (NCCER) Plumbing Program. May be repeated up to 3 credits.
Prerequisite(s): BCT 109.

BCT 217. Building and the Environment
3 Credits
Introduction to LEED’s, and Green Building Fundamentals, sustainability, sustainable design and green building evaluating cost implication of green building. Describes site development; managing site water runoff, improving a project’s water use efficiency. Discusses renewable energy sources, and introduces student to generating power on-site using renewable energy sources, improving a building’s indoor environment quality, improving the building industries' environmental performance and environmental aspects of building maintenance, re-use and conservation.Restricted to: Community Colleges only

BCT 218. Plumbing 2
4 Credits (2+4P)
This course builds on the skills and knowledge students have gained in previous BCT introduction to plumbing courses, focusing on installation of plumbing systems. Students will become familiar with the tasks and responsibilities of plumbing professionals in the construction industry and gain a basic knowledge of the plumbing field.
Prerequisite(s): BCT 117 and BCT 119.

BCT 221. Cooperative Experience I
1-4 Credits
Supervised cooperative work program. Student is employed in an approved occupation and is supervised and rated by the employer and instructor. Student will meet in a weekly class. Graded S/U.
Prerequisite: consent of instructor.

BCT 222. Alternative Building
3 Credits (2+2P)
Exploration of different types of building techniques and materials other than the traditional wood framed structures. Materials and techniques will include adobe, straw bale, insulated concrete forms, rammed earth and structural insulated panels with an emphasis on "green building" methods. Restricted to: Community Colleges only.

BCT 255. Special Topics
1-6 Credits (1-6)
Topics to be announced in the Schedule of Classes. May be repeated up to 12 credits. Consent of Instructor required. Restricted to Community Colleges campuses only.

BCT 290. Special Problems in Building Technology
1-4 Credits
Individual studies in areas directly related to building technologies.
Prerequisite: consent of instructor.

BIL 505. The Bilingual Preschool Child
3 Credits
Principles of multicultural education applied to preschool and primary levels. Focus on issues, methods, and materials.

BIL 520. Issues in Schooling for Bilingual Learners
3 Credits
Identification and consideration of current thought and directions in bilingual education, nationally and internationally.

BIL 522. Literacy-Language Instruction for Bilingual Students
3 Credits
Framework and strategies for developing the written language abilities of bilingual learners, with attention to the interrelationships among reading, writing, and oral language.

BIL 545. Bilingual/Multicultural Schooling and Community Relations
3 Credits
Rationale, information pertinent to the school and the community in a setting involving economic, cultural, and linguistics diversity.

BIL 550. Internship in Bilingual Education IV
1-6 Credits
Advanced experience in educational bilingual settings for prospective bilingual education teachers. Maximum of 6 credits.

BIL 560. Selected Topics in Bilingual Education III
1-6 Credits
Various topics on current requests and needs in bilingual education. Maximum of 6 credits. BIL561. The Bilingual Exceptional Student 3 cr. Introduction to bilingual/multicultural special education. Same as SPED 561, SPED 661.

BIL 570. Directed Study in Bilingual Education III
1-6 Credits
Independent research topics in bilingual education based on particular individual interest or needs.

BIL 616. Acquiring Emancipatory Discourses: TESOL/BIL
3 Credits
An elaboration of understandings of bi- and multilingualism and related models of education based on current research and practice.

BIL 617. Multiple Critical Literacies
3 Credits
An exploration of the multiple literacies that operate on the individual, classroom, community, cultural and societal levels.

BIL 633. Praxis and Reflexivity
3 Credits
The cyclical research processes of continuous self and systemic (re)evaluation vis-a-vis classroom, community, and society with an eye toward reflection, growth, change, and larger forms of social agency. Restricted to doctoral-level students of any major. Same as ECED 633, EDUC 633, RDG 633, EDLT 633.
Prerequisite: consent of instructor.

BIL 635. Critical Theory and Pedagogy
3 Credits
Same as EDUC 635.

BIL 637. Social Justice Issues in Education
3 Credits
Same as EDUC 637.

BIL 670. Directed Study in Bilingual Education IV
1-6 Credits
Independent research topics in bilingual education based on particular individual interest or needs.
BIOL-BIOLOGY (BIOL)

BIOL 101G. Human Biology
3 Credits
Introduction to modern biological concepts. Emphasis on relevance to humans and their relationships with their environment. Cannot be taken for credit after successful completion of BIOL 111G or BIOL 211G. Appropriate for non-science majors. Requires successful completion of BIOL 101GL in order to meet the NM Common Core Area III Laboratory Science requirements.

BIOL 101GL. Human Biology Laboratory
1 Credit
Laboratory for BIOL 101G. Laboratory experiences and activities exploring biological concepts and their relevance to humans and their relationship with their environment.
Prerequisite(s)/Corequisite(s): BIOL 101G.

BIOL 110G. Contemporary Problems in Biology
4 Credits (3+3P)
Fundamental concepts of biology will be presented using examples from relevant problems in ecology, medicine and genetics. For nonscience majors only. Community Colleges only.

BIOL 111G. Natural History of Life
3 Credits (3)
Survey of major processes and events in the genetics, evolution, and ecology of microbes, plants and animals, and their interactions with the environment. Appropriate for science and nonscience majors. Must be taken with BIOL 111L to meet general education requirements. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): Currently enrolled in MATH 120, grade of C- or better in MATH 120, or a Math Placement Exam score adequate to enroll in mathematics courses beyond MATH 120.

BIOL 111GL. Natural History of Life Laboratory
1 Credit
Laboratory experiments, demonstrations and exercises on interrelationships among organisms, biodiversity, processes of evolution, and interaction of organisms and their environment. Appropriate for science and nonscience majors. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): BIOL 111G; Currently enrolled in MATH 120, grade of C- or better in MATH 120, or a Math Placement Exam score adequate to enroll in mathematics courses beyond MATH 120.

BIOL 115. Topics in Biology
1-3 Credits (1-3)
Introductory level coverage of biological topics. May be repeated up to 9 credits.

BIOL 150. Topics in Biology
1 Credit
A laboratory course to accompany BIOL 221 or BIOL 219.
Prerequisite: BIOL 221 or BIOL 219 or concurrent enrollment.

BIOL 211G. Cellular and Organismal Biology
3 Credits
Principles of cellular structure and function, genetics, and organismal physiology. This course prepares the student for continuation in science or allied health fields. Suitable for all majors. Must be taken with BIOL 211L to meet general education requirements. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): a C- or better in MATH 120 or higher and a C- or better in CHEM 110G or CHEM 111G or CHEM 115.

BIOL 211GL. Cellular and Organismal Biology Laboratory
1 Credit
Laboratory demonstrations, experiments and exercises on molecular and cellular biology and organismal physiology. Must have passed BIOL 211G or be concurrently enrolled in BIOL 211G and BIOL 211L. Pre/ May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): a C- or better in BIOL 211G, MATH 120 or higher, and a C- or better in CHEM 110G or CHEM 111G or CHEM 115.

BIOL 219. Public Health Microbiology
3 Credits
The characteristics of pathogenic microorganisms and the diseases that they cause. Will not meet the microbiology requirements for biology or medical technology majors.
Prerequisite: BIOL 211G and BIOL 211GL.

BIOL 221. Introductory Microbiology
3 Credits
Principles of isolation, taxonomy, and physiology of microorganisms. Restricted to Community Colleges campuses only.
Prerequisite(s)/Corequisite(s): CHEM 110G or CHEM 111G or CHEM 112G.
Corequisite(s): BIOL 221 L.

BIOL 221 L. Introductory Microbiology Laboratory
1 Credit
The second in a two-course sequence that covers the structure and function of the human body, including terminology of the human gross anatomy, chemistry overview, cell structure, cell physiology (including DNA, protein synthesis and cell division). The organization of cells and tissues and their metabolic and homeostatic processes and regulation are also covered. Physical and chemical operation of organs and systems of the human body include the intergumentary, skeletal, muscular, and nervous systems. Pre/ Restricted to: Community Colleges only.
Corequisite(s): CHEM 110G or CHEM 111G.

BIOL 225. Human Anatomy and Physiology I
4 Credits (3+3P)
The first in a two-course sequence that covers the structure and function of the human body, including terminology of the human gross anatomy, chemistry overview, cell structure, cell physiology (including DNA, protein synthesis and cell division). The organization of cells and tissues and their metabolic and homeostatic processes and regulation are also covered. Physical and chemical operation of organs and systems of the human body include the intergumentary, skeletal, muscular, and nervous systems. Pre/ Restricted to: Community Colleges only.
Corequisite(s): CHEM 110G or CHEM 111G.

BIOL 226. Human Anatomy and Physiology II
4 Credits (3+3P)
The second in a two-course sequence that covers the structure and function of the human body. Includes the physical and chemical operation of the organs and systems of the human body, including endocrine, cardiovascular, lymphatic, immune, respiratory, digestive, urinary and reproduction system. Concepts of nutrition, metabolism, energy, fluid and electrolyte balance, heredity pregnancy and human embryonic and fetal development are also covered. Restricted to: Community Colleges only.
Prerequisite(s): BIOL 225, CHEM 110G or CHEM 111G.

BIOL 227. Pathophysiology
3 Credits
A study of the structure and function of the human body with specialized emphasis on disease processes.
Prerequisite(s)/Corequisite(s): AHS 153 or BIOL 225 Corequisite/Prerequisites(s): AHS 154 or BIOL 226 Restricted to: Community Colleges only.

BIOL 250. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 6 credits. Community Colleges only.
BIOL 253. Human Anatomy
4 Credits (3+3P)
Detailed presentations of human anatomy, with laboratory. For nursing, prenursing, and human nutrition and food science majors only. Restricted to: HNFS, PNUR majors.
Prerequisite(s): Grade of C- in BIOL 211G and either CHEM 111G or CHEM 110G.

BIOL 254. Human Physiology
3 Credits
Physical and chemical operation of the organs and systems of the human body. Not open to students who have passed BIOL 354 or BIOL 381.
Prerequisite(s): Grade of at least C- in BIOL 211G; BIOL 211GL; CHEM 111G or CHEM 110G.

BIOL 262. Human Pathophysiology I
3 Credits
The first in a two-course sequence that covers changes in body physiology that result from disease or injury. Includes a general introduction to pathophysiology as well as an overview of altered cellular and tissue biology, injury, inflammation, and neoplasia. Students will also explore deviation from fluid, hemodynamic, and endocrinologic balance. Topics related to the science of pathophysiology, including pathology, pathogenesis, etiology, epidemiology, and clinical manifestations, are also discussed throughout the course where relevant. Grade of C- or higher in microbiology is recommended. Restricted to Community Colleges campuses only.
Prerequisite(s): Grade of C- or higher in BIOL 225 and BIOL 226.

BIOL 263. Pathophysiology II
3 Credits
The second in a two-course sequence that covers changes in body physiology that result from disease or injury. This course focuses on the pathophysiology of the nervous, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems. Topics related to the science of pathophysiology, including pathology, pathogenesis, etiology, epidemiology, and clinical manifestations, are also discussed throughout the course where relevant. Grade of C- or higher in microbiology is recommended. Restricted to Community Colleges campuses only.
Prerequisite(s): Grade of C- or higher in BIOL 225, BIOL 226, and BIOL 262.

BIOL 301. Principles of Ecology
3 Credits
A survey of ecology including general theory, the adaptations of organisms, population dynamics, species interactions, and the structure and function of natural communities and ecosystems. MATH 191G and A ST 311 recommended. Same as E S 301. Crosslisted with: E S 301.
Prerequisite(s): BIOL 111G, MATH 121G.

BIOL 302. Molecular Biology Techniques Laboratory
3 Credits
This combined lecture and laboratory course emphasizes molecular biology laboratory practices through the hands-on application of commonly applied techniques, protocols, and equipment. The topics covered include both the fundamental development of empirical data as well as data analysis using stand-alone and web-based resources. Consent of instructor required.
Prerequisite(s): BIOL 211G or equivalent, and MATH 121G.

BIOL 305. Principles of Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals. Crosslisted with: HORT 305 and AGRO 305.
Prerequisite(s): BIOL 111G and BIOL 211G, or BIOL 211G and BCHE 140, either CHEM 111G or CHEM 115, and MATH 121G.

BIOL 309. Guided Biological Research Lab
3 Credits
This laboratory course provides a guided experience to hands-on research in biology. It is intended for early-career undergraduates who have finished the introductory sequence of Biology courses. Topics will vary with instructor.
Prerequisite(s): BIOL 111G, BIOL 211G, and MATH 121G.

BIOL 311. General Microbiology
3 Credits
Principles of physiology, molecular biology, ecology, and taxonomy of microorganisms.
Prerequisite(s): BIOL 211G and MATH 121G.

BIOL 311 L. General Microbiology Laboratory
2 Credits
Microbiology techniques and procedures, including isolation and identification of microorganisms and biotechnology procedures that employ microorganisms.
Prerequisite(s)/Corequisite(s): BIOL 219 or BIOL 311. Prerequisite(s): BIOL 211G and MATH 121G.

BIOL 312. Plant Taxonomy
3 Credits (2+3P)
Classification and identification of representative plant families and local plants. Emphasis on ability to use technical sources. Saturday field trips may be recommended.
Prerequisite(s): BIOL 111G and MATH 121G.

BIOL 313. Structure and Function of Plants
3 Credits (2+3P)
Structure, function, and survey of plants. BIOL 211G recommended.
Prerequisite(s): BIOL 111G, MATH 121G, and sophomore-level standing.

BIOL 314. Plant Physiology
3 Credits
Photosynthesis, respiration, water relation of plants, minerals and organic nutrition, growth and development.
Prerequisite(s): BIOL 211G and CHEM 112G.

BIOL 322. Zoology
3 Credits (2+3P)
Structure, function, and survey of animals. BIOL 211G recommended.
Prerequisite(s): BIOL 111G, MATH 121G, and at least sophomore-level standing.

BIOL 330. Comparative Anatomy and Embryology
4 Credits (3+3P)
The developmental and evolutionary basis for the diversity and homology of body plans within the classes of vertebrate organisms. Laboratories will emphasize comparative dissection. BIOL 322 recommended.
Prerequisite(s): BIOL 111G, BIOL 211G, and MATH 121G.

BIOL 350. Special Topics
1-4 Credits
Specific subjects announced in Schedule of Classes and offered as scheduled courses. May be repeated for unlimited credit.
BIOL 351. Biology Internship  
1-6 Credits  
Substantial off-campus experience in biology selected by student in consultation with regular biology faculty member. Internship must be approved by faculty member. Student will supply mutually agreed upon documentation of internship activities after the internship is completed. May be repeated up to 6 credits. Restricted to: BIOL, MBIO, CEC, GEBT majors. S/U Grading (S/U, Audit).  
Prerequisite(s): 45 college credits, 2.5 or better GPA, consent of instructor.

BIOL 353. Pre-Professional Human Anatomy  
4 Credits  
Pre-professional clinically-oriented survey of human anatomy. Designed primarily for pre-nursing majors. Provides comprehensive anatomical training for students planning careers in health and allied health sciences, such as medicine, dentistry, nursing, physical therapy, physicians aid, human nutrition, and food science. Suitable as a biology elective. Concurrent enrollment in BIOL 354L is recommended but not required.  
Prerequisite(s): BIOL 211G and either CHEM 110G, CHEM 111G, or CHEM 115.

BIOL 353 L. Pre-Professional Human Anatomy Laboratory  
1 Credit  
Laboratory experience in human anatomy using anatomical models and cat dissections. Designed as a learning aid to support and augment BIOL 353 pre-professional Human Anatomy. For students planning careers in health and allied health sciences such as medicine, dentistry, nursing, physical therapy, physicians aid, human nutrition, and food science.  
Prerequisite(s)/Corequisite(s): BIOL 253 or BIOL 353. Prerequisite(s): BIOL 211G and and either CHEM 110G, CHEM 111G, or CHEM 115.

BIOL 354. Physiology of Humans  
3 Credits  
Principles of integrative functions in humans. A systems approach emphasizing tissues, organs, and their regulation.  
Prerequisite(s): BIOL 211G and MATH 121G.

BIOL 354 L. Laboratory of Human Physiology  
1 Credit  
Laboratory to accompany BIOL 354.  
Prerequisite(s): BIOL 254, BIOL 381, BIOL 354, or concurrent enrollment in BIOL 354.

BIOL 373. Fungal Biology  
3 Credits (3+2P)  
Same as EPWS 372.  
Prerequisite: EPWS 310 or BIOL 311 or consent of instructor.

BIOL 377. Cell Biology  
3 Credits  
Prerequisite(s): BIOL 211G, BIOL 305, and MATH 121G.

BIOL 381. Animal Physiology  
3 Credits  
Principles of integrative function in animals, emphasizing tissues, organs, organ systems, and regulation. Includes adaptations of animals to their environments. BIOL 111G and BIOL 377 recommended.  
Prerequisite(s): BIOL 211G and junior-level standing, MATH 121G.

BIOL 382. Plant Signalling and Development  
3 Credits  
This is a course that introduces plant signalling pathways and their role in development to students. The lectures are structured to facilitate in-class discussions on the current state and future directions in this field. Topics will cover a wide range of biological questions and the methods used to study them.  
Prerequisite(s): BIOL 305 or GENE 315, and MATH 121G.

BIOL 385. An Introduction to Cancer  
3 Credits  
This course will cover 3 areas of cancer research and their interdisciplinary connections: clinical cancer research, epidemiology and public health, and basic cancer research. May be repeated up to 3 credits.  
Prerequisite(s): BIOL 305 or GENE 315 or equivalent and MATH 121G.

BIOL 398. Biology Research Programs  
1-3 Credits  
Directed studies and research experiences, by arrangement with instructor. May be repeated for a maximum of 6 credits.

BIOL 402. Biology Honors Thesis  
1-3 Credits (1-3)  
Provides guidance in how to write a scientific paper in the sciences. Students will produce an honors thesis based on previous independent research. Consent of instructor required.  
Prerequisite(s): MATH 121G and consent of instructor.

BIOL 408. Ecology of Plants  
3 Credits  
Controlling factors, succession, community dynamics, and the classification of vegetation.  
Prerequisite(s): BIOL 301 and MATH 121G.

BIOL 412. Seminar in Microbiology  
1 Credit  
Seminar to aid students in assessment and presentation of current topics in microbiology. Graded: S/U.  
Prerequisite(s): BIOL 311, BIOL 311L, and MATH 121G.

BIOL 417. Topics in Environmental Microbiology  
3 Credits  
This is an advanced undergraduate course based on current literature in Environmental Microbiology, and is a seminar-style, discussion-based class. Topics typically include marine microbiology, ancient DNA, and the human microbiome. Crosslisted with: BIOL 577.  
Prerequisite(s): MATH 121G, BIOL 477 or consent of instructor.

BIOL 423. Primate Adaption and Evolution  
3 Credits  
Prerequisite(s): ANTH 355 or consent of instructor.  
Corequisite(s): BIOL 423L when offered.

BIOL 423 L. Primate Evolution Laboratory  
1 Credit  
Laboratory with exercises on non-human primate adaptation and evolution. Crosslisted with: ANTH 473 L.  
Prerequisite(s): ANTH 355 or consent of instructor.  
Corequisite(s): BIOL 423.
BIOL 211G, BIOL 305 or BIOL 478 or GENE 315, and MATH 121G.

BIOL 211G, BIOL 305, and MATH 121G.

BIOL 111G, BIOL 211G, and MATH 121G.

BIOL 111G, BIOL 211G, and MATH 121G.

BIOL 447. Ornithology
4 Credits (3+3P)
Morphology, life histories, systematics, ecology, and behavior of birds.
Prerequisite(s): MATH 121G.

BIOL 450. Special Topics
1-3 Credits
Specific subjects announced in the Schedule of Classes and offered as scheduled courses. May be repeated for unlimited credit.

BIOL 451. Physiology of Microorganisms
3 Credits
Aspects of cellular physiology unique to prokaryotes. BCHE 395 recommended.
Prerequisite(s): C- or better in BIOL 311, MATH 121G.

BIOL 455. Biometry
3 Credits
Biometry is the analysis of biological data using mathematical and statistical models. The course will cover basic theories of probability and statistics and will introduce principles of sampling, estimation, experimental design, and hypothesis testing. Students will analyze biological data using computer programs and will perform tests for goodness-of-fit, independence, analysis of variance, correlation, and regression.
Prerequisite(s): BIOL 111G or BIOL 211G, and MATH 121G.

BIOL 459. Darwinism Versus Creationism
3 Credits
This course examines the debate regarding Creationism versus Darwinism as explanations for the origin and diversification of life on Earth. Topics covered include the nature and philosophy of science, new-world creationism, old-world creationism, intelligent design, history of evolutionary thought, modern evolutionary theory, and the Creationism-Darwinism debate at the societal, political, and educational interfaces. The course structure will include formal lectures and in-class discussion of assigned readings.
Prerequisite(s): BIOL 111G or BIOL 211G, and MATH 121G.

BIOL 462. Conservation Biology
3 Credits
Examination of the value of biological diversity, the natural processes that control biological diversity, and the ways in which human activities have resulted in the loss of biological diversity, both regionally and globally.
Prerequisite(s): BIOL 301 and either MATH 142G or MATH 191G.

BIOL 465. Invertebrate Zoology
4 Credits (3+3P)
Survey, ecology, behavior, and physiology. BIOL 322 recommended.
Prerequisite(s): MATH 121G, BIOL 111G, and junior-level standing.

BIOL 466. Invertebrate Zoology Field Trip
1 Credit
A one-week field trip for the study of marine invertebrates. Registrants must provide own camping gear. Graded: S/U.
Prerequisite(s): MATH 121G, BIOL 465 or equivalent (or concurrent enrollment) or consent of instructor.

BIOL 467. Evolution
3 Credits
Covers theory, historical background, population variation, natural selection, adaptation, speciation.
Prerequisite(s): BIOL 111G, BIOL 305 or GENE 320, and MATH 121G.
BIOL 469. Biology of Emerging Infectious Diseases
3 Credits
This class will investigate the evolutionary and ecological drivers of disease emergence. The effect of emerging diseases on human health will be addressed throughout the class, but the class will also consider the consequences of disease emergence for the health of wildlife and plant populations. Additionally, the class will consider the mechanisms used to control disease emergence and why they succeed or fail.
Prerequisite(s): MATH 121G, Introductory Genetics (BIOL 305 or equivalent) or consent of the instructor.

BIOL 470. Developmental Biology
3 Credits
The purpose of this course is to introduce students to the principles that govern the development of a single fertilized egg cell into a complex multicellular organism. These principles, and often the molecular mechanisms by which they are accomplished, appear to be universal for all multicellular organisms including both plants and animals. We will explore issues such as: how cells become committed to particular cell fates and how this commitment is maintained; how organs acquire particular shapes, sizes and positions; the developmental causes of some human diseases; how the environment affects development; and, how changes in development provide the material basis for evolutionary change.
Prerequisite(s): BIOL 211G, BIOL 305, and MATH 121G.

BIOL 471. Molecular and Cellular Mycology
3 Credits
Exploration of the world of fungi with emphasis on fungal molecular biology and development. Including discussion of fungal taxonomy and genomics.
Prerequisite(s): MATH 121G and BIOL 311 required, BCHE 341 or BCHE 395 recommended, or consent of instructor.

BIOL 472. Primate Behavior and Ecology
3 Credits
Survey of the social behavior and ecology of nonhuman primates. Crosslisted with: ANTH 472.

BIOL 473. Ecology of Microorganisms
3 Credits (2+3P)
The metabolic interactions of microorganisms in the environment, with emphasis on their roles in ecological processes.
Prerequisite(s): MATH 121G, BIOL 311 or consent of instructor.

BIOL 474. Immunology
3 Credits
Basic concepts of the immune response.
Prerequisite(s): MATH 121G, BIOL 305, and CHEM 211 or CHEM 313.

BIOL 475. Virology
3 Credits
Mechanisms of viral infections of animals and man. BCHE 395 or BIOL 305 are recommended.
Prerequisite(s): BIOL 311 and MATH 121G.

BIOL 476. Soil Microbiology
3 Credits
Nature and physiology of soil microorganisms, how they affect plant growth and recycle nutrients. Land framing, bioremediation, and other environmental problems as influenced by soil microorganisms. SOIL 252 and BIOL 311 recommended. Same as SOIL 476.

BIOL 476 L. Soil Microbiology Laboratory
1 Credit
Enumeration of soil microorganisms, their activities, and transformations they mediate. Same as SOIL 476L.
Prerequisite(s)/Corequisite(s): BIOL 476.

BIOL 477. Applied and Environmental Microbiology
4 Credits
A lecture-laboratory course on the microorganisms and the reactions they mediate which either impact the environment or have industrial applications. Reading of current literature will be emphasized. Topics include bioremediation, water quality, and aspects of industrial and food microbiology.
Prerequisite(s): MATH 121G, BIOL 311, and 311 L, or consent of instructor.

BIOL 478. Molecular Biology of Microorganisms
3 Credits
The biochemical basis for gene mutation, recombination, and expression with emphasis on prokaryotes. Includes fundamentals of recombinant DNA technology. BIOL 305 and BCHE 395 recommended.
Prerequisite(s): BIOL 311 and MATH 121G.

BIOL 479. Medical Microbiology
3 Credits
An in-depth overview of microbial pathogens associated with human infectious disease. Etiological agents, pathogenesis, and processes leading to the disease state and the therapies of infectious disease.
Prerequisite(s): MATH 121G and BIOL 311 required, BIOL 474 recommended.

BIOL 479 L. Medical Microbiology Laboratory
1 Credit
Overview of common procedures used by medical microbiologists to identify agents of disease or microbial pathogen traits. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): BIOL 479. Prerequisite(s): MATH 121G, BIOL 311, BIOL 311 L.

BIOL 480. Animal Behavior
3 Credits
A survey of the field of animal behavior. BIOL 322 recommended.
Prerequisite(s): MATH 121G, BIOL 111G, and junior-level standing.

BIOL 480 L. Animal Behavior Laboratory
1 Credit
Laboratory and field experiences in animal behavior BIOL 322 recommended.
Prerequisite(s): BIOL 111G, MATH 121G, and junior-level standing.
Corequisite(s): BIOL 480.

BIOL 484. Animal Communication
3 Credits
An examination of how animals produce and perceive signals, what factors influence the form of signals in different sensory modalities, and how conflicts between senders and receivers affect signaling strategies. Weekly discussion from the primary literature and group research products.
Prerequisite(s): BIOL 111G or consent of instructor, and MATH 121G.
BIOL 485. Comparative Stress Physiology
3 Credits
This course explores the biochemical, hormonal, and molecular aspects of stress physiology in all organisms from bacteria to humans. Focus area include hormesis, temperature, radiation, oxygen, infection, and dehydration.
Prerequisite(s): MATH 121 and BIOL 211G.

BIOL 488. Principles of Conservation Genetics
3 Credits
Fundamentals of the genetics of small populations. Genetic technologies used in studying small populations. Application of genetics and evolution to the conservation of biological populations.
Prerequisite(s): MATH 121G and BIOL 305.

BIOL 489. Genetic Aspects of Population Biology
3 Credits
Basic theory of population genetics and how that theory has guided, and been influenced by, studies of natural populations.
Prerequisite(s): MATH 121G and BIOL 305 or equivalent.

BIOL 490. Neurobiology
3 Credits
Fundamentals of neurobiology with an emphasis on properties of neurons and glia, principles of synaptic transmission, development of nervous system and organization of motor and sensory systems.
Prerequisite: BIOL 211, BIOL 305, MATH 142G, or MATH 191G, and CHEM 211 or CHEM 313.

BIOL 498. Biology Research Programs
1-3 Credits
Directed studies and research experiences, by arrangement with instructor. May be repeated for a maximum of 6 credits.

BIOL 503. Advanced Primate Adaptation and Evolution
3 Credits
Advanced review of non-human primate adaptation and evolution. Crosslisted with: ANTH 534 L.
Corequisite(s): BIOL 503L when offered.

BIOL 503 L. Advanced Primate Adaptation and Evolution Laboratory
1 Credit
Laboratory with exercises on non-human primate adaptation and evolution. Crosslisted with: ANTH 573 L.
Corequisite(s): BIOL 503.

BIOL 506. Biological Electron Microscopy (f)
5 Credits
Principles and use of light microscope, transmission and scanning electron microscope; specimen preparation, thick and ultrathin sectioning, analysis of micrographs.

BIOL 510. Current Topics in Biology
3 Credits
Introduction to diverse topics in modern biology, including dynamic areas of current research.

BIOL 514. Plant Physiology
2 Credits
Same as EPWS 514.
Prerequisites: BIOL 211G and CHEM 112G.

BIOL 520. Molecular Cell Biology
3 Credits
An in-depth look at cellular processes and structures at the molecular level. Emphasis is placed on formal student presentations and discussions of current literature.
Prerequisite: BIOL 377 or equivalent.

BIOL 527. Symbiosis
3 Credits
In-depth treatment of the ecology, evolution, and mechanisms that are found in symbiotic systems.
Prerequisite: graduate status.

BIOL 533. Environmental Physiology of Plants
3 Credits
Integral responses of plants and crop productivity to naturally occurring and modified environmental factors such as radiation, temperatures, water vapor, carbon dioxide, and air flow. Same as AGRO 533 and HORT 533.
Prerequisite: BIOL 314 or consent of instructor.

BIOL 534. Advanced Human Evolution
3 Credits
Advanced overview of human biological evolution from the emergence of Miocene apes to the modern human diaspora. Crosslisted with: ANTH 534.
Prerequisite(s): ANTH 355 or consent of instructor.
Corequisite(s): ANTH 534L when offered.

BIOL 534 L. Advanced Human Evolution Laboratory
1 Credit
Advanced laboratory in human evolution, includes exercises and activities to learn the human fossil record. Crosslisted with: ANTH 534 L.
Corequisite(s): BIOL 534.

BIOL 536. Advanced Disease Vector Biology
3 Credits
Prerequisite(s): BIOL 211G and BIOL 305.

BIOL 540. Science and Ethics
1-3 Credits (1-3)
Ethical concerns facing researchers in the basic and applied biological sciences. Coverage of responsible conduct in research including scientific integrity and research misconduct, mentor/trainee responsibilities, data management, authorship, publication practices, human subjects, animal welfare, intellectual property, conflicts of interest and effort and collaborative science. Emphasis on ethical reasoning skills. Discussion of ethical and societal implications of issues selected from a broad range of contemporary research areas (genetics, reproductive biology, environmental sciences, nanoscience, drug discovery, bioengineering, neuroscience). Subtitled. May be repeated up to 4 credits. Crosslisted with: PHIL 540.

BIOL 541. Professional Development Seminar
1-3 Credits
Practical aspects of career enhancement including job seeking, professional presentations, grant proposals, etc.
Prerequisite: consent of instructor.

BIOL 545. Molecular and Biochemical Genetics
3 Credits
Same as BCHE 545.
BIOL 550. Special Topics
1-3 Credits
Readings, discussions, and/or field and laboratory investigation of selected problems. Possible topics: human genetics, systematic entomology, or parasitism in animals. May be repeated for unlimited credit.
Prerequisite: consent of instructor, and designation of a specific topic before registration.

BIOL 560. Seminar in Cell and Organismal Biology
1-3 Credits
Oral presentation and discussion of journal articles and ongoing research project. May be repeated for a maximum of 6 credits.

BIOL 562. Advanced Genomics Technology
3 Credits
This course covers current genomics techniques in genome sequencing, transcriptome analysis, detection of genetic variation, and metagenomics. Consent of Instructor required.

BIOL 566. Advanced Bioinformatics and NCBI Database
3 Credits
The course discusses how to use NCBI database and bioinformatic tools for research with genomics approaches. The topics include nucleotide and protein sequence analysis, similarity search with blast algorithms, gene/genome annotation, protein structure analysis, gene expression analysis, and metagenomic study. Consent of Instructor required.

BIOL 568. Communities and Ecosystems
3 Credits
Study of ecological systems at the levels of the community and ecosystem. Topics include species interactions, community structure and dynamics, and flow of material and energy through ecosystems.

BIOL 570. Ecological Biogeography
3 Credits
Survey of modern theory incorporating ecological mechanisms governing distribution and abundance of species over space and time.

BIOL 571. Advanced Molecular and Cellular Mycology
3 Credits
Exploration of the world of fungi with emphasis on fungal molecular biology and development, including discussion of fungal taxonomy and genomics, using current literature. Consent of Instructor required.

BIOL 572. Advanced Primate Behavior and Ecology
3 Credits

BIOL 573. Fungal Biology
3 Credits (3+2P)
Same as EPWS 572.
Prerequisites: EPWS 310 or BIOL 311, or consent of instructor.

BIOL 574. Advanced Human Osteology
3 Credits
Advanced human osteology surveying the functional, developmental and evolutionary biology of the human skeleton. Identifying bones and teeth from hands-on experience with skeletal and dental material. Provides a foundation for human evolutionary studies, bioarchaeology and forensic anthropology. Crosslisted with: ANTH 574.
Corequisite(s): BIOL 574L when offered.

BIOL 574 L. Human Osteology Laboratory
1 Credit
Laboratory for BIOL 574. Experiences and activities related to identifying teeth and bones of the human skeleton. Crosslisted with: ANTH 574 L.
Corequisite(s): BIOL 574.

BIOL 577. Advanced Topics in Environmental Microbiology
3 Credits
This course is based on current literature in Environmental Microbiology, and is a seminar-style, discussion-based class. Topics typically include marine microbiology, ancient DNA and the human microbiome.
Prerequisite(s): Consent of instructor.

BIOL 581. Physiology of Animals
3 Credits
Comprehensive treatment of integrative physiology of animals, emphasizing tissues, organ systems, and regulatory control, including neuroendocrine function, circulation, respiration, and excretion. Term paper required. BIOL 111G, BIOL 377 recommended.
Prerequisite: BIOL 211G.

BIOL 582. Advanced Plant Signalling and Development
3 Credits
This is a course that introduces plant signalling pathways and their role in development to students. The lectures are structured to facilitate in-class discussions on the current state and future directions in this field. Topics will cover a wide range of biological questions and the methods used to study them.
Prerequisite(s): BIOL 305 or GENE 315, and MATH 121G.

BIOL 587. Behavioral and Evolutionary Ecology
3 Credits
This course will investigate the causes and consequences of phenotypic variation and the adaptive value of phenotypic traits.

BIOL 590. Advanced Neurobiology
1-3 Credits
Detailed examination of the principles underlying nervous system organization and function. Emphasis on recent advances in multidisciplinary, integrated approaches to study the nervous system. May be repeated under different subtitles for a maximum of 9 credits.
Prerequisites: either BIOL 490, BIOL 520, or equivalent, and consent of instructor.

BIOL 598. Special Research Programs
1-9 Credits
Individual investigations either analytical or experimental.

BIOL 599. Master’s Thesis
15 Credits
Thesis.

BIOL 600. Doctoral Research
1-15 Credits
Research.

BIOL 610. Seminar
1-3 Credits (1-3)
Oral presentation and discussion of journal articles and ongoing research projects. May be repeated up to 6 credits. S/U Grading (S/U, Audit).

BIOL 612. Microbiology Seminar
1 Credit
Seminar to aid graduate students in assessment and presentation of classical and current topics in microbiology.
BLAW 230. Business Law
3 Credits
Introduction to law in general and application to business specifically; comprehensive study of the law of contracts; and the principal and agent relationship. Offered at all NMSU Community Colleges except Dona Ana Community College. Credit may not be earned in both BLAW 230 and BLAW 317.

BLAW 313. Sports and the Law
3 Credits
Introduction to legal concepts related to sports and business including an introduction to U.S. law and the civil practice, agency, sports contracts, sport torts, sport crimes, pertinent federal legislation such as Title IX, drugs and sports, international sports issues, pertinent antitrust issues, intellectual property, ethics and alternative dispute resolution.
Prerequisite(s)/Corequisite(s): BLAW 316. Prerequisite(s): BLAW 316.

BLAW 316. Legal Environment of Business
3 Credits
Survey of business law including: the legal system (court systems, sources and types of law, litigation and dispute resolution), ethics and corporate social responsibility, administrative law, tort law, contract law, agency and employment law, business structure and governance, securities regulations, and international law. Students may not receive credit for both BLAW 316 and BLAW 317.

BLAW 325. Real Estate Principles and Law I
3 Credits
Same as FIN 325.

BLAW 330. Entrepreneurial Law
3 Credits
This course will explore the legal issues faced in the process of launching, financing, and growing a new venture. We will pay special attention to ventures making use of innovative technologies and business models. Intellectual property (trade secrets and confidential information, patents, copyrights, and trademarks) are of special importance to innovation-driven ventures, so we will consider in-depth how intellectual property is developed, protected, and put to use.

BLAW 385V. Consumers and the Law
3 Credits
Study of the interrelationships between business, legal, and ethical aspects of consumer issues and their attendant civil liability and remedies in domestic and international markets.

BLAW 418. Uniforms Commercial Code and Advanced Business Law
Topics
3 Credits
Property, advanced contract law, debtor-creditor relations, bankruptcy and Uniform Commercial Code topics, including sales, negotiable instruments, secured transactions. Students who have taken BLAW 318 may not receive credit for BLAW 418.
Prerequisite(s): BLAW 316.

BLAW 430V. American Indian Law and Policy
3 Credits
Explores the principles, doctrines, and texts governing the legal relations between the United States and Indian tribes, the history of federal Indian law and policy, tribal property, treaty rights and sovereignty, congressional plenary power, the trust doctrine, jurisdiction in Indian country, and tribal government. Topic specifically examined in the course include tribal lawmaking powers, gaming and economic development in Indian country, protection of Indian religious rights and cultural property, water rights, fishing, hunting and other treaty-based rights.

BLAW 490. Selected Topics
1-3 Credits
Prerequisite(s): BLAW 316. Prerequisite(s): BLAW 316.

BLAW 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head.
Prerequisites: junior or above standing and consent of instructor and department head.

BLAW 502. Legal Environment of Business
3 Credits
Legal procedures and the judicial system as applied to business situations and a general coverage of the bodies of substantive law most commonly associated with business.
Prerequisite: graduate students only.

BLAW 518. Uniform Commercial Code and Advanced Business Law
Topics
3 Credits
Property, advanced contract law, debtor-creditor relations, bankruptcy and Uniform Commercial Code topics, including sales, negotiable instruments, secured transactions. Students who have taken either BLAW 318 or BLAW 418 may not receive credit for BLAW 518. Same as BLAW 418 with differentiated assignments for graduate students.
Prerequisite(s): BLAW 316 or BLAW 502.

BLAW 527. Negotiation and Business Dispute Resolution
3 Credits
Focus on learning tactics related to conflict resolution skills and negotiation theory. Also the use of quantitative methods and their realistic application in resolving disputes. Students will participate in numerous role playing activities and simulated mediation games. Same as MGT 527.

BLAW 530. American Indian Law and Policy
3 Credits
This course is divided into two major parts: an historical survey of federal Indian law and policy, and selected topics focusing on contemporary federal Indian law and policy issues and problems. This course assumes that the students have not had any law courses and approaches the topic of the history of federal Indian law and policy from various multidisciplinary and interdisciplinary perspectives.
BLAW 550. Selected Topics
3 Credits
Seminars in selected topics related to business law or the legal environment of business.
Prerequisite(s): Varies according to seminar being offered.

BMGT-BUSINESS MANAGEMENT (BMGT)

BMGT 110. Introduction to Business
3 Credits
Terminology and concepts of the business field. Role of accounting, computers, business management, finance, labor, and international business in our society. Restricted to: Community Colleges only.

BMGT 112. Introduction to Money
3 Credits
Banking in today’s economy: language and documents of banking, check processing, teller functions, deposit function, trust services, bank bookkeeping, loans, and investments. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

BMGT 126. Retail Management
3 Credits
Phases of retailing, including types of retail outlets and basic problems of organizing and operating a retail store. Restricted to: Community Colleges only.

BMGT 132. Principles of Selling
3 Credits
Analysis of customer behavior, persuasive communication, process of the sales interview. Restricted to: Community Colleges only.

BMGT 136. Fundamentals of Buying and Merchandising
3 Credits
Covers operational aspects of procuring and selling merchandise for the retail store. Procedures covered are buying, receiving, pricing strategies, sales promotions and operational controls. Restricted to: Community Colleges only.

BMGT 138. Advertising
3 Credits
Psychological approach to non-personal consumer persuasion; applied techniques in media selection, layout mechanics, production methods, and campaign structures. Restricted to: Community Colleges only.

BMGT 140. Principles of Supervision I
3 Credits
Principles of supervision emphasizing planning, organization, rating of employees and procedures to develop good morale. Introduction to interpretation of case studies. Restricted to: Community Colleges only.

BMGT 150. Income Taxation
3 Credits
Federal income taxation of individuals, sole proprietorships, partnerships, corporations, trusts, and estates with particular reference to CLU, life insurance and annuities. Restricted to: Community Colleges only.

BMGT 155. Special Topics I
1-3 Credits (1-3)
Introductory special topics of lower division level work that provides a variety of timely subjects and content material. May be repeated up to 9 credits. Restricted to Community Colleges campuses only.

BMGT 160. Self-Presentation and Etiquette
3 Credits
Introduction to business etiquette based on tradition, social expectations, and professional behavior standards. Restricted to: Community Colleges only.

BMGT 191. ENACTUS (Students in Free Enterprise)
1 Credit
ENACTUS is an international organization promoting and teaching business entrepreneurship. Students learn teamwork, leadership, and networking skills by participating in regional and national business competitions and community service projects. May be repeated up to 6 credits. Restricted to: BMGT or Pre-Business majors. Restricted to Community Colleges only.

BMGT 201. Work Readiness and Preparation
3 Credits
Instruction in methods of selection, seeking, acquiring and retaining employment. Addresses work success skills, business etiquette, employer expectation and workplace norms. Restricted to Community Colleges campuses only.

BMGT 205. Customer Service in Business
3 Credits
Establishes concepts of service quality in relationship to business success and maximization of returns to the organization. Explores techniques for delivering quality and service in a variety of business settings. Restricted to: Community Colleges only.

BMGT 208. Business Ethics
3 Credits
The course examines the underlying dimensions of ethics in business, investigating ethics in relationship to the organization, the stakeholders, and society. Exploration of ethical issues from a historical context, analyzing actual events through the lens of business decision making, including legal/political, sociocultural, economic, and environmental considerations will be undertaken. Restricted to Community Colleges campuses only.

BMGT 210. Marketing
3 Credits
Role of marketing in economy, types of markets, product development, distribution channels, pricing, promotion of goods, market research, consumer motivation, and management of marketing process. Restricted to: Community Colleges only.
Prerequisite(s): BMGT 110.

BMGT 212. Supervisory and Leadership Trends
3 Credits
Current trends in marketing, merchandising, sales promotion and management; in manufacturing, merchandising and service types of businesses. Extensive use of practical student project. Restricted to Community Colleges only.
Prerequisite(s): BMGT 110 or BUSA 111.

BMGT 213. Consumer Lending
3 Credits
Principles of credit evaluation, types of credit, marketing, collections, legal aspects, installment lending, leasing management, insurance, and rate structure and yields. Restricted to: Community Colleges only.
Prerequisite(s): BMGT 112.
BMGT 215. Banks and the Money Supply  
3 Credits  
Practical application of the economics of money and banking. Required of all students electing the banking option. Restricted to: Community Colleges only.

BMGT 216. Business Math  
3 Credits  
Application of basic mathematical procedures to business situations, including percentage formula applications, markup, statement analysis, simple and compound interest, and annuities. Restricted to: Community Colleges only.  
Prerequisite(s): CCDM 103N or satisfactory math score on ACT.

BMGT 221. Internship I  
1-3 Credits (1-3)  
Work experience that directly relates to a student’s major field of study that provides the student an opportunity to explore career paths and apply knowledge and theory learned in the classroom. Internships may be paid or unpaid. Students are supervised/evaluated by both the employer and instructor. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: BMGT majors. S/U Grading (S/U, Audit). Restricted to Community Colleges campuses only.

BMGT 225. Introduction to Commercial Lending  
3 Credits  
Commercial lending overview, the lending process, portfolio management, and regulation and business development. Restricted to: Community Colleges only.  
Prerequisite(s): BMGT 112.

BMGT 231. Legal Issues in Business  
3 Credits  
Application of fundamental legal principles to business transactions. Sources, functions, and objectives of law, including federal and New Mexico court systems and procedures, criminal law, torts, contracts, and sales, and Uniform Commercial Code. Restricted to: Community Colleges only.

BMGT 232. Personal Finance  
3 Credits  
Budgeting, saving, credit, installment buying, insurance, buying vs. renting a home, income tax statement preparation, investment, and estate disposal through will and trust. Restricted to: Community Colleges only.

BMGT 235. Credit Administration  
3 Credits  
Covers factors influencing and determining loan policy: methods of credit investigation and analysis, credit techniques, credit problems, and types of loans. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.  
Prerequisite(s): BMGT 112.

BMGT 239. Visual Marketing Techniques  
3 Credits  
Provides a basic understanding of visual marketing and merchandising techniques. The importance of effective presentation of a store and its merchandise is covered, as is line, balance and artistic display. Restricted to: Community Colleges only.

BMGT 240. Human Relations  
3 Credits  
Human interactions in business and industrial settings. Motivation and learning experiences as related to problems of the worker and supervisor. Practical applications of human behavior. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

BMGT 248. Introduction to Quality Management  
3 Credits  
Introductory practices of total quality management practices aimed at all levels of an organization to continually improve performance to include competitiveness in today’s business world. Restricted to: Community Colleges only.

BMGT 250. Diversity in the Workplace  
3 Credits  
Concepts of culture, diversity, prejudice, and discrimination within the domestic workforce/society. Restricted to Community Colleges campuses only.  
Prerequisite(s): BMGT 110 or BUSA 111.

BMGT 260. Real Estate Practice  
3 Credits  
This course is a requirement for licensure in real estate for the state of New Mexico. Topics covered include: real estate finance, settlement, foreclosure, federal taxation, valuation and appraisal, land descriptions and math skills. These topics are requirements of the New Mexico Real Estate Commission. Restricted to: Community Colleges only.

BMGT 264. Real Estate Law  
3 Credits  
This course is a requirement for licensure in real estate for the state of New Mexico. Topics covered include: ownership of real estate, real estate brokerage relationships, contracts, environmental concerns and federal laws that affect real estate. These topics are requirements of the New Mexico Real Estate Commission. Restricted to: Community Colleges only. Crosslisted with: PL S 264

BMGT 268. Real Estate Broker’s Basic Course  
3 Credits  
State of New Mexico specific criteria that apply to real estate licensure: purchase agreements, listing agreements, New Mexico Rules and Regulations, and landlord tenant legislation. Restricted to: Community Colleges only.  
Prerequisite(s): BMGT 260 & BMGT 264.

BMGT 272. E-Commerce Operations  
3 Credits  
Includes the many forms of e-commerce and emerging technologies that will impact the business of tomorrow. Restricted to Community Colleges campuses only.  
Prerequisite(s): OECS 105 or CS 110 or BCIS 110.

BMGT 275. Small Business Planning  
3-4 Credits (3-4)  
How to start a small business based on a formal business plan. Includes feasibility study and legal requirements. Restricted to: Community Colleges only.

BMGT 277. Small Business Management  
3 Credits  
Study of the principles, advantages, and problems of owning or operating a small business. Location, capital, marketing, control, and sales promotion. Restricted to Community Colleges campuses only.  
Prerequisite(s): BMGT 110 or BUSA 111.
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BMGT 280. Introduction to Human Resources
3 Credits
Personnel functions encompassing job analysis, recruitment, selection, training, appraisals, discipline, and terminations. Restricted to Community Colleges campuses only.
Prerequisite(s): BMGT 110 or BUSA 111 or BA 104.

BMGT 282. Introduction to International Business Management
3 Credits
Overview of the social, economic and cultural environment of international business transactions. Restricted to Community Colleges only.
Prerequisite(s): (BMGT 110 or BUSA 111) or (BMGT 140 or MGT 201).

BMGT 285. Introduction to Manufacturing Operations
3 Credits
Introduction to issues related to manufacturing, including an overview of the production function, product design and development, location, layout, forecasting, planning, purchasing, materials/inventory, and quality management. Restricted to Community Colleges campuses only.
Prerequisite(s): BMGT 110 or BUSA 111.

BMGT 286. Introduction to Logistics
3 Credits
Overview on the planning, organizing, and controlling of transportation, inventory maintenance, order processing, purchasing, warehousing, materials, handling, packaging, customer service standards, and product scheduling. Restricted to Community Colleges only.

BMGT 287. Introduction to Export/Import
3 Credits
Procedures and documentation for exporting and importing products. Emphasis on NAFTA regulations and other U.S. border operations crossings. Restricted to Community Colleges only.
Prerequisite(s): BMGT 110 or BUSA 111.

BMGT 290. Applied Business Capstone
3 Credits
Refines skills and validates courses taken in BMGT program. Business simulations, case studies and projects used to test and improve business practices. Student must be within 25 credits of graduation. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): (BMGT 110 or BUSA 111) and (BMGT 140 or MGT 201).

BMGT 298. Independent Study
3 Credits
Individual studies directed by consenting faculty with prior approval of department chair. May be repeated up to 6 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): Sophomore standing with 3.0 GPA.

BOT 101. Keyboarding Basics
3 Credits (2+2P)
Covers correct fingering and mastery of the keyboard to develop skillful operation. Formatting basic business letters, memos, and manuscripts. Designed to improve keyboarding speed and accuracy; introduce formats of letters, tables and reports. A speed and accuracy competency requirement must be met. Prerequisite: BOT 101 or consent of instructor.

BOT 105. Business English I
3 Credits
Training and application of the fundamentals of basic grammar, capitalization and sentence structure (syntax).

BOT 106. Business Mathematics
3 Credits (2+2P)
Mathematical applications for business, including training in the touch method of the 10-key calculator. Prerequisite: CCDM 103N or adequate score on math placement exam.

BOT 109. Business English II
3 Credits
Training and application of the fundamentals of punctuation, numbers, basic writing and editing skills. Prerequisite: C or better in BOT 105.

BOT 110. Records Management
3 Credits
Principles, methods and procedures for the selection, operation and control of manual and automated records systems.

BOT 120. Accounting Procedures I
3 Credits (2+2P)
Business accounting principles and procedures. Use of special journals, cash control, and merchandising concepts. Reports for sole proprietorships.

BOT 121. Accounting Procedures II
3 Credits (2+2P)
Continuation of BOT 120, emphasizing accounting principles and procedures for notes and interest, depreciation, partnerships and corporations, cash flow and financial statement analysis. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): BOT 120 or ACCT 221.

BOT 135. Keyboarding Technique Review
3 Credits
Emphasis on improving keyboarding speed and accuracy. Prerequisite: BOT 101 or equivalent.

BOT 140. Payroll Accounting
3 Credits (2+2P)
Payroll procedures including payroll tax forms and deposits. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): ACCT 221 or BOT 120.

BOT 150. Medical Terminology
3 Credits
Understanding of the basic elements of medical words. Use of medical abbreviations. Same as NURS 150 and OEHO 120.
BOT 169. Spanish Grammar for Business Administration
3 Credits
Introductory course in Spanish grammar and practical business terms required for the proper application of fundamental oral and written business communication skills for Spanish speakers in the field of business administration. Restricted to Community Colleges campuses only.
Prerequisite(s): Spanish-speaking ability and computer keyboarding ability.

BOT 170. Office Communications in Spanish I
3 Credits
Develop oral and written communications skills of native or near-native speakers of Spanish. The student will learn basic letter writing skills, customer service techniques, and telephone etiquette in Spanish. Restricted to Community Colleges campuses only.
Prerequisite(s): BOT 169, Spanish-speaking ability, and computer keyboarding ability.

BOT 171. Office Communications in Spanish II
3 Credits
Develop oral and written communications skills of native or near-native speakers of Spanish. Emphasis placed on learning the office assistant's role within the office environment. Compose complex business correspondence and learn to make international travel arrangements.
Prerequisite: BOT 101 or BOT 170.

BOT 191. Taking Minutes & Proofreading
3 Credits
Preparation and practice producing minutes suited for different meeting types and purposes. Provides strategies to prepare for meetings, to record proceedings, and to transcribe minutes while incorporating proofreading skills practice. Topics include legal requirements, meeting types, minute formats, and duties/expectations of the minute taker and the meeting chair. Graded: S/U. Restricted to Community Colleges campuses only.
Prerequisite(s): BOT 109 or consent of instructor.

BOT 202. Keyboarding Document Production
3 Credits (2+2P)
Further development of keyboarding speed and accuracy. Production of complex letters, memos, tables, reports and business forms. A speed and accuracy competency requirement must be met.
Prerequisites: BOT 102 and BOT 109, or consent of instructor.

BOT 203. Office Equipment and Procedures I
3 Credits (2+2P)
Office organization, telephone techniques, equipment and supplies, handling meetings, human relations, mail procedures, and travel.
Prerequisites: BOT 213 or C S 110G or consent of instructor.

BOT 205. Microcomputer Accounting I
3 Credits (2+2P)
Introduction to automated accounting systems on microcomputers.
Prerequisite: working knowledge of computers and accounting or consent of instructor.

BOT 206. Microcomputer Accounting II
3 Credits (2+2P)
Microcomputer accounting applications, integrating spreadsheets, word processing, graphics, and database. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): BOT 121 or BOT 215.

BOT 207. Machine Transcription
3 Credits (2+2P)
Creating office documents using transcribing equipment and microcomputer software. Emphasis on proofreading, editing and grammar.
Prerequisites: minimum keyboarding of 45 wpm and C or better in BOT 105 or BOT 109 or equivalent and BOT 211 or BOT 213.

BOT 208. Medical Office Procedures
3 Credits (2+2P)
Current computerized and traditional administrative medical office procedures will be introduced. Practical knowledge on managing required record keeping in a medical office environment will be emphasized. Restricted to Community Colleges campuses only.
Prerequisite(s): BOT 109 or ENGL 111G, HIT 150 or AHS 120, and computer keyboarding ability or consent of instructor.

BOT 209. Business and Technical Communications
3 Credits
Effective written communication skills and techniques for career success in the work place. Composition of letters, memos, short reports, forms, and proposals, and technical descriptions and directions.
Prerequisites: ENGL 111G and computer keyboarding ability or consent of instructor.

BOT 211. Information Processing I
3 Credits (2+2P)
Defining and applying fundamental information processing concepts and techniques using the current version of leading software. Restricted to Community Colleges only.
Prerequisite(s): BOT 101 or consent of instructor.

BOT 213. Word Processing I
3 Credits (2+2P)
Operation and function of a word processor. Specific equipment to be announced in the Schedule of Classes.
Prerequisite: BOT 101 or keyboarding proficiency as demonstrated through completion of BOT 122, BOT 123, and BOT 124 or equivalent.

BOT 214. Word Processing II
3 Credits (2+2P)
Advanced operation and functions of a word processor. Specific equipment to be announced in the Schedule of Classes.
Prerequisite: BOT 213 or consent of instructor.

BOT 215. Spreadsheet Applications
1-3 Credits
Use of spreadsheets to include graphics and business applications. Same as OECS 215. May be repeated under different subtitles listed in the Schedule of Classes.

BOT 217. Powerpoint Presentation
3 Credits
Comprehensive, hands-on approach to learning and applying basic and advanced features of PowerPoint. These include text enhancements, objects, fills, colors, animation, charts, sound, video, and hyperlinks. Students demonstrate appropriate audience and communication tools to deliver presentations.
Prerequisites: BOT 211 or ability to demonstrate keyboarding and Windows proficiency.

BOT 218. Information Processing II
3 Credits (2+2P)
Advanced information processing techniques using current version of leading software. May be repeated for a maximum of 6 credits.
Prerequisite: BOT 211 or consent of instructor.
BOT 220. Internship in Business Office Technology
2 Credits
Experience in a supervised office position. Student must work at least eight hours per week. May be repeated for a maximum of 4 credits. 
Prerequisite(s): sophomore standing and consent of instructor.

BOT 221. Internship I
1-3 Credits
Work experience that directly relates to a student’s major field of study that provides the student an opportunity to explore career paths and apply knowledge and theory learned in the classroom. Internships may be paid or unpaid. Students are supervised/evaluated by both the employer and the instructor. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: BOT & HIT majors. S/U Grading (S/U, Audit). Restricted to Community Colleges campuses only.

BOT 222. Internship II
1-3 Credits
Continuation of BOT 221. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: BOT & HIT majors. S/U Grading (S/U, Audit). Restricted to Community Colleges campuses only. 
Prerequisite(s): BOT 221 and consent of instructor.

BOT 223. Medical Transcription I
3 Credits (2+2P)
Concepts in medical transcription are introduced on how to produce a variety of reports required in a medical office or facility utilizing accurate medical terminology, spelling, grammar, and document formatting. May be repeated up to 3 credits. Restricted to Community Colleges campuses only. 
Prerequisite(s): HIT 150 or AHS 120 and HIT 158 and BOT 209.

BOT 228. Medical Insurance Billing
3 Credits (2+2P)
Comprehensive overview of the insurance concepts and applications required for successfully and accurately completing and submitting insurance claims and reimbursement processes for various insurance carriers, both private and government, will be emphasized. Restricted to Community Colleges campuses only.
Prerequisite(s): HIT 150 or AHS 120 and BOT 208.

BOT 233. Advanced Medical Transcription
3 Credits (2+2P)
Builds upon the concepts introduced in Medical Transcription I providing greater understanding of how to produce advanced reports dictated by physicians with increasing speed and accuracy. Emphasis will be on proofreading and editing of operative reports, patient history and physicals, office notes, labor and delivery reports, consultation reports, discharge summaries, and other medical reports. May be repeated up to 3 credits. Consent of Instructor required. Restricted to Community Colleges campuses only.
Prerequisite(s): BOT 223 and HIT 130.

BOT 239. Personal Development
3 Credits
Development of a marketable, employable office systems person, to include interview, voice, manners, and apparel.

BOT 240. Introduction to Individual Taxation
3 Credits
Overview of Individual Federal Taxation; awareness of tax problems pitfalls and planning opportunities; focus on individual personal financial concerns and tax planning. One semester of accounting principles/procedures is recommended.

BOT 241. Auditing and Business Issues
3 Credits
Introduction to basic auditing concepts, the purpose for the auditing process, and requirements of persons assisting with the audit process. The course will also deal with issues of business law including contracts, sales, torts, strict liability, and business ethics. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): BOT 120 or ACCT 221.

BOT 244. Tax Preparation
3 Credits
Introduces basic federal and state tax codes for preparing individual income tax returns. Emphasis on use of tax software. 
Prerequisite: keyboarding proficiency.

BOT 250. Electronic Office Systems
3 Credits (2+2P)
Management of the electronic office. Office use of computers, printers, fax machines, copiers, and scanner concepts will be covered.
Prerequisite: BOT 211.

BOT 260. Bookkeeping Simulation Capstone
3 Credits (2+2P)
Refines the professional and technical skills students have learned while completing the BOT-Bookkeeping Assistant Option curriculum by demonstrating how coursework ties together. Designed as a bookkeeping assistant capstone course.
Prerequisite(s): BOT 121 or ACCT 221, BOT 140, BOT 205, and BOT 244, or consent of instructor.

BOT 270. Business Office Technology Capstone
3 Credits (2+2P)
Refines professional skills learned in the BOT program and ties all BOT coursework together. Restricted to: Community Colleges only.
Prerequisite(s): BOT 102 or BOT 129; and BOT 120; and BOT 209 or ENGL 203G or ENGL 218G; and BOT 211 or OECS 211.

BUSA-BUSINESS ADMINISTRATION (BUSA)

BUSA 111. Business in a Global Society
3 Credits
Overview of the global environment of business and the development of business as an integrative, cross-disciplinary activity.

C D-COMMUNICATION DISORDERS (C D)

C D 221. Introduction to Communication Disorders
3 Credits
Basic information about speech, language, and hearing disorders; orientation to the professions of speech-language pathology and audiology.

C D 301. Language Acquisition
3 Credits
This course introduces students to the study of the development of language, speech, and communication. Includes language sampling. May be repeated up to 3 credits. Crosslisted with: C D 509. Restricted to: C D majors.
Prerequisite(s): B or better in C D 221; Cumulative GPA of 3.2 or higher.
C D 322. Anatomy and Physiology of Speech Mechanisms
3 Credits
Structure and function of systems underlying human speech sound production and processing, including respiratory, phonatory, and articulatory components. May be repeated up to 3 credits. Crosslisted with: C D 502. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422, C D 324, and C D 301; and minimum 3.2 GPA.

C D 323. Phonetics
3 Credits
The science of phonetics, including work with the International Phonetic Alphabet. Taught with C D 501. May be repeated up to 3 credits. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221; Cumulative GPA of 3.2 or better.

C D 324. Introduction to Speech Science
3 Credits
Basic concepts and theories in acoustics, speech production and speech perception. Includes laboratory experience with instrumental measurement and analysis of speech systems. May be repeated up to 3 credits. Crosslisted with: C D 503. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422; and minimum 3.2 GPA.

C D 325. Language Disorders
3 Credits
Prerequisite(s): C- or better in C D 221.

C D 326. Clinical Methods and Procedures
3 Credits
Guidelines and procedures associated with the clinical and supervisory processes. Provide opportunities to complete the supervised clinical observation requirement for participation in clinical practicum. May be repeated up to 3 credits. Crosslisted with: C D 506. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422, C D, 324, C D 301; and minimum 3.2 GPA.

C D 374. American Sign Language I
3 Credits
Introduction to the basics of ASL including questions, commands, sentence types, time, subjects and objects, classifiers, locative case, pluralization, and temporal and distributional aspects.

C D 375. American Sign Language II
3 Credits
Continuation of C D 374, ASL I. Emphasis on ASL grammar, spatial referencing, detailed descriptions, and deaf culture. Features dialogues, short stories, narratives.
Prerequisite: C D 374 or consent of instructor.

C D 421. Speech and Language Disorders
3 Credits
Bases, symptoms, etiologies, and clinical management of issues related to disorders of articulation, phonology, voice and resonance, and fluency. May be repeated up to 3 credits. Crosslisted with: C D 504. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422, C D 324, and C D 301; and minimum 3.2 GPA.

C D 422. Audiology
3 Credits
Anatomy and physiology of the auditory system, bases of auditory disorders, and basic audiometric procedures. May be repeated up to 3 credits. Crosslisted with: C D 507. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, and a minimum of 3.2 GPA.

C D 423. Neural Bases of Communication Disorders
3 Credits
Study of the neuroanatomy and neurophysiology of communication and communication disorders. Includes review of the central nervous system and peripheral nervous system relationship to speech motor control, language, and hearing. May be repeated up to 3 credits. Crosslisted with: C D 510. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 301, C D 323, C D 422, C D 324, C D 421, C D 322, C D 326 and minimum 3.0 GPA.

C D 424. Aural Rehabilitation
3 Credits
Overview of hearing aids and amplification devices including cochlear implants. Review of the bases and psychosocial aspects of hearing loss. Clinical management of hearing loss consistent with ASHA's scope of practice for SLPs. May be repeated up to 3 credits. Crosslisted with: C D 508. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422, C D 324, C D 301, C D 421, C D 322, C D 326; and minimum 3.2 GPA.

C D 425. Professional Reasoning and Scientific Thinking
3 Credits
Overview of constructive thinking, problem solving, and decision making theories and strategies associated with professional reasoning and scientific thinking that are to be used academically and clinically in the transition from student to scholar to professional. Taught with C D 593. May be repeated up to 3 credits. Restricted to: C DS,C D majors.
Prerequisite(s): B or better in C D 221, C D 323, C D 422, C D 324, C D 301, C D 421, C D 322, C D 326, and a minimum cumulative GPA of 3.2.

C D 476. American Sign Language III
3 Credits
Continuation of C D 375, ASL II. Focus on more complex grammatical features. Students will comprehend and generate medium length stories, narratives, and discussions including culturally significant topics.
Prerequisite: C D 375.

C D 501. Phonetics
3 Credits
The science of phonetics, including work with the International Phonetic Alphabet. Restricted to majors. Same as C D 390 with differentiated assignments for graduate students.
Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 502. Anatomy and Physiology of Speech Mechanisms
3 Credits
Structure and function of systems underlying human speech sound production and processing including nervous, respiratory, and articulatory components. Restricted to majors. Same as C D 370 with differentiated assignments for graduate students.
Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.
C D 503. Speech Science
3 Credits (2+3P)
Basic concepts and theories in acoustics, speech production, and speech perception. Laboratory experience with instrumental measurement and analysis of speech systems. Restricted to majors. Same as C D 380 with differentiated assignments for graduate students.
Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 504. Speech and Language Disorders
3 Credits
Prerequisite(s): B or better GPA.

C D 505. Research Methods
3 Credits
Introduction to basic qualitative, quantitative, and single subject research methodology in speech-language pathology and audiology. Restricted to majors.
Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 506. Clinical Methods and Procedures
3 Credits
Guidelines and procedures associated with the clinical and supervisory processes. Provide opportunities to complete the supervised clinical observation requirement for participation in clinical practicum. Differentiated assignments for graduate students. Taught with C D 326. Restricted to: C DS,C D majors.
Prerequisite(s): B or better GPA.

C D 507. Audiology
3 Credits
Anatomy and physiology of the auditory system, bases of auditory disorders, and basic audiometric procedures. Differentiated assignments for graduate students. Taught with C D 422. Restricted to: C D, C DS majors.
Prerequisite(s): Minimum of 3.0 GPA.

C D 508. AURAL REHABILITATION
3 Credits
Prerequisite(s): Minimum 3.0 GPA.

C D 509. Language Acquisition
3 Credits
Normal development of communication across the age span. Includes language sampling and analysis. A minimum grade of B- in all graduate courses and a minimum overall GPA of 3.0 required. Taught with C D 360 with differentiated assignments for graduate students. Restricted to CD majors andLING majors majors.

C D 510. Neural Bases of Communication Disorders
3 Credits
Study of the neuroanatomy and neurophysiology of communication and communication disorders. Includes review of the central nervous system and peripheral nervous system relationship to speech motor control, language, and hearing. Crosslisted with: C D 423. Restricted to: CD, CDS majors.

C D 521. Professional Issues and Multicultural Practices in Communication Disorders
3 Credits
This course includes a range of topics pertinent to students entering professional practice as speech-language pathologists including current legal, cultural, ethical, and clinical service provision issues. Restricted to: C DS,C D majors.
Prerequisite(s): Minimum of 3.0 GPA.

C D 522. Interpreter Workplace Skills in Communication Studies
1 Credit
The purpose of this course is to identify principles and procedures necessary to be an effective interpreter and to use an interpreter in the field speech, language, hearing and swallowing disorders. Students will identify the history the use of interpreters, the interpreting process, bilingual vocabulary appropriate for the scope of practice in the field, bilingual assessment principles, second language learning principles and multicultural aspects to consider in the interview and interpreting process. The students will engage in several interpreter scenarios for interview, assessment and intervention cases. Restricted to: C D majors.
Prerequisite(s): Minimum of 3.0 GPA.

C D 523. Assessment of Communication Disorders
3 Credits
Diagnostic theories and management of communication disorders using standardized and descriptive methodology. Includes the practice of interviewing, testing, and oral and written reporting. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 525. Pediatric Language and Disorders
3 Credits
Normal communication development of neonates, infants, toddlers, and preschoolers; etiologies, and treatment of cognitive, linguistic and social elements of communication problems in family systems. Restricted to majors.
Prerequisites: minimum grade of B- and an overall GPA of 3.0 or higher.

C D 530. School Age Language and Disorders
3 Credits
Normal communication-learning development of elementary, secondary, and postsecondary students; etiologies, diagnosis, and treatment of interpersonal communication and language-based academic disorders. Restricted to majors.
Prerequisites: a minimum grade of B- in all graduate courses and an overall GPA of 3.0 or higher.

C D 535. Aphasia & Cognitive Linguistic Disorders
3 Credits
Etiologies, diagnosis, assessment, and treatment of adult aphasia and cognitive-linguistic disorders. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.
C D 541. Advanced Spanish Morpho-Syntax for Education Professionals
3 Credits
This class has been designed for Heritage Speakers of Spanish who work in educational settings. It will cover the essential linguistic theory and fundamental structures of the Spanish language. This includes, but is not limited to, verb morphology, morphosyntactic and syntactic structures. The main goal of this course is to determine what usages fall within the norms of an individual’s speech community, or if there are elements that fall outside those norms.
Prerequisite(s): Students have to be fluent in Spanish as course will be conducted in Spanish.

C D 542. Articulation and Phonological Disorders
3 Credits
Advanced study of the symptoms, etiologies, assessment, and clinical management of articulation and phonological disorders including cleft palate and disorders of resonance Restricted to: C DS,C D majors.
Prerequisite(s): A minimum grade of B- in all graduate courses and a minimum overall GPA of 3.0 is required.

C D 545. Introduction to Augmentative and Alternative Communication
3 Credits
Assessment and intervention for children and adults with developmental disabilities; Alternative communication strategies and systems for individuals with severe speech and/or language impairments. May be repeated up to 3 credits. Restricted to: C DS,C D majors.
Prerequisite(s): Graduate standing; overall GPA of 3.0.

C D 547. Cognitive-Linguistic Communication Disorders
3 Credits
Topics include attention, memory, executive function, and underlying neuropathologies, with emphasis on assessment, diagnosis, prognosis, treatment and recovery processes in cognitive communication disorders related to traumatic brain injury, dementia, and right hemisphere brain damage. May be repeated up to 3 credits. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0.

C D 548. Best Practices in Bilingual/Multicultural Assessment for Practitioners
3 Credits
The purpose of this course is to provide future speech-language pathologists, educational diagnosticians and special educators with a foundation for evaluating the linguistic, cognitive and academic skills of students from any cultural linguistic background. The course covers a review of the literature on best practices for working with interpreters during assessments. Practitioners will be expected to gather qualitative information about cultural/linguistic and educational histories of school-age children and integrate those results with the results of standardized tests.
Prerequisite(s): C D 594.

C D 555. Instrumentation in Communication Disorders
2 Credits
This course will provide graduate students with information regarding the purpose and operation of a variety of perceptual assessment and instrumental tools for the evaluation and treatment of voice, fluency, and resonance disorders. Restricted to: C D majors.

C D 574. American Sign Language III
3 Credits
Continuation of ASL II. Focus on more complex grammatical features. Students will comprehend and generate medium length stories, narratives, and discussions including culturally significant topics.
Prerequisite: C D 375 or consent of instructor.

C D 583. Dysphagia
3 Credits
Study of the anatomy and physiology of swallowing and upper aerodigestive systems. Review of the bases and etiologies of child and adult swallowing disorders, including diagnosis, assessment, and treatment. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 584. Fluency Disorders
3 Credits
Speech fluency development and the disorders of stuttering, cluttering, and neurogenic dysfluency. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 585. Motor Speech Disorders
3 Credits
Advanced studies of dysfunction of the nervous system that affect speech. Includes evaluation, diagnosis, and treatment of speech apraxias and dysarthrias. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 586. Voice Disorders/Head and Neck Anomalies
3 Credits
Advanced studies of anatomy and physiology of the vocal tract with emphasis on diagnosis, assessment, and treatment of voice disorders, laryngectomy, cleft palate, and other oral-facial anomalies. Restricted to: C DS,C D majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 587. Cleft Palate and Syndromes
2 Credits
An advanced study of etiology, assessment and treatment of craniofacial anomalies with a focus on the effects of clefts of the lip and/or palate on speech, resonance and velopharyngeal dysfunction. Review of the contribution of interdisciplinary cleft palate team care managing feeding, audiologic, surgical, orthodontic, and psychosocial aspects. General review of embryology and common syndromes with associated speech, language, and hearing disorders. Consent of Instructor required. Restricted to: C D,C DS majors.
Prerequisite(s): A course grade of B or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 588. Practicum in Speech-Language Pathology
1-3 Credits (1-4)
Supervised clinical practice in a variety of speech, language, and hearing disorders. Practicum includes diagnostic, treatment, and management work through direct patient/client contact. Attendance at weekly clinical staff meetings is required. May be repeated for a maximum of 15 credits. Restricted to majors.
Prerequisite: good standing in the graduate school; a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.
C D 590. Clinical Education
1 Credit
This course is specifically designed to target the knowledge base necessary to initiate clinical practicum in the CD Program. The learning objectives are based upon the Council of Academic Accreditation in Audiology and Speech-language Pathology (CAA) standards and knowledge areas. These learning outcomes are developed to assist students in clinical practicum and are specific to the services provided to clients of the NMSU Edgar R. Garrett Speech and Hearing Center. Restricted to: C DS, C D majors.
Corequisite(s): C D 589.

C D 591. Special Topics
1-9 Credits
Individual and/or group study of special topics identified by subtitle. May be repeated for a maximum of 9 credits.
Prerequisite: prior arrangement with faculty; a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 593. Professional Reasoning and Scientific Thinking
3 Credits
Overview of constructive thinking, problem solving, and decision making theories and strategies associated with professional reasoning and scientific thinking that are to be used academically and clinically in the transition from student to scholar to professional. Restricted to majors. Same as C D 393 except for differentiated assignments for graduate students.
Prerequisites: a course grade of B- or higher in all graduate courses and an overall GPA of 3.0 or higher.

C D 599. Master's Thesis
15 Credits
Thesis.

C D 640. Externship in Communication Disorders
3-9 Credits (3-9)
This course is designed to provide opportunities for the developing clinician to provide treatment to and evaluations for clients in a full term externship experience under the supervision of a licensed SLP. May be repeated up to 9 credits. Consent of Instructor required. Restricted to: C DS, C D majors.

C E-CIVIL ENGINEERING (C E)

C E 109. Computer Drafting Fundamentals
3 Credits (2+2P)
Same as DRFT 109, E T 109, SUR 109.

C E 151. Introduction to Civil Engineering
3 Credits
Problem solving and use of computer software for civil engineering applications.
Prerequisite(s): ENGR 100.
Corequisite(s): MATH 190.

C E 198. Special Topics
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

C E 233. Mechanics-Statics
3 Credits
Engineering mechanics using vector methods.
Prerequisites: MATH 192G and cumulative GPA of 2.0.
Corequisite: PHYS 215G.

C E 234. Mechanics-Dynamics
3 Credits
Kinematics and dynamic behavior of solid bodies utilizing vector methods.
Prerequisite(s): C E 233, MATH 192G, PHYS 215G.

C E 256. Environmental Engineering and Science
3 Credits
Principles in environmental engineering and science: physical chemical systems and biological processes as applied to pollution control. Crosslisted with: E S 256
Prerequisite(s): CHEM 111 and MATH 191G.

C E 256 L. Environmental Science Laboratory
1 Credit
Laboratory experiments associated with the material presented in C E 256. Same as E S 256L.
Corequisite: C E 256.

C E 298. Special Topics
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

C E 301. Mechanics of Materials
3 Credits
Stress, strain, and elasticity of materials.
Prerequisite: C E 233.

C E 311. Civil Engineering Materials
3 Credits (2+3P)
Introduction to the structure, physical properties, testing and mechanical behavior of civil engineering materials and components made from these materials.
Prerequisite: C E 301.

C E 315. Structural Analysis
4 Credits (3+3P)
Classical analysis of determinate and indeterminate structures; introduction to modern methods of structural analysis using computer programs.
Prerequisite(s): C E 301.

C E 331. Fluid Mechanics and Hydraulics
3 Credits
Prerequisite(s): PHYS 215, C E 233.

C E 331 L. Fluid Mechanics and Hydraulics Laboratory
1 Credit
Fundamentals and Theory of Fluid Mechanic, compressible and incompressible flow of fluids in open and closed conduits.
Prerequisite(s)/Corequisite(s): C E 331. Restricted to: C E majors.

C E 335V. Technology and the Global Environment
3 Credits
A scientific basis for understanding changes in the global environment that result through the complex interactions of natural phenomena and the impacts of the activities of man.
Prerequisites: junior or senior standing, and the general education requirements for math and natural sciences.
C E 356. Fundamentals of Environmental Engineering  
3 Credits  
Introduction to water treatment and water pollution and the analysis and design of selected treatment processes.  
Prerequisite(s): C E 256.

C E 357. Soil Mechanics  
3 Credits (2+3P)  
Engineering properties of soils, consolidation settlement, compaction, water flow through soils, geostatic stresses, soil shear strength, lateral earth pressure, and soil laboratory testing.  
Prerequisite(s): C E 160 or GEOL 111G, and C E 301.

C E 365. Intermediate Structural Analysis  
1 Credit  
Classical analysis of indeterminate structure; introduction to matrix method of structural analysis.  
Prerequisite(s): C E 301 and C E 315.

C E 382. Hydraulic and Hydrologic Engineering  
3 Credits  
Analysis and design of hydraulic systems, including pipe networks, open channels, regulating structures, and pumping systems. Surface water and groundwater hydrology, analysis and design. May be repeated up to 3 credits.  
Prerequisite(s): C E 331 and C E 331 L.

C E 398. Special Topics  
1-3 Credits  
May be repeated for a maximum of 6 credits.  
Prerequisite: consent of department head.

C E 430. Environmental Management Seminar II  
1 Credit  
Survey of practical and new developments in environmental management field, hazardous and radioactive, waste management, and related health issues, provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: CH E 430, E E 430, E S 430, E T 430, I E 430, M E 430 and WERC 430

C E 444. Elements of Steel Design  
3 Credits  
Analysis and design of tension members, beams, columns, and bolted and welded connections.  
Prerequisite(s)/Corequisite(s): C E 311. Prerequisite(s): C E 315.

C E 445. Reinforced Concrete Design  
3 Credits  
Design and mechanics of structural reinforced concrete members.  
Prerequisite(s)/Corequisite(s): C E 311. Prerequisite(s): C E 315.

C E 452. Geohydrology  
3-4 Credits (3+1P)  
Origin, occurrence, and movement of fluids in porous media and assessment of aquifer characteristics. Development and conservation of ground water resources, design of well fields. Crosslisted with: E S 452 and GEOL 452.  
Prerequisite(s): Junior or Senior.

C E 454. Wood Design  
3 Credits  
Theory and design of wood structural members and systems subjected to gravity and lateral loads. Taught every other year, alternates with C E 455, Masonry Design.  
Prerequisite(s)/Corequisite(s): C E 311. Prerequisite(s): C E 315.

C E 455. Masonry Design  
3 Credits  
Theory and design of masonry structural members and systems subjected to gravity and lateral loads. Taught every other year, alternates with C E 454, Wood Design.  
Prerequisite(s)/Corequisite(s): C E 311. Prerequisite(s): C E 315.

C E 457. Foundation Design  
3 Credits (2+3P)  
Application of principles of classical soil mechanics to the design of shallow and deep foundations, and the fundamentals of geotechnical site investigation.  
Prerequisite(s): C E 357.

C E 460. Site Investigation  
3 Credits (2+2P)  
Investigation and characterization of surficial and subsurface geologic materials and ground water for civil engineering projects. Includes exploration program, drilling and sampling, rock and soil classification and logging, groundwater monitoring, profiles, and preparation of geotechnical reports. Pre/  
Prerequisite(s): C E 357.  
Corequisite(s): C E 457.

C E 469. Structural Systems  
3 Credits  
Design of structural systems for buildings and bridges. May be repeated up to 3 credits.  
Prerequisite(s): C E 444 or C E 445 or C E 457.

C E 470. Design of Municipal and Hazardous Waste Landfills  
3 Credits  
Solid waste and application of geotechnical engineering principles and methods to the site selection and design of municipal and hazardous waste landfills.  
Prerequisite(s): C E 357 and C E 452, or consent of instructor.

C E 471. Transportation Engineering  
3 Credits  
Highway and traffic design and systems.  
Prerequisite(s): MATH 291.

C E 473. Transportation Analysis  
3 Credits  
Transportation Analysis of land-based transportation modes. Crosslisted with: C E 573.  
Prerequisite(s): C E 471.

3 Credits  
Engineering economics, construction and project management.  
Prerequisite(s): STAT 371.  
Corequisite(s): C E 357.

C E 479. Pavement Analysis and Design  
3 Credits  
Covers stresses and deflections in pavement layers, material characterization, flexible and rigid pavement design by AASHTO, and rehabilitation concepts.  
Prerequisite(s): C E 357.

C E 481. Civil Engineering Capstone Design  
3 Credits  
Culminating multidisciplinary project-oriented capstone design. Ethics, professional development, global issues.  
Prerequisite(s)/Corequisite(s): C E 457, C E 471, C E 477. Prerequisite(s): C E 356, C E 382, and either C E 444 or C E 445.
C E 482. Hydraulic Structures
3 Credits
Engineering design of water-regulating structures. Capstone design course. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): C E 477. Prerequisite(s): C E 382.

C E 483. Surface Water Hydrology
3 Credits
Hydrologic cycle and relationships between rainfall and surface water runoff.
Prerequisite: C E 331 or consent of instructor.

C E 485. Design of Earth Dams
3 Credits
Engineering design applied to site selection, foundation inspection and treatment, hydrology and hydraulics, stability, and seepage analysis.
Prerequisite(s): C E 357.

C E 498. Special Topics
1-3 Credits
May be repeated for a maximum of 9 credits.
Prerequisite: consent of department head.

C E 501. Advanced Mechanics of Materials
3 Credits
Study of stress and strain in two and three dimensions, theories of failure, stress concentrations, unsymmetrical bending, curved beams, beams on elastic foundations, column theories, torsion, thick-wall cylinders. Same as M E 501.
Prerequisites: C E 301, MATH 392.

C E 502. Advanced Mechanics of Steel Structures
3 Credits
Advanced structural mechanics applicable to steel structures. Includes inelastic behavior, plastic analysis, column and frame stability and torsion.
Prerequisite: C E 444.

C E 503. Special Design and Analysis Program
3-6 Credits
Design and analysis covering subject matter of an approved 450 undergraduate departmental course plus an additional report or project. Course may be subtitled in the Schedule of Classes. May be repeated once for a total of 6 credits.
Prerequisite: consent of instructor/committee.

C E 504. Advanced Engineering Design
3 Credits
Advanced engineering design covering subject matter of a selected capstone undergraduate design course plus an additional report or project. May be subtitled.
Prerequisite: consent of instructor/committee.

C E 505. Advanced Mechanics of Concrete
3 Credits
Advanced structural mechanics applicable to concrete structures. Topics include: nonlinear-inelastic modeling and analysis of reinforced concrete structures, seismic behavior of reinforced concrete structures, and deformation of members under various loads. To be taught along with C E 605.
Prerequisite(s): C E 445.

C E 506. Advanced Soil Mechanics
3 Credits
Stress and strain analyses in soil, stress paths; drained and undrained shear strengths of granular soils and clays, consolidation, liquefaction, soil improvement.
Prerequisite: C E 457 or consent of instructor.

C E 507. Design of Earth Retaining Structures
3 Credits
Lateral earth pressure theory, soil-reinforcement interaction, and analysis and design of rigid and flexible earth retaining structures for support of fills and excavations, including retaining walls, mechanically stabilized earth (MSE) walls, sheet pile walls, anchored walls, tiebacks and soil nailing. Pre/Prerequisite(s): C E 357. Corequisite(s): C E 457.

C E 508. Advanced Soil Behavior
3 Credits
The course covers particle-scale phenomena that govern the macro-scale behavior of soils. Topics covered in the class include classical concepts as well as contemporary advances in soil mechanics. The students will develop a fundamental understanding of soil-water interaction, theories of contact level deformation, and mass and energy transport through granular media. Consent of Instructor required.
Prerequisite(s): C E 357 or Instructor Consent.

C E 509. Deep Foundations
3 Credits
Behavior, analysis and design of pile and pier foundations subjected to axial and lateral loads.
Prerequisite: C E 457 or consent of instructor.

C E 515. Finite Element Methods
3 Credits
Introduces the finite element method. Topics may include beam, frame, plane stress, plane strain, axisymmetric, and 3-D stress elements. Includes static and dynamic analysis. Uses readily available finite-element software.
Prerequisite: graduate standing or consent of instructor.

C E 530. Environmental Management Seminar I
1 Credit
Survey of practical and new developments in hazardous and radioactive waste management provided through a series of guest lectures and reports of ongoing research.

C E 531. Open Channel Hydraulics
3 Credits
Theoretical and applied hydraulics of open channels, with emphasis on nonuniform flow, rapidly varied flow, and wave formation.
Prerequisite: C E 382 or consent of instructor.

C E 543. Advances in Concrete Technology
3 Credits
Advanced topics related to concrete materials, including mixture proportioning with nontraditional admixtures, roles and side effects of concrete admixtures, durability of concrete, nondestructive testing of concrete, creep, and shrinkage.
Prerequisites: C E 311 and C E 445.

C E 544. Advanced Design of Steel Structures
3 Credits
Connection design; beam, column, and beam-column stability and design; and seismic frame design.
Prerequisites: C E 444 and C E 468.
C E 545. Advanced Concrete Design
3 Credits
Prestressed concrete, ultimate strength theory, design of shell structures.
Prerequisites: C E 445 and C E 468.

C E 547. Bridge Engineering
3 Credits
Topics related to prestressed concrete, reinforced concrete and steel bridge design according to the AASHTO specifications; bridge analysis and evaluation. May be repeated for a maximum of 6 credits.
Prerequisite: C E 469 or consent of instructor.

C E 550. Environmental Management Seminar II
1 Credit
Survey of practical and new developments in hazardous and radioactive waste management provided through a series of guest lectures and reports of ongoing research.

C E 554. Wood Design
3 Credits
Theory and design of wood structural members and systems subjected to gravity and lateral loads. Design project required. Taught every other year, alternates with C E 555 - Masonry Design.

C E 555. Masonry Design
3 Credits
Theory and design of masonry structural members and systems subject to gravity and lateral loads. Design project required. Taught every other year, alternates with C E 554 - Wood Design.

C E 557. Water Resources Development
3 Credits
Students function as members of a consulting panel and prepare reports on major water resources development problems. Political, financial, and social aspects of water resources development are considered as well as scientific and technical details. Background: C E 450.
Corequisite: C E 483, or C E 482.

C E 571. Structural Dynamics
3 Credits
Response of elastic structure to dynamic loading. Moving load, earthquake and blast loading.
Prerequisite: C E 468 or consent of instructor.

C E 572. Earthquake Engineering
3 Credits
Earthquake characteristics; seismic loads; elastic and inelastic response; analysis and design of buildings for earthquakes.
Prerequisites: graduate standing and consent of instructor.

C E 573. Transportation Analysis
3 Credits
Transportation analysis of land-based transportation modes. Crosslisted with: C E 473.
Prerequisite(s): C E 471.

C E 577. Advanced Pavement Analysis
3 Credits
Review of advanced constitutive models for pavement materials and their implementation in finite element analysis.
Prerequisite(s): C E 479 and C E 515 or consent of instructor.

C E 579. Ground Improvement
3 Credits
The objective of this course is to introduce common ground improvement techniques, including mechanical (compaction, soil reinforcement, preloading and accelerated consolidation) and chemical (cementing, ion-replacement, polymer bonding) stabilization methods, as well as seepage and dewatering. Emphasis will be placed on developing an understanding of the underlying physical and chemical processes involved in each case.
Prerequisite(s): C E 357.

C E 581. Ground Water Hydrology
3 Credits
Mathematical treatment of water flow in porous media. Emphasis on hydraulics of water movement, including pumping and recharge wells, drainage, and water quality.
Prerequisites: MATH 392, G EN 452, and C E 382, or consent of instructor.

C E 582. Structural Hydrology
3 Credits
Application of statistical techniques to hydrologic data, including distributions, hypothesis testing, linear models, non-parametrics, and time-series and stochastic models.

C E 585. Slope Stability Analysis and Design
3 Credits
Design of earth slopes, causes of instability, limit equilibrium methods, slope reinforcement (geosynthetics soil nailing, tiebacks), seismic analysis, rock slope stability. Consent of instructor required.

C E 586. Geotechnical Earthquake Engineering
3 Credits
Earthquake origin and geology; wave propagation; dynamic soil properties; ground response analysis; local site effects; design ground motion; liquefaction assessment. Consent of instructor required.
Prerequisite(s): C E 450, or consent of instructor.

C E 596. Special Topics
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

C E 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. May be subtitled. Maximum of 3 credits per semester.

C E 599. Master's Thesis
15 Credits
Thesis.

C E 600. Doctoral Research
1-15 Credits
Research.

C E 604. Advanced Engineering Topics
3 Credits
In depth study of a topic at the forefront of environmental engineering & science. Journal papers will be critically reviewed and students will be asked to write an analysis of the topic and present their thoughts orally.

C E 615. Advanced Finite Element Methods
3 Credits
Finite element method with emphasis on stress analysis. May include development and use of plane stress, plane strain, and 3-D and shell elements. Includes static, dynamic, and nonlinear analysis.
Prerequisite: graduate standing.
C E 645. Prestressed Concrete
3 Credits
Behavior of prestressed concrete; design of statically determinate and indeterminate structures; estimation of prestress loss; flexure and shear strength; deflections and stress control; composite behavior and design. 
Prerequisite(s): graduate standing and consent of instructor.

C E 671. Scientific Approaches to Transportation Research
3 Credits
This course addresses professional and ethical practices for doing, managing, and evaluating research programs and projects. Students will learn about the critical elements in the research process, turning research objectives into research hypotheses, testing of the hypotheses and evaluation of the results. The course will look at the scientific method as well as the management and handling of data as it applies to transportation research. Consent of Instructor required.
Prerequisite(s): C E 471.

C E 682. Topics in Hydrodynamics II
3 Credits
Selected topics in flow-in open channels, flow-through porous media, and transport of sediments and contaminants. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

C E 698. Special Research Programs
1-3 Credits
May be subtitled. May be repeated for a maximum of 9 credits.

C E 700. Doctoral Dissertation
15 Credits
Dissertation.

C EP-COUNSELING & EDUC PSY (C EP)

C EP 110G. Human Growth and Behavior
3 Credits
Introduction to the principles of human growth and development throughout the life span.

C EP 199. Academic Excellence
1 Credit
Academic curriculum of excellence that includes the development of collaborative learning and student success environment, learning diverse learning styles and multiple intelligences, and developing multi-contextual academic communication styles. Students must enroll in course for both Fall and Spring semesters. Course does not count toward CEP minor. May be repeated up to 2 credits.

C EP 210. Educational Psychology
3 Credits
Psychological foundations as they apply to the learner in the classroom setting.

C EP 215. The Preschool Child
3 Credits
Survey of psychological development from conception to age five.

C EP 240. Adolescence in School Settings
3 Credits
Survey of psychological development during the adolescent years.

C EP 298. Exploration of Counseling & Community Psychology
3 Credits
An exploration of careers, activities, & techniques in counseling, school, and community psychology. Course does not count towards CEP minor. May be repeated up to 6 credits.

C EP 299. Academic Excellence Classes
1-6 Credits (1-6)
Academic curriculum of excellence that includes an in-depth understanding of the elements that promote student academic success. Students will develop leadership and presentation skills needed to forge effective student mentor relationships and conduct outreach to campus and local community leaders to cultivate a collaborative learning environment. May be repeated up to 6 credits.

C EP 300V. Human Relations Training
3 Credits
Gain skills, knowledge, and sensitivity for living and working with others.

C EP 320. Sex Roles in Education
3 Credits
Physiological, psychological, and political aspects of sex role socialization and the effects of these factors on personal development.

C EP 420. Introduction of Mindfulness Practice
3 Credits
Students will learn about contemplative practices through learning and participation in various mindfulness practices. Engages students in a practice or experience that leads to reflection and, thus, acquired knowledge about themselves, others, and group functioning.

C EP 451V. Introduction to Counseling
3 Credits
Principles of counseling for nonmajors.

C EP 455. Addictions Prevention and Recovery
3 Credits
Understanding addictions process, prevention, and recovery, including biological, interpersonal and sociological influences, and intervention strategies. Taught with C EP 555.

C EP 461. Family Guidance
3 Credits
Prerequisite(s): C EP 110G.

C EP 495. Psychology, Multiculturalism and Counseling
3 Credits
Understanding social identities such as race, ethnicity, sexual orientation, age, social class and spirituality as it relates to psychosocial development, academic achievement and counseling.

C EP 498. Internship in Counseling & Community Psychology
1-6 Credits (1-6)
Students will explore in more depth the fields of counseling, community, and school psychology professions by completing an internship. Through the completion of the internship students will gain hands on work experience, enhance sensitivity for respect with working with diverse populations, and hone their interpersonal skills needed to succeed in the counseling, community, and school psychology professions. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CCP majors.

C EP 499. Independent Study
1-6 Credits
Individual study directed by consenting faculty.
C EP 503. Introduction to Counseling  
3 Credits  
Overview of counseling theory, techniques, ethics, and professional issues. Same as C EP 451V. This course is open to all majors.

C EP 505. Appraisal of Psychoeducational Achievement in a Diverse Society  
3 Credits  
Advanced theory and use of norm and criterion referenced instruments in the classroom: planning of prescriptive and educational programs. Consent of Instructor required.

C EP 511. Introduction to Inferential Statistics  
3 Credits  
An introduction to the theories and techniques of inferential statistics as applied to education and psychology. Includes sampling distributions, confidence intervals, t-test, correlation, and chi-square. Intended primarily for post-baccalaureate students. Both hand calculation and computer packages will be employed. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: NURS, FCS; and all education majors.

C EP 512. Human Development  
3 Credits  
Theory and research regarding cognitive, social, and emotional development across the lifespan with emphasis on enhancing human development. This course is open to all majors.

C EP 515. Learning Theory  
3 Credits  
Survey and comparison of theory and research regarding human learning as they apply to development, education, and counseling. Crosslisted with: C EP 615  
Prerequisite(s): C EP 512 or consent of instructor.

C EP 517. Multicultural Counseling  
3 Credits  
Understanding age, gender, ethnicity, socioeconomic status and culture in relation to human development, education, and counseling.  
Prerequisite(s)/Corequisite(s): C EP 512 or concurrent enrollment or consent of instructor.

C EP 519. Psychology of Social Identities  
3 Credits  
Theory, research and practice from feminist and multicultural perspectives will examine the integration of social identities such as gender, sexual orientation, race, ethnicity, age, social class, spirituality, and ability in relation to counseling psychology. Same as C EP 619.  
Prerequisite: C EP 512 or concurrent enrollment or consent of instructor.

C EP 520. The Art & Science of Mindfulness  
1-3 Credits (1-3)  
In this course students will learn about contemplative practices by learning about and participating in various mindfulness practices for self-care and to increase well-being. Students will learn about psychological theories and research that support the use of mindfulness in helping others increase their well-being. Students will learn how to teach mindfulness to others. Taught with CEP 490.

C EP 522. Organization and Administration of School Counseling Services  
3 Credits  
Procedures for establishing and maintaining counseling programs in the schools. Professional and ethical issues in school counseling and group laboratory experience to enhance self-awareness and interpersonal skills for effective professional relationships. Restricted to majors.  
Prerequisite: consent of instructor.

C EP 524. Professional Issues in Mental Health Counseling  
3 Credits  
History, roles, organizational structures, settings, ethics, standards, laws, and credentialing related to mental health counseling. Group laboratory experience to enhance self-awareness and interpersonal skills for effective professional relationships. Restricted to majors.  
Prerequisite: consent of instructor.

C EP 529. Indigenous Counseling Theory and Practice  
3 Credits  
Students will explore current uses of indigenous modes and methods of counseling and therapy that are theoretically consonant with Indigenous/Native traditions. They will examine the integration of such modes to ensure a progressive reconstruction of the counseling endeavor to include an indigenous epistemology in their work with clients. Taught with C EP 429. This course is open to all majors. Consent of Instructor required.

C EP 532. Research Methods  
3 Credits  
Develop research and program evaluation including critical literature review, generating questions, quantitative and qualitative methodology, analysis, and writing proposals.

C EP 542. Appraisal Theory and Technique  
3 Credits  
Selection, administration, and interpretation of tests and other assessment methods. Topics include reliability, validity, norms, cultural factors, and ethics related to appraisal. May be repeated up to 3 credits. Restricted to: C G, CEP, C EP, CMHC majors.  
Prerequisite(s): C EP 512 and C EP 517, or consent of instructor.

C EP 547. Appraisal of Cognitive Functioning  
3 Credits  
Selection, administration, scoring, interpretation, and report writing using individual tests of intelligence. Moderator variables, such as acculturation, ethnic identity development, and world view are also incorporated. Restricted to majors. Taught with C EP 647. Consent of instructor required.  
Prerequisite(s): C EP 542 and consent of instructor.

C EP 549. Indigenous Research Methods  
3 Credits  
Students will gain an understanding of ethical and respectful research practices from an Indigenous/culturally appropriate vantage. They will thoroughly examine the works of Native/Tribal and Indigenous scholarship. Additionally, safeguards for ethical research practices with native populations will be thoroughly examined with regard to intent, practice, and integration of outcome. This course is open to all majors.

3 Credits  
Major theories of counseling with an emphasis on development of the ability to offer theory-based counseling and consultation. May be repeated up to 3 credits. Restricted to: SPSY, CEP, C EP, C G, CMHC majors.  
Prerequisite(s): C EP 512, or concurrent enrollment.

C EP 551. Diagnosis and Treatment Planning  
3 Credits  
Appraisal and conceptualization of mental disorders and other problems through diagnostic interviewing using the DSM. Treatment planning for counseling with children, adolescents, and adults. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: SPSY, CEP, C EP, C G, CMHC majors.  
Prerequisite(s): C EP 512 or concurrent enrollment, or consent of instructor.
C EP 552. Career/Life Planning and Vocational Assessment
3 Credits
Vocational choice theories, relationship between career choice and life style, sources of occupational and educational information, and approaches to decision making and values clarification. Laboratory involves supervised interpretation of vocational assessment. This course is open to all majors. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

3 Credits
Major theories of counseling with an emphasis on development of the ability to offer theory-based counseling and consultation. May be repeated up to 3 credits. Restricted to: CEP, SPSY, C EP, CMHC majors.
Prerequisite(s): C EP 524, or concurrent enrollment.

C EP 555. Addictions Counseling
3 Credits
Emphasis on alcohol and other psychoactive substance abuse. Also includes eating disorders, gambling, and other addictive behaviors. Covers review of psychopharmacology, assessment, and diagnosis with the major focus on treatment and professional issues. May be repeated up to 3 credits. Restricted to: CEP, C EP, C G, SPSY, CMHC majors.
Prerequisite(s): C EP 550.

C EP 556. Addictions Counseling
3 Credits
Covers review of psychopharmacology, assessment, and diagnosis with the major focus on treatment and professional issues. May be repeated up to 3 credits. Restricted to: CEP, SPSY, CMHC majors.

C EP 557. Advanced Addictions Counseling
3-6 Credits
Students will learn about Trauma to gain a deeper understanding of the socio-political implications of colonization on Native people groups. They will learn about incidents of physical and mental health disparities. Students will thoroughly examine the impact of the current mental health field on Native/Indigenous populations and engage the literature from Native Scholars to problem solve and create new ways to address the challenges that Native people and their communities face as members of mainstream Western society. This course is open to all majors.

C EP 558. Child and Adolescent Counseling Theory and Technique
3 Credits
Counseling theory and technique applied to children and adolescents from a developmental perspective in school and mental health settings. May be repeated up to 3 credits. Restricted to: C G, CEP, C EP, CMHC majors.
Prerequisite(s): C EP 550 or consent of instructor.

C EP 559. Healing Trauma, Including Historical and Intergenerational
3 Credits
Students will learn about Trauma to gain a deeper understanding of the socio-political implications of colonization on Native people groups. They will learn about incidents of physical and mental health disparities. Students will thoroughly examine the impact of the current mental health field on Native/Indigenous populations and engage the literature from Native Scholars to problem solve and create new ways to address the challenges that Native people and their communities face as members of mainstream Western society. This course is open to all majors.

C EP 560. Family Therapy Theory and Technique
3 Credits
Covers review of psychopharmacology, assessment, and diagnosis with the major focus on treatment and professional issues. May be repeated up to 3 credits. Restricted to: CEP, SPSY, CMHC majors.

C EP 561. Family Therapy Theory and Technique
3 Credits
Covers review of psychopharmacology, assessment, and diagnosis with the major focus on treatment and professional issues. May be repeated up to 3 credits. Restricted to: CEP, SPSY, CMHC majors.

C EP 562. Family Therapy Theory and Technique
3 Credits
Covers review of psychopharmacology, assessment, and diagnosis with the major focus on treatment and professional issues. May be repeated up to 3 credits. Restricted to: CEP, SPSY, CMHC majors.

C EP 563. Primary Care Psychology
3 Credits
Didactic and experiential learning in primary care psychology issues. Through this course students will learn about the cultural necessity of the integration of mental and physical health issues and multidisciplinary collaboration. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: SPSY, CEP, C EP, C G, CMHC majors.

C EP 564. Primary Care Psychology
3 Credits
Didactic and experiential learning in primary care psychology issues. Through this course students will learn about the cultural necessity of the integration of mental and physical health issues and multidisciplinary collaboration. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: SPSY, CEP, C EP, CMHC majors.

C EP 565. Addictions Counseling
3 Credits
Covers review of psychopharmacology, assessment, and diagnosis with the major focus on treatment and professional issues. May be repeated up to 3 credits. Restricted to: CEP, SPSY, CMHC majors.

C EP 566. Group Work Theory and Technique
3 Credits
Major theories of counseling, relationship between career choice and life style, sources of occupational and educational information, and approaches to decision making and values clarification. Laboratory involves supervised interpretation of vocational assessment. This course is open to all majors. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

C EP 567. Group Work Theory and Technique
3 Credits
Major theories of counseling, relationship between career choice and life style, sources of occupational and educational information, and approaches to decision making and values clarification. Laboratory involves supervised interpretation of vocational assessment. This course is open to all majors. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

C EP 568. Counseling Practicum
1-6 Credits
Supervised experience of counseling and consultation. Weekly individual and group supervision involves review of audio, video, and/or live sessions and case presentations. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: C EP 662. Restricted to: C G, CEP, C EP, CMHC majors.
Prerequisite(s): C EP 550 and consent of instructor.

C EP 569. Indigenous Counseling Internship
1-6 Credits
Supervised experience of counseling and consultation. Weekly individual and group supervision involves review of audio, video, and/or live sessions and case presentations. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: C EP 662. Restricted to: C G, CEP, C EP, CMHC majors.
Prerequisite(s): C EP 550 and consent of instructor.

C EP 570. Clinical Psychopharmacology
3 Credits
Basic biological aspects of psychopharmacology with applications to clinical populations and treatment implications. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: C G, CEP, C EP, CMHC majors.
Prerequisite(s): Consent of instructor.

C EP 571. Clinical Psychopharmacology
3 Credits
Basic biological aspects of psychopharmacology with applications to clinical populations and treatment implications. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: C G, CEP, C EP, CMHC majors.

C EP 572. Counseling Practicum
1-6 Credits
Supervised experience of counseling and consultation. Weekly individual and group supervision involves review of audio, video, and/or live sessions and case presentations. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: C EP 662. Restricted to: C G, CEP, C EP, CMHC majors.
Prerequisite(s): C EP 550 and consent of instructor.

C EP 573. Advanced Counseling Practicum
3-6 Credits
Supervised experience of counseling and consultation. Weekly individual and group supervision involves review of audio, video, and/or live sessions and case presentations. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: C EP 662. Restricted to: C G, CEP, C EP, CMHC majors.
Prerequisite(s): C EP 550 and consent of instructor.

C EP 574. Advanced Counseling Practicum
3-6 Credits
Supervised experience of counseling and consultation. Weekly individual and group supervision involves review of audio, video, and/or live sessions and case presentations. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: C EP 662. Restricted to: C G, CEP, C EP, CMHC majors.
Prerequisite(s): C EP 550 and consent of instructor.

C EP 575. Clinical Psychopharmacology
3 Credits
Basic biological aspects of psychopharmacology with applications to clinical populations and treatment implications. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: C G, CEP, C EP, CMHC majors.
Prerequisite(s): Consent of instructor.

3 Credits
Didactic and experiential learning in group theory and practice. Laboratory involves experiences in group participation and leadership. May be repeated up to 3 credits. Restricted to: C G, CEP, C EP, CMHC majors.
Prerequisite(s): C EP 560, C EP 562 or consent of instructor.

C EP 577. Indigenous Counseling Internship
1-6 Credits (1-6)
The primary purpose for this course is to provide students with the opportunity to study and practice under a well-known and recognized indigenous healing practitioner with the primary goal of affirming and activating the holistic paradigm of Indigenous knowledge into their work as practitioners in the helping professions to reveal the wealth and richness of Indigenous languages, worldviews, teachings and experiences. Consent of Instructor required.

C EP 578. Advanced Counseling Practicum
3-6 Credits
Supervised experience of counseling and consultation. Weekly individual and group supervision involves review of audio, video, and/or live sessions and case presentations. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: C EP 662. Restricted to: C G, CEP, C EP, CMHC majors.
Prerequisite(s): C EP 550 and consent of instructor.

C EP 579. Clinical Psychopharmacology
3 Credits
Basic biological aspects of psychopharmacology with applications to clinical populations and treatment implications. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: C G, CEP, C EP, CMHC majors.

C EP 580. Counseling Internship
3-12 Credits
Supervised experience in a professional counselor role in a school or agency. Students perform all counselor functions including appraisal, individual/family/group counseling, consultation, administration, program development, research, and/or evaluation.
Prerequisite(s): C EP 578.

C EP 581. Special Research Programs
1-6 Credits
Individual investigations either analytical or experimental. Maximum of 6 credits per semester and total of 9 credits overall. May be repeated up to 9 credits. Restricted to: CEP, SPSY, C EP, CMHC majors.

C EP 582. Master's Thesis
15 Credits
C EP 607. Curriculum-Based Assessment and Intervention
3 Credits
The study and practice of curriculum-based assessment and intervention for academic skills and problems among children and adolescents. Restricted to: SPSY majors.

C EP 608. Diagnostic Class
3 Credits
Emphasis on developing the knowledge, skills, and necessary application abilities related to diagnosis and associated interventions related to mental health and psychopathology issues that impact a student’s ability to navigate the education setting.

C EP 612. Human Development
3 Credits
Same as C EP 512 with differentiated assignments for Ed.S and Ph.D. students. This course is open to all doctoral majors. Consent of Instructor required.

C EP 616. Spanish for Mental Health Professionals
3 Credits
This course emphasizes the vocabulary for Mental Health Professionals to include academic, psychological and medical terminology. Students will incorporate Spanish terms in assessment and treatment plans through role plays. Further, the course will include an overview of the use of interpreters and translators in working with culturally and linguistically diverse clientele.
Prerequisite(s): Enrolled in Bilingual School Psychology Training Grant with instructor consent.

C EP 619. Psychology of Social Identities
3 Credits
Same as C EP 519 with differentiated assignments for Ph.D. students.

C EP 622. Ethical/Professional Issues in Counseling Psychology
3 Credits
History of counseling psychology, scientist-practitioner model, American Psychological Association’s Ethical Principles of Psychologists and Code of Conduct. Focus on current ethical, professional, and scientific issues. Restricted to majors.
Prerequisite: consent of instructor.

3 Credits
History, philosophy, and orientation of school psychology. Roles, technology, credentialing, community resources, school system issues, educational and psychology delivery service models, and current professional issues.

C EP 625. Legal and Ethical Issues in School Psychology
3 Credits
Overview of legal/ethical, and professional standards in school psychology. NASP and APA codes of ethics, NM Mental Health and Children’s codes, and child abuse/neglect laws.
Prerequisite(s): C EP 624.

C EP 630. School Psychology Research and Program Evaluation
3 Credits
Survey and analysis of research and program evaluation procedures in school psychology. Critical review of literature, formulating questions, quantitative and qualitative methodology, and data analysis as foundations for reading research literature and generating research, program evaluation, and/or grant proposals. Consent of Instructor required.

C EP 632. Counseling Psychology Research
3 Credits
Survey and analysis of research and program evaluation procedures in counseling psychology. Critical review of literature, formulating questions, quantitative and qualitative methodology, and data analysis are covered as a foundation for reading research literature and generating research, program evaluation, and/or grant proposals.
Prerequisite: C EP major or consent of instructor.

C EP 634. Introduction to Qualitative Research
3 Credits
This course is intended to be an introduction to qualitative research methods for persons wishing to understand, apply, and conduct qualitative studies with human subjects in the fields of counseling and psychology. This course is open to all doctoral majors. Consent of Instructor required.

3 Credits
An intermediate course focusing on more advanced theories and techniques of inferential statistics as applied to education and psychology. Includes ANOVA, planned contrasts, ANCOVA, simple regression, and non-parametrics. Both hand calculation and computer packages will be employed.
Prerequisite(s): C EP 511 or equivalent course work.

C EP 637. Multivariate Statistics
3 Credits
Theories and techniques of multivariate statistics as applied to education and psychology. Includes multiple regression, logistic regression, MANOVA, factor analysis, and structural equation modeling. Computer packages will be the primary tool for data analysis.
Prerequisite(s): C EP 636 or equivalent course work.

C EP 647. Appraisal of Cognitive Functioning
3 Credits
Taught with C EP 547 with differentiated assignments for doctoral students.

C EP 648. Appraisal of Personality
3 Credits
Selection, administration, scoring, interpretation, and report writing using major objective and projective tests of personality.

C EP 649. Behavioral Assessment & Intervention
3 Credits
The course introduces basic concepts, methods, and applications of behavioral assessment and intervention. Students will learn how to conduct functional assessments of behavior and how to write behavior intervention plans. Methods appropriate for assessment and intervention of school-age children will be emphasized. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: SPSY majors.

C EP 651. Diagnosis and Treatment Planning
3 Credits
Restricted to majors. Same as C EP 551 with differentiated assignments for Ph.D. students.
Prerequisite: C EP 612 or consent of instructor.

C EP 652. Career/Life Planning and Vocational Assessment
3 Credits
Same as C EP 552 with differentiated assignments for Ed.S and Ph.D. students. This course is open to all doctoral majors.
3 Credits  
Same as C EP 558 with differentiated assignments for Ph.D. students. Consent of Instructor required.  
Prerequisite(s): C EP 550 or consent of instructor.

C EP 662. Family Therapy Theory and Technique  
3 Credits  
Prerequisite(s): C EP 550.

C EP 670. Behavioral Health Practicum  
1-6 Credits  
An intensive supervised experience in providing behavioral health services at an on or off campus interdisciplinary health setting. Supervision provided by doctoral level psychologist faculty in collaboration with other team disciplines’ supervising faculty involves audio, video, and/or live observation of counseling sessions and team interventions and case presentations. Graded: S/U.

C EP 671. Consultation  
3 Credits  
Didactic and experimental trainings in theory-based consultation. Supervision provided by faculty involves audio, video, and/or live observation consultation activities and case presentations. Restricted to majors.  
Prerequisite(s): C EP 672, C EP 675, or C EP 678; and consent of instructor.

C EP 672. Practicum in School Psychology: Psychoeducational  
1-6 Credits  
Supervised practicum in psychological and educational evaluation. Skill development in ecological assessment, including interviewing, observations micro-counseling, acculturation, world view, and ethnic identity formation. Graded: S/U.  
Prerequisite(s): C EP 647, C EP 505 and consent of instructor.

C EP 673. Counseling Psychology Theory/Practicum  
1-6 Credits  
Theories of counseling and psychotherapy and their application during supervised counseling with clients. Supervision provided by doctoral psychologist faculty involves audio, video, and/or live observation of counseling sessions and case presentations. Restricted to majors.  
Prerequisite: consent of instructor.

C EP 675. Practicum in School Psychology: Psychological  
1-6 Credits  
School-based supervised experience for the advanced student. Provides experiences in various roles and models of service delivery (group, multifactored, integrative, family assessments) expected of school psychologists. Restricted to majors. S/U grading option only.  
Prerequisite(s): C EP 672 and consent of instructor.

C EP 676. Field Experience in Educational Diagnostics  
1-6 Credits (1-6)  
C EP 676 is designed to provide students with supervised school-based experiences and practices. The goal of the course is for students to master the competencies required for the delivery of academic services in the educational diagnostician role. The specific emphases in this course are placed on a data-based decision-making skills, psychoeducational assessment activities, and academic interventions. Under faculty and school-system staff supervisions, students will assume service delivery responsibilities and with increasing independence will respond to the diagnostic and intervention needs of students. Restricted to: C EP Masters, C EP Ph D majors. S/U Grading (S/U, Audit).  

C EP 677. Group Work Theory/Practicum  
1-6 Credits  
Application of theory in group work with clients and in supervising group leaders in training. Supervision provided by doctoral psychologist faculty involves audio, video, and/or live observation of counseling sessions and case presentations. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CEP, C EP majors.  
Prerequisite(s): C EP 673.

C EP 678. Advanced Counseling Psychology Practicum  
1-6 Credits  
Supervised counseling psychology experience including appraisal, diagnosis, case conceptualization, treatment planning, theory-based counseling and evaluation. Supervision provided by doctoral psychologist faculty involves audio, video, and/or live observation of counseling sessions and case presentations. Graded: S/U.  
Prerequisite(s): C EP 677.

C EP 679. Supervision Theory and Practicum  
1-6 Credits  
Didactic and experimental training in theory-based supervision. Supervision provided by doctoral psychologist faculty involves audio, video, and/or live observation of supervision sessions and case presentations. May be repeated for a maximum of 6 credits. Restricted to majors.  
Prerequisite(s): C EP 675 or C EP 678; and consent of instructor.

C EP 680. Internship in Counseling Psychology I  
1-18 Credits  
Full-time equivalent of one-half calendar year of internship preferably in an APA-approved or APA-equivalent site. Available to Ph.D. students who have successfully completed their comprehensive exams. May be repeated for a maximum of 18 credits.

C EP 682. Internship in Counseling Psychology II  
1-18 Credits  
Full-time equivalent of one-half calendar year of internship preferably in an APA-approved or APA-equivalent site. Available to Ph.D. students who have successfully complete their comprehensive exams. May be repeated for a maximum of 18 credits. Restricted to majors.  
Prerequisite: consent of instructor.

C EP 684. Internship in School Psychology  
1-12 Credits (1-12)  
Supervised experience in school psychology. May be repeated for a maximum of 12 credits. Consent of instructor required. Graded: S/U. Restricted to School Psychology (SPSY) majors.  
Prerequisite(s): C EP 672, C EP 675.
3 Credits
Same as EMD, EDUC, SPED 693.

C EP 698. Selected Topics
1-6 Credits
Offered under various subtitles which indicate the subject matter covered. A maximum of 6 credits in any one semester and a total of 18 credits overall. Restricted to C EP majors.

1-15 Credits
Study and research at the Specialist in Education level. Each problem to be designated by a qualifying subtitle. Restricted to majors.

C EP 700. Doctoral Dissertation
15 Credits
Dissertation. Restricted to majors.

C J 101G. Introduction to Criminal Justice
3 Credits
Examination of crime and justice within the broader social and cultural context of U.S. society from interdisciplinary social science perspectives. Includes critical analysis of criminal justice processes and the ethical, legal, and political factors affecting the exercise of discretion by criminal justice professionals.

C J 199. Special Topics in Criminal Justice I
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated under different topics for a maximum of 6 credits.

C J 205. Criminal Law
3 Credits
Rules, principles, and doctrines of criminal liability in the United States. The historical development, limits, and functions of the substantive criminal law. May be repeated up to 3 credits.

C J 210. The American Law Enforcement System
3 Credits
Historical and philosophical foundations of law and order. An in-depth examination of the various local, state, and federal law enforcement agencies.

C J 221. Fundamentals of Criminal Investigation
3 Credits
Investigation procedures from crime scene searches, collection of evidence, and case preparation. Community Colleges only. (Note: students completing C J 221 may not take C J 321.)

C J 230. Introduction to Corrections
3 Credits
Development of correctional philosophy, theory, and practice. Instructional and non-institutional alternatives available in the corrections process.

C J 250. Courts and the Criminal Justice System
3 Credits
Structures and functions of American courts. Roles of attorneys, judges, and other court personnel; operation of petit and grand juries, trial and appellate courts.

C J 293. Field Experience in Criminal Justice
3-6 Credits
Field experience in a public criminal justice agency or equivalent private sector organization. Supervised internship experience, conferences, and observations. Restricted to majors. Community Colleges only.
Prerequisites: C J 101G, prior arrangement and consent of instructor and a GPA of 2.0 or better in major.

C J 300. Introduction to Criminal Justice Research
3 Credits
Overview and evaluation of criminal justice research. Selection of research topics, methods of data selection and collection, analysis techniques, and presentation of findings.
Prerequisite: restricted to majors or consent of instructor.

C J 301. Advanced Research Methods
3 Credits
Study of selected quantitative and qualitative skills and their application to criminal justice research.
Prerequisite: Restricted to majors or consent of instructor.

C J 302. Crime, Justice and Society
3 Credits
Through critical analysis students build a rich understanding of the role of crime in our contemporary landscape and explore ideas and practices associated with justice, victimization, criminality, morality and righteousness. The course cultivates knowledge & awareness of the interactions between socially constructed phenomena (race, class, power, ethnicity, economic structures) and popular beliefs, policies, and practices associated with crime, punishment, and formal social control. It is recommended that you complete three of the following English courses before enrolling in this class: ENGL 111G, 203G, 211G, 218G, & 311G. Restricted to: Criminal Justice majors.

C J 303. Introduction to Criminological Theory
3 Credits
Prerequisite(s): Restricted to majors or consent of the instructor and must have completed C J 300.
Corequisite(s): Must be enrolled or have completed third English writing class.

C J 304. Historical Perspectives of Criminal Justice Systems
3 Credits
Examines the precursors to and development of three distinct systems associated with crime and punishment in the United States: the Courts, the Police, & Corrections. By studying the historical context and socio-political backdrop in which these institutions emerged and expanded students will come to a richer understanding of them and their attendant polices, practices, conventions, and assumptions. It is recommended that you complete three of the following English courses before enrolling in this class: ENGL 111G, 203G, 211G, 218G, & 311G. Restricted to: Criminal Justice majors.
Prerequisite(s): C J 300.

C J 306. Criminal Procedural Law
3 Credits
Legal analyses of the rights of criminal defendants; legal duties and responsibilities of criminal justice personnel in the processing of criminal defendants. May be repeated up to 3 credits. Restricted to: C J majors.
Prerequisite(s): Restricted to majors, Forensic Science minors, or consent of instructor.
C J 307. Law of Evidence
3 Credits
Evidentiary rules and concepts and their application in a criminal trial. May be repeated up to 3 credits. Restricted to: C J majors.
Prerequisite(s): Restricted to majors, Forensic Science minors, or consent of instructor.

C J 321. Criminal Investigation and Intelligence
3 Credits
Principles of criminal investigation and intelligence production; processing cases from complaint through crime scene search, identification and collection of evidence, interviewing and interrogation, and case preparation for courts. May be repeated up to 3 credits. Restricted to: C J majors.
Prerequisite(s): Restricted to majors, Forensic Science minors, or consent of instructor.

C J 312. Organized Crime
3 Credits
Study of national and international criminal organizations and organized crime core groups. Examination of criminal and legitimate enterprises of organized criminal syndicates. Study of tactics to combat organized crime. Current policy implications.
Prerequisite: restricted to majors or consent of instructor.

C J 331. American Correctional Institutions
3 Credits
Structure, organization, and operations of United States jails and prisons. Overview of correctional standards and classification systems, emphasizing current theory and practice.
Prerequisite: restricted to majors or consent of instructor.

C J 332. Correctional Law
3 Credits
Federal and state laws and rules of post-conviction procedures; rights of the convicted related to sentencing, appeals, clemency, and restoration of rights.
Prerequisite: restricted to majors or consent of instructor.

C J 333. Juvenile Corrections
3 Credits
Development and implementation of juvenile facilities and community programs. Effectiveness of current corrections practices. Restricted to majors.

C J 345. Victimology
3 Credits
Study of risk factors in crime victimization, the impact of crimes upon victims, and the role of the victim in the criminal justice system.
Prerequisite: restricted to majors or consent of instructor.

C J 346. Psychology and the Justice System
3 Credits
Analysis of psychological underpinnings of criminal behavior and the implications of these psychological principles for criminal justice policy. May be repeated up to 3 credits. Restricted to: C J majors.
Prerequisite(s): Restricted to majors, Forensic Science minors, or consent of instructor.

C J 347. Sex Crimes
3 Credits
Dynamics of sex crimes for victims and offenders, plus consideration of the legal and correction systems’ response to sex crimes. Restricted to majors.

C J 348. Serial Killers
3 Credits
Overview and critical assessment of serial homicide and its relevance for contemporary U.S. society. Focus on factors influencing definitions and cultural understanding of serial homicide.
Prerequisite(s): 60 credit hours.

C J 360. The Juvenile Justice System
3 Credits
History, development, and philosophy behind a separate juvenile justice system. Role of the juvenile court, evaluation of juvenile law and procedure, and the processing of juvenile offenders.
Prerequisite: restricted to majors or consent of instructor.

C J 380. Introduction to Terrorism
3 Credits
Overview of the phenomenon of terrorism, psychological and sociological theories of terrorism, and various contemporary governmental policies.

C J 391. Special Readings in Criminal Justice
1-3 Credits
Individually chosen subject areas not readily available in other courses. May be repeated for a maximum of 6 credits under different subtitles. Restricted to majors.
Prerequisites: at least a 2.5 GPA and consent of instructor.

C J 393. Internship in Criminal Justice
1-12 Credits
Field experience in a local, state, or federal criminal justice or private security agency. Includes orientation, observation, conferences, and work experience. Credits limited to six if student has taken C J 293. May be repeated for a maximum of 12 credits. Restricted to majors. Graded S/U.
Prerequisites: consent of instructor and GPA of 2.5 or better.

C J 399. New Mexico Law
3 Credits
Same as GOVT 399, JOUR 399, SOC 399, and HIST 399.

C J 405. Juvenile Courts and Law
3 Credits
History, development, and current status of juvenile courts. Legal status of juveniles in court and constitutional protections afforded them. Restricted to majors.

C J 410. Criminal Justice Administrative Systems
3 Credits
Administrative structures in criminal justice agencies and institutions; relationship of administrative structures to practical police, courts, and corrections problems.
Prerequisite: restricted to majors or consent of instructor.

C J 414. Race, Crime and Justice
3 Credits
Historical and contemporary analysis of the relationship between race and crime in the United States with emphasis upon human equality and fairness. Overview of racial and ethnic social categorizations and how they impact law and order.

C J 416. Global Perspectives on Youth and Drug Use
3 Credits
Overview of global drug use among young people, comparative legal structures, formal and informal responses. Restricted to C J, ANTH, GOVT, SOC, W S, S WK majors.

C J 417. Drugs In Our World
3 Credits
Comparative analysis of patterns and theories of drug use, formal government mitigation strategies.
C J 424. Forensic Law
3 Credits
Overview of the rules and issues related to the use of scientific information in the legal process. May be repeated up to 3 credits. Restricted to: C J majors.
Prerequisite(s): C J major, Forensic Science minors, or consent of instructor.

C J 425. Issues in Ethics, Law, and Criminal Justice
3 Credits
Examination of the key ethical and decision-making dilemmas facing professionals working in the field of law and criminal justice. 
Prerequisite: restricted to majors or consent of instructor.

C J 427. Race and Crime in Film
3 Credits
Critical analysis of film where messages relating race and crime are present, with emphasis on how this imagery informs problem definition, policies, and practice within the criminal justice system.
Prerequisite(s): 60 credit hours.

C J 428. Mexican-American and Issues of Social Justice
3 Credits
In this course we will explore and discuss social issues related to the Mexican American community in the U.S., with special emphasis on their collective historical struggles and contributions to society. We will discuss the political, economic and cultural forces that exemplify their experience as a "whole."
Prerequisite(s): Students must have completed C J 300 or research methods equivalent or consent from the instructor.

C J 429. Immigration & Justice
3 Credits
This course is designed to introduce undergraduate students to the complexities of immigration in the United States through a social justice lens. Students will explore the intersections of race, ethnicity, gender, and class in immigration through different groups' historical and contemporary experiences, including immigrants' experience with the criminal justice system.
Prerequisite(s): Student must have completed C J 300 or Research Methods equivalent or consent of the instructor.

C J 430. The U.S. Supreme Court and the Criminal Justice System
3 Credits
History and workings of the U.S. Supreme Court in the context of the criminal justice system from writs of certiorari to last minute appeals in death penalty cases, including study of specific U.S. Supreme Court cases in the areas of criminal law, criminal procedural law, 8th amendment prison sentencing issues, and death penalty cases. Consent of Instructor required. Restricted to: Criminal Justice majors.

C J 431. Family Violence and the Law
3 Credits
This course will examine how practitioners are involved in the criminal justice system in areas of family violence including: child physical abuse; child sexual abuse; child neglect; child ritualistic abuse; child exploitation; sibling abuse; intimate partner abuse; stalking; sexual abuse and elder abuse. This course will be helpful for those who wish to go into law enforcement or victim's advocacy work. Restricted to: Criminal Justice majors.

C J 432. Issues in Criminal Justice
3 Credits
Seminar on problems and conflicts encountered in major criminal justice issues. Topics announced in the Schedule of Classes. May be repeated for unlimited credits under different subtitles.

C J 433. Probation, Parole, and Community Corrections
3 Credits
Structure, organization, and operation of probation, parole, and other community-based correctional programs in the U.S. Overview of historical and recent trends in the supervision of offenders in the community and in the development of alternatives to incarceration. Analysis of issues related to community correctional policies and practices. Restricted to majors.

C J 435. Political Penology
3 Credits
Comparative analysis of incarceration and sanctions as punishment for crimes of conscience, religious intolerance, and dissidence.

C J 436. COURTS AND SENTENCING
3 Credits
This course will focus on the structure, organization, and operation of the state and federal court systems in the United States. It examines courtroom decision making and dynamics of courthouse justice—prosecutorial discretion, plea bargaining practices, jury and judicial decision making and sentencing. Additional topics will include racial, gender and class disparities in sentencing outcomes and the impact of recent reforms directed at the criminal court system. Restricted to: Criminal Justice majors.

C J 437. WRONGFUL CONVICTIONS
3 Credits
This course will address causes (e.g. problems in witness identification, forensics, police and attorney conduct) as well as results of erroneous dispositions (e.g. compensation, media dynamics, possible reforms) in a critical analysis. Appropriate for prospective police, legal, and policy professionals. Restricted to: Criminal Justice majors.

C J 440V. Comparative Criminal Justice Systems
3 Credits
Cross-national study of selected Western and non-Western legal systems. Comparison of structures and functions of police, court systems, and corrections in different systems.

C J 449. Senior Seminar
3 Credits
Problems and conflicts encountered in major attempts to control crime. Restricted to majors.
Prerequisite(s): C J 101, C J 205, C J 210, C J 230, C J 250, C J 300, C J 301, 90 credit hours completed.

C J 451. Border Violence and Justice
3 Credits
Critical analysis of violence and systems of justice along border regions. Examines causes and correlates of violence experienced by those living in border regions and the social responses to that violence.

C J 452. Upper World Crime
3 Credits
Corporate crime, white collar crime and political abuse and corruption; executive and corporate criminal behavior, and violations of the public trust by elected and appointed officials.
Prerequisite: restricted to majors or consent of instructor.

C J 453. Women and Justice
3 Credits
Critical analysis of the impact of the criminal justice system, race and class upon the lives of women. Restricted to majors.
C J 454. Human Trafficking
3 Credits

C J 455. Feminist Research Methods
3 Credits
Feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work. Same as W S 455.

C J 501. Research Methods in Criminal Justice
3 Credits
Research design, methods of data collection and analysis, and preparation of research reports. Restricted to majors.
Prerequisite: C J major or consent of instructor.

C J 510. Advanced Criminal Justice Administrative Systems
3 Credits
Structure and operations of criminal justice agencies and institutions; relationships of structure and operations to practical police, courts, and corrections problems.

C J 511. Nature of Crime
3 Credits
Defining and measuring crime, crime causation, and criminal behavior systems. Restricted to majors.
Prerequisite: C J major or consent of instructor.

C J 514. Advanced Race, Crime, and Justice
3 Credits
Advanced analysis of the historical and contemporary relationship between race and crime in the United States with emphasis upon human equality and fairness. Overview of racial and ethnic social categorizations and how they impact law and order.

C J 515. A Course on Punishment
3 Credits
Exploration and analysis of the idea and practice of punishment through a variety of philosophical perspectives, seeking to understand its moral and practical viability as employed in contemporary society, including its application within the criminal justice system.

C J 520. Advanced Girls, Women & Crime
3 Credits
Advanced critical social science analysis of concepts of violence and justice as experienced by women impacted by the criminal justice system. Restricted to C J, W S majors. Crosslisted with: W S 520

C J 521. Law and Social Control
3 Credits
The development and implementation of criminal law. Consideration of functionalist, conflict, and interpretive theories and research. Restricted to majors.
Prerequisite: C J major or consent of instructor.

C J 524. Forensic Law
3 Credits
Rules and policy implications related to the use of scientific information in legal process. Restricted to majors.
Prerequisite: C J major or consent of instructor.

C J 525. Issues in Ethics, Law, and Criminal Justice
3 Credits
Examination of the key ethical and decision-making dilemmas facing professionals working in the fields of law and criminal justice. Restricted to majors.

C J 526. Advanced Race & Environmental Justice
3 Credits
Advanced analysis of concepts of justice and social justice responses across the 20th and 21st centuries to environmental degradation affecting communities of differing racial and ethnic backgrounds.

C J 527. Advanced Race & Crime in Film
3 Credits
Advanced critical analysis of film where messages relating race and crime are present, with emphasis on how this imagery informs problem definition, policies, and practice within the criminal justice system.

C J 529. Advanced Immigration & Justice
3 Credits
Advanced analysis of the complexities of immigration in the United States through a social justice lens. Students will explore the intersections of race, ethnicity, gender, and class in immigration through different groups' historical and contemporary experiences, including immigrants' experience with the criminal justice system.

C J 530. Advanced U.S. Supreme Court and the Criminal Justice System
3 Credits
Advanced history and workings of the U.S. Supreme Court in the context of the criminal justice system from writs of certiorari to last minute appeals in death penalty cases, including study of specific U.S. Supreme Court cases in the areas of criminal law, criminal procedural law, 8th amendment prison sentencing issues, and death penalty cases. Restricted to: Criminal Justice majors.

C J 531. Advanced Family Violence and the Law
3 Credits
This course will examine how practitioners are involved in the criminal justice system in areas of family violence including: child physical abuse; child sexual abuse; child neglect; child ritualistic abuse; child exploitation; sibling abuse; intimate partner abuse; stalking; sexual abuse and elder abuse. This course will be helpful for those who wish to go into law enforcement or victim's advocacy work. Restricted to: Criminal Justice majors.

C J 532. Advanced Issues in Criminal Justice (f, s, sum)
3 Credits
Seminar on problems and conflicts encountered in major criminal justice issues. Topics announced in the Schedule of Classes. May be repeated under different subtitles for unlimited credit.

C J 535. Advanced Political Penology
3 Credits
Advanced comparative analysis of incarceration and sanctions as punishment for crimes of conscience, religious intolerance, and dissidence.

C J 537. Advanced Wrongful Convictions
3 Credits
This course will address causes (e.g. problems in witness identification, forensics, police and attorney conduct) as well as results of erroneous dispossession (e.g. compensation, media dynamics, possible reforms) in a critical analysis. Appropriate for prospective police, legal, and policy professionals. Restricted to: Criminal Justice majors.

C J 541. Seminar in Criminal Justice Policy Analysis and Planning
3 Credits
Seminar on policy development, planning and implementation processes in criminal justice. Links formal policy goals as they relate to theory and outcomes. Topics announced in the Schedule of Classes. Restricted to majors.
Prerequisite: C J major or consent of instructor.
C J 545. Advanced Victimology
3 Credits
Study of risk factors in crime victimization, the impact of crimes upon victims, and the role of the victim in the criminal justice system. Consideration of the impact of criminal justice policy on victim outcomes. Same as W S 545.

C J 554. Advanced Human Trafficking
3 Credits

C J 555. Advanced Feminist Research Methods
3 Credits
Advanced feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work. Same as W S 555.

C J 560. Juvenile Justice Systems
3 Credits
Policy development and operations in police, court, and correctional agencies in response to juveniles. Analysis of programs designed to identify, prevent and treat juvenile offenders. CJ 570. Probation and Parole 3 cr. Advanced analysis of goals, theories and practices of all forms of correction in the community, including probation, parole, plus other intermediate sanctions. Restricted to majors.

C J 581. Community Policing
3 Credits
Overview and analysis of community policing issues from various perspectives. Analysis of strategies that facilitate police and community collaboration. Restricted to majors.

C J 591. Directed Readings in Criminal Justice
3 Credits
Supervised review of literature in specialized areas of the nature of crime, law and social control, and criminal justice administration. Consent of instructor required.

C J 592. Independent Research
1-3 Credits
Design and execution of a criminal justice research project. Requires a written paper in standard format, including literature review, hypotheses, methodology, findings, and conclusions.

C J 593. Internship
3-6 Credits
Supervised placement in an applied or research setting in criminal justice. An in-depth written report of the project is required. Restricted to C J majors. May be repeated for a maximum of 6 credits. Graded S/U. Prerequisite: introductory graduate course in the area of the internship and consent of the internship supervisor.

C J 599. Master's Thesis
15 Credits
Thesis.

C S-COMPUTER SCIENCE (C S)

C S 110. Computer Literacy
3 Credits
This course provides a broad introduction to computing, including computer and information technology concepts; economic and social implications of technology; database management, spreadsheet, word processing, and presentation applications.

C S 111. Computer Science Principles
4 Credits (3+2P)
This course provides a broad and exciting introduction to the field of computer science and the impact that computation has today on every aspect of life. It focuses on exploring computing as a creative activity and investigates the key foundations of computing: abstraction, data, algorithms, and programming. It looks into how connectivity and the Internet have revolutionized computing and demonstrates the global impact that computing has achieved, and it reveals how a new student in computer science might become part of the computing future. Prerequisite(s): MATH 120 or higher.

C S 117. Introduction to Computer Animation
3 Credits
Introductory course for learning to program with computer animation as well as learning basic concepts in computer science. Students create interactive animation projects such as computer games and learn to use software packages for creating animations in small virtual worlds using 3D models. Recommended for students considering a minor/major in computer science or simply interested in beginning computer animation or programming.

C S 150. C Programming
3 Credits (2+2P)
Programming in the C language. May be repeated up to 3 credits. Prerequisite(s): MATH 120 or higher.

C S 151. C++ Programming
3 Credits (2+2P)
Introduction to object-oriented programming in the C++ language. May be repeated up to 3 credits. Prerequisite(s): MATH 120 or higher.

C S 152. Java Programming
3 Credits (2+2P)
Programming in the Java language. May be repeated up to 3 credits. Prerequisite(s): MATH 120 or higher.

C S 153. Python Programming I
3 Credits
This course is an introduction to programming in the Python language, covering fundamental scripts, data types and variables, functions, and simple object creation and usage. The focus will be on preparing students to use Python in their own areas. No prior programming experience is required. Prerequisite(s): MATH 120 or higher.

C S 154. Python Programming II
3 Credits
This course covers advanced Python programming, including classes, objects, and inheritance, embedded programming in domain applications, database interaction, and advanced data and text processing. The focus will be on preparing students to use Python in their own areas. Prerequisite(s): C S 153 or C S 453.

C S 155. Internet Programming I
3 Credits
This course is an introduction to programming for the Web in PHP and Javascript, covering fundamental web scripting ideas, CSS, data types and variables, functions, simple object creation and usage. Javascript usage will focus on dynamic page content. No prior programming experience is required, though a basic understanding of HTML will be assumed. Prerequisite(s): MATH 120 and a basic understanding of HTML.
C S 156. Internet Programming II
3 Credits
This course covers advanced web scripting, including Javascript with AJAX, PHP integration with databases, object oriented features of PHP and Javascript, advanced CSS usage, and using web application frameworks.
Prerequisite(s): C S 155 or C S 455.

C S 157. Topics in Software Programming and Applications
3 Credits (2+2P)
Current topics in computer programming and software applications. Topic announced in the Schedule of Classes. May be repeated if subtitle is different.

C S 158. R Programming I
3 Credits
This course is an introduction to data processing in the R language, covering fundamental script configuration, data types and data collections, R control structures, and basic creation of graphs and data visualizations. This course will not focus on the statistical capabilities of R, though some basic statistical computations will be used.
Prerequisite(s): MATH 121G.

C S 159. R PROGRAMMING II
3 Credits
This course covers advanced R programming, including advanced data collection processing, advanced data visualizations, object oriented features of R, and file processing. It is recommended that students have one statistics course before taking this course.
Prerequisite(s): C S 158 or C S 458.

C S 171G. Introduction to Computer Science
4 Credits (3+2P)
Computers are now used widely in all area of modern life. This course provides understanding of the theoretical and practical foundations for how computers work, and provides practical application and programming experience in using computers to solve problems efficiently and effectively. The course covers broad aspects of the hardware, software, and mathematical basis of computers. Weekly labs stress using computers to investigate and report on data-intensive scientific problems. Practical experience in major software applications includes an introduction to programming, word processing, spreadsheets, databases, presentations, and Internet applications.
Prerequisite(s): MATH 210G or MATH 120 or higher.

C S 172. Computer Science I
4 Credits (3+2P)
Computational problem solving; problem analysis; implementation of algorithms. Recursive structures and algorithms. Crosslisted with: C S 460.
Prerequisite(s): MATH 121G or higher; C S 111 or successful placement.

C S 209. Special Topics.
1-3 Credits
May be repeated for a maximum of 12 credits.

C S 271. Object Oriented Programming
4 Credits (3+2P)
Introduction to problem analysis and problem solving in the object-oriented paradigm. Practical introduction to implementing solutions in the C++ language. Hands-on experience with useful development tools.
Prerequisite(s): C- or better in C S 172 or E E 161.

C S 272. Introduction to Data Structures
4 Credits (3+2P)
Design, implementation, use of fundamental abstract data types and their algorithms: lists, stacks, queues, deques, trees; imperative and declarative programming. Internal sorting; time and space efficiency of algorithms.
Prerequisite(s): At least a C- in C S 172, or placement.

C S 273. Machine Programming and Organization
4 Credits (3+2P)
Computer structure, instruction execution, addressing techniques; programming in machine and assembly languages.
Prerequisite(s): At least a C- in C S 172 or E E 161.

C S 278. Discrete Mathematics for Computer Science
4 Credits (3+2P)
Discrete mathematics required for Computer Science, including the basics of logic, number theory, methods of proof, sequences, mathematical induction, set theory, counting, and functions. Crosslisted with: MATH 278.
Prerequisite(s): At least C- in C S 172.

C S 343. Algorithm Design & Implementation
3 Credits
Prerequisite(s): At least a C- in C S 272, or consent of instructor.

C S 370. Compilers and Automata Theory
4 Credits (3+2P)
Methods, principles, and tools for programming language processor design; basics of formal language theory (finite automata, regular expressions, context-free grammars); development of compiler components.
Prerequisite(s): At least a C- in C S 271, C S 272, C S 273, and C S 278.

C S 371. Software Development
4 Credits (3+2P)
Software specification, design, testing, maintenance, documentation; informal proof methods; team implementation of a large project.
Prerequisite(s): At least a C- in C S 271 and C S 272.

C S 372. Data Structures and Algorithms
4 Credits (3+2P)
Prerequisite(s): At least a C- in CS 272 and C S 278.

C S 375. Introduction to Intelligent Agents Using Science Fiction
3 Credits
This course uses science-fiction movies to introduce fundamental principles and techniques in agents and multi-agent systems. It covers game theory, decision theory, machine learning, and distributed systems.

C S 409. Independent Study
1-6 Credits (1-6)
Faculty supervised investigation, to culminate in a written report. May be repeated up to 6 credits.
Prerequisite(s): Written agreement with faculty supervisor.
C S 419. Computing Ethics and Social Implications of Computing
1 Credit
Corequisite(s): C S 448 or C S 449.
C S 448. Senior Project
4 Credits
Capstone course in which C S majors work in teams and apply computer science skills to complete a large project. Consent of Instructor required. Restricted to: C S majors.
Prerequisite(s): Senior standing.
Corequisite(s): C S 419.
C S 449. Senior Thesis
4 Credits
Capstone course in which C S majors apply computer science skills to complete a research project, culminating in a written thesis report. Consent of Instructor required. Restricted to: C S majors.
Prerequisite(s): Consent of thesis adviser.
Corequisite(s): C S 419.
C S 450. C Programming
3 Credits (2+3P)
Programming in the C language. More advanced than C S 150. Recommended for nonmajors only. May be repeated up to 3 credits.
Prerequisite(s): Graduate standing.
C S 451. C++ Programming
3 Credits
Programming in the C language. More advanced than C S 151. Recommended for nonmajors only. May be repeated up to 3 credits.
Prerequisite(s): Graduate standing.
C S 452. Java Programming
3 Credits (2+2P)
Programming in the Java language. More advanced than C S 152. Recommended for nonmajors only. May be repeated up to 3 credits.
Prerequisite(s): Graduate standing.
C S 453. PYTHON PROGRAMMING I
3 Credits
This course is an introduction to programming in the Python language, covering fundamental scripts, data types and variables, functions, and simple object creation and usage. The focus will be on preparing students to use Python in their own areas. No prior programming experience is required. More advanced than C S 153.
Prerequisite(s): MATH 120 or higher.
C S 454. Python Programming II
3 Credits
This course covers advanced Python programming, including classes, objects, and inheritance, embedded programming in domain applications, database interaction, and advanced data and text processing. The focus will be on preparing students to use Python in their own areas. For graduate students only. Has more advanced work than C S 154, and does not count towards CS major requirements.
Prerequisite(s): C S 153 or C S 453.
C S 455. Internet Programming I
3 Credits
This course is an introduction to programming for the Web in PHP and Javascript, covering fundamental web scripting ideas, CSS, data types and variables, functions, simple object creation and usage. Javascript usage will focus on dynamic page content. No prior programming experience is required, though a basic understanding of HTML will be assumed. For graduate students only. Has more advanced work than C S 155. Does not count towards CS major requirements.
Prerequisite(s): MATH 120 and a basic understanding of HTML.
C S 456. Internet Programming II
3 Credits
This course covers advanced web scripting, including Javascript with AJAX, PHP integration with databases, object oriented features of PHP and Javascript, advanced CSS usage, and using web application frameworks. For graduate students only. Has more advanced work than C S 156. Does not count towards CS major requirements.
Prerequisite(s): C S 155 or C S 455.
C S 457. Topics in Software Programming and Applications
3 Credits (2+2P)
Current topics in computer programming and software applications. Topic announced in the Schedule of Classes. More advanced than C S 157. Recommended for non-majors only. May be repeated if subtitle is different.
Prerequisite(s): Graduate standing.
C S 458. R Programming I
3 Credits
This course covers advanced R programming, including advanced data collection processing, advanced data visualizations, object oriented features of R, and file processing. It is recommended that students have one statistics course before taking this course. For graduate students only. Has more advanced work than C S 158. Does not count towards CS major requirements.
Prerequisite(s): MATH 121G.
C S 459. R Programming II
3 Credits
This course covers advanced R programming, including advanced data collection processing, advanced data visualizations, object oriented features of R, and file processing. It is recommended that students have one statistics course before taking this course. For graduate students only. Has more advanced work than C S 159, and does not count towards CS major requirements.
Prerequisite(s): C S 158 or C S 458.
C S 460. Computer Science I Transition
3 Credits
Computational problem solving; problem analysis; implementation of algorithms. Recursive structures and algorithms. For C S graduate students only; cannot be used to meet a C S student’s program of study. Taught with C S 172. Consent of Instructor required. Crosslisted with: C S 172.
C S 462. Object Oriented Programming Transition
3 Credits
Introduction to problem analysis and problem solving in the object-oriented paradigm. Practical introduction to implementing solutions in the C++ language. Hands-on experience with useful development tools. Cannot be used in a C S student's program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 172 or C S 460 or consent of instructor.

C S 463. Introduction to Data Structures Transition
3 Credits
Design, implementation, use of fundamental abstract data types and their algorithms: lists, stacks, queues, deques, trees; imperative and declarative programming. Internal sorting; time and space efficiency of algorithms. Cannot be used in a C S student's program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 172 or C S 460 or consent of instructor.

C S 464. Machine Programming and Organization Transition
3 Credits
Computer structure, instruction execution, addressing techniques; programming in machine and assembly languages. Cannot be used in a C S student's program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 172 or C S 460 or consent of instructor.

C S 465. Discrete Math for Computer Science Transition
3 Credits
Logical connectives, sets, functions, relations, graphics, trees, proofs, induction, and application to computer science. Cannot be used in a C S student's program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 172 or C S 460 or consent of instructor.

C S 466. Compilers and Automata Transition
3 Credits
Methods, principles, and tools for programming language processor design; basics of formal language theory (finite automata, regular expressions, context-free grammars); development of compiler components. For C S graduate students only; cannot be used in a students program of study. Consent of Instructor required.
Prerequisite(s): At least a C in C S 271 or C S 462, in C S 272 or C S 463, in C S 273 or C S 464, in C S 278 or C S 465, or consent of instructor.

C S 468. Software Development Transition
3 Credits
Software specification, design, testing, maintenance, documentation; informal proof methods; team implementation of a large project. Cannot be used in a C S student's program of study. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 271 or C S 462, in C S 272 or C S 463, or consent of instructor.

C S 469. Data Structure and Algorithms Transition
3 Credits
Prerequisite(s): At least a C- in C S 272 or C S 463, in C S 278 or C S 465, or consent of instructor.

C S 471. Programming Language Structure I
3 Credits
Syntax, semantics, implementation, and application of programming languages; abstract data types; concurrency. Not for C S graduate students.
Prerequisite(s): C- or better in C S 370 and C S 371.

C S 473. Architectural Concepts I
3 Credits
Comparison of architectures to illustrate concepts of computer organization; relationships between architectural and software features. Not for C S graduate students.
Prerequisite(s): At least a C- in C S 273 and C S 370.

C S 474. Operating Systems I
3 Credits
Operating system principles and structures, and interactions with architectures. Not for C S graduate students.
Prerequisite(s): At least a C- in C S 273, C S 371, and C S 372.

C S 475. Artificial Intelligence I
3 Credits
Fundamental principles and techniques in artificial intelligence systems. Intelligent Agents; solving problems by searching; local search techniques; game-playing agents; constraint satisfaction problems; knowledge representation and reasoning. Further selected topics may also be covered. Not for C S graduate students.
Prerequisite(s): At least a C- in C S 272 and C S 278.

C S 476. Computer Graphics I
3 Credits
Languages, programming, devices, and data structures for representation and interactive display of complex objects. Not for C S graduate students.
Prerequisite(s): At least C- in C S 370 or C S 371.

C S 477. Digital Game Design
3 Credits
An introductory to digital game design. Topics include design, develop, and playtest games. The course is structured to use team-based learning. Not for C S graduate students.
Prerequisite(s)/Corequisite(s): C S 371 or consent of instructor.

C S 478. Computer Security
3 Credits
Introduction to the art and science of computer security. Fundamentals of computer security including elementary cryptography, authentication and access control, security threats, attacks, detection and prevention in application software, operating systems, networks and databases.
Prerequisite(s): At least a C- in C S 273 or consent of instructor.

C S 479. Special Topics
1-6 Credits
Topic announced in the Schedule of Classes. May be repeated if subtitle is different. Not for C S graduate students. May be repeated up to 6 credits.

C S 480. Linux System Administration
3 Credits
Basic system administration for Linux environments. Topics include user managements, file systems, security, backups, system monitoring, kernel configuration and other relevant aspects of system administration. Not for Computer Science graduate students.
C S 481. Visual Programming
3 Credits
Design and implementation of programs using visual (i.e. dataflow or diagrammatic) programming techniques, with an emphasis on real-time data processing. Students will learn how to design visual programs, including how to handle cycles and state maintenance, and will learn to process audio, video, and other data using visual programs. Not for C S graduate students.
Prerequisite(s): C- or better in C S 272 and C S 278.

C S 482. Database Management Systems I
3 Credits
Database design and implementation; models of database management systems; privacy, security, protection, recovery. Not for C S graduate students.
Prerequisite(s): At least a C- in C S 272 and C S 278.

C S 483. Introduction to Robotics
3 Credits
Basic AI-based robotic architecture and concepts, with an emphasis on building and programming mobile robots. Not for C S graduate students. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 272 and C S 273.

C S 484. Computer Networks I
3 Credits
Fundamental concepts of computer communication networks: layered network architecture, network components, protocol stack and service. Example of application, transport, network and data link layers, protocols primarily drawn from the Internet (TCP, UDP, and IP) protocol multimedia networks; network management and security. Not for C S graduate students. Consent of Instructor required.
Prerequisite(s): At least a C- in C S 272 and C S 273.

C S 485. User Interface Design
3 Credits
Interface design, conceptual models formed by users, computer aided instruction, natural and query languages, graphical representations. Not for C S graduate students.
Prerequisite(s): At least C- in C S 371.

C S 486. Bioinformatics
3 Credits
Introduction to bioinformatics and computational biology. Computational approaches to sequences analysis, protein structure prediction and analysis, and selected topics from current advances in bioinformatics. Not for C S graduate students.
Prerequisite(s): At least a C- in C S 272 and C S 278.

C S 488. Introduction to Data Mining
3 Credits
Techniques for exploring large data sets and discovering patterns in them. Data mining concepts, metrics to measure its effectiveness. Methods in classification, clustering, frequent pattern analysis. Selected topics from current advances in data mining. Taught with C S 508.
Prerequisite(s): At least a C- in C S 272 and C S 278.

C S 489. Bioinformatics Programming
3 Credits
Application of computer programming languages to address data processing and analysis problems in modern molecular biology. R/Perl/Python programming; Web API programming. Automatic manipulation of next generation sequence data, analysis of large gene expression tables, access to online biological databases, performing statistical analysis, and visualization of data and results. Taught with C S 509.
Prerequisite(s): At least a C- in C S 272 and C S 278.

C S 491. Parallel Programming
3 Credits
Programming of shared memory and distributed memory machines; tools and languages for parallel programming; techniques for parallel programming; parallel programming environments. Not for C S graduate students.
Prerequisite(s): C- or better in C S 370 or consent of instructor.

C S 493. Algorithm Design and Implementation
3 Credits
This course introduces the basic knowledge of designing classical algorithms and implementing these algorithms using a programming language. In particular, the course teaches various data structures, including graphs and balanced binary search trees, and efficient schemes to implement these data structures. This course also teaches basic algorithm design techniques including divide-and-conquer, greedy scheme, and dynamic programming. This course covers graph algorithms, including graph traversals (depth-first search and breadth-first search), connectivity, shortest paths, and minimum spanning trees. Restricted to: exclude C S majors.
Prerequisite(s): At least a C- in C S 272, or Consent of Instructor.

C S 494. Introduction to Smart Grids
3 Credits
This course is an introduction to the technologies and design strategies associated with the Smart Grid. The emphasis will be on the development of communications, energy delivery, coordination mechanisms, and management tools to monitor transmission and distribution networks. Topics include: Smart grid introduction and evolution; Power systems; Networking and transport control; Artificial intelligence & agent coordination; Data mining for smart grids.
Prerequisite(s): At least a C- in C S 272 and a C- in E E 201 or 280; or Consent of instructor.

C S 502. Database Management Systems I
3 Credits
Database design and implementation; models of database management systems; privacy, security, protection, recovery; requires more advanced graduate work than C S 482. Students are expected to have solid knowledge of data structures and discrete mathematics.

C S 503. Introduction to Robotics
3 Credits
Basic AI-based robotic architectures and concepts, with an emphasis on building and programming mobile robots; requires more advanced graduate work than C S 483. Students are expected to have solid knowledge of data structures and machine-level programming.

C S 504. Computer Networks I
3 Credits
Fundamental concepts of computer communication networks: layered network architecture, network components, protocol stack and service. Example of application, transport, network and data link layers, protocols primarily drawn from the Internet (TCP, UDP, and IP) protocol suite; local and wide area networks, wireless and mobile networks, multimedia networks; network management and security; requires more advanced graduate work than C S 484. Students are expected to have solid knowledge of data structures, machine-level programming. Knowledge of statistics (at the level of STAT 371 or 470) is recommended.
C S 505. Artificial Intelligence I
3 Credits
Fundamental principles and techniques in artificial intelligence systems. Knowledge representation formalisms; heuristic problem solving techniques; automated logical deduction; robot planning methods; algorithmic techniques for natural language understanding, vision and learning; requires more advanced graduate work than C S 475. Students are expected to have strong knowledge of algorithms and data structures (at the level of C S 372).

C S 506. Computer Graphics I
3 Credits
Languages, programming, devices, and data structures for representation and interactive display of complex objects. Requires more advanced graduate work than C S 476. Students are expected to have knowledge of compilers design and software engineering equivalent to CS 370 and CS 371.

C S 508. Introduction to Data Mining
3 Credits
Techniques for exploring large data sets and discovering patterns in them. Data mining concepts, metrics to measure its effectiveness. Methods in classification, clustering, frequent pattern analysis. Selected topics from current advances in data mining. Students are expected to have a preparation in Discrete Mathematics and Data Structures equivalent to C S 272 and C S 278. Requires more advanced graduate work than C S 488. Crosslisted with: C S 488.

C S 509. Bioinformatics Programming
3 Credits
Application of computer programming languages to address data processing and analysis problems in modern molecular biology. R/Perl/Python programming; Web API programming. Automatic manipulation of next generation sequence data, analysis of large gene expression tables, access to online biological databases, performing statistical analysis, and visualization of data and results. Requires a preparation in discrete mathematics and data structures equivalent to C S 272 and C S 278. Taught with C S 489.

C S 510. Automata, Languages, Computability
3 Credits
Regular and context-free languages, pushdown and finite-slate automata, turing machines, models of computation, halting problems. Students are expected to have knowledge of compilers design and algorithms equivalent to C S 370 and C S 372.

C S 511. Logic and Constraint Logic Programming
3 Credits
Declarative programming techniques; foundations of logic programming; programming in Prolog; constraint logic programming; application of logic and constraint programming; requires more advanced graduate work than C S 472. Students are expected to have knowledge of data structures and discrete mathematics equivalent to C S 272 and C S 278.

C S 512. Computer Systems Modeling and Simulation
3 Credits
Basic concepts of modeling computer systems: continuous and discrete time models, states and transition, probabilistic models. Structures of simulation programs, time driven and event driven simulation, simulation on captured and synthetic traces, generation of random variables, queuing models, Markov chains, random walks, Poisson, Markov, renewal branching and Brownian motion processes, model validation and data analysis; requires more advanced graduate work than C S 492. Students are expected to have knowledge of algorithms and data structures equivalent to C S 372.

C S 513. Computer Security
3 Credits
Introduction to the art and science of computer security. Fundamentals of computer security including elementary cryptography, authentication and access control, security threats, attacks, detection and prevention in application software, operating systems, networks and databases. Prerequisite(s): At least a C in C S 273 or consent of instructor.

C S 514. Introduction to Smart Grids
3 Credits
This course is an introduction to the technologies and design strategies associated with the Smart Grid. The emphasis will be on the development of communications, energy delivery, coordination mechanisms, and management tools to monitor transmission and distribution networks. Topics include: Smart grid introduction and evolution; Power systems; Networking and transport control; Artificial intelligence & agent coordination; Data mining for smart grids. Requires more advanced work than C S 494. Prerequisite(s): At least a C- in C S 272 and a C- in E E 201 or 280; or Consent of instructor.

C S 515. User Interface Design
3 Credits
Interface design, conceptual models formed by users, computer-aided instruction, natural and query languages, graphical representations; requires more advanced graduate work than C S 485. Students are expected to have knowledge of software engineering equivalent to C S 371.

C S 516. Bioinformatics
3 Credits
Introduction to bioinformatics and computational biology. Computational approaches to sequences analysis, protein structure prediction and analysis, and selected topics from current advances in bioinformatics; requires more advanced graduate work than C S 486. Students are expected to have a knowledge of algorithms and data structures equivalent to C S 372 or exposure to Biology (equivalent to BIOL 221 or BIOL 311).

C S 517. Digital Game Design
3 Credits
An introductory to digital game design. Topics include design, develop, and playtest games. The course is structured to use team-based learning.

C S 518. Visual Programming
3 Credits
Design and implementation of languages using visual but nontextual means to specify programs. Required more advanced work than C S 481. Prerequisite(s): At least a C in C S 272 and C S 278.

C S 521. Parallel Programming
3 Credits
Programming of shared memory and distributed memory machines; tools and languages for parallel programming; serializing compilers; parallel programming environments; requires more advanced graduate work than C S 491. Students are expected to have knowledge of programming and machine organization equivalent to C S 271 and C S 273.

C S 560. Graph Theory
3 Credits
Graph theoretic models in all areas of computer science including computer architectures, computation geometry, fault tolerance, databases. Includes connectivity, colorability, factorization, topological embeddings in surfaces, reconstruction, groups and matrices associated with graphs. Prerequisite: consent of instructor.
C S 570. Analysis of Algorithms
3 Credits
Techniques for design and analysis of algorithms; time and space complexity; proving correctness of programs. Particular algorithms such as sorting, searching, dynamic programming. NP complete problems. Students are expected to have knowledge of algorithms and data structures equivalent to C S 372.

C S 571. Programming Language Structure II
3 Credits
Formal semantics of programming languages. Students are expected to have knowledge of algorithms and data structures equivalent to C S 372, and knowledge of principles of programming languages equivalent to C S 471.

C S 572. Advanced Algorithms
3 Credits
Design, analysis, and use of important algorithms and data structures. Prerequisite: C S 570 or consent of instructor.

C S 573. Architectural Concepts II
3 Credits
Advanced topics related to computer architecture, guided by the current literature. Students are expected to have knowledge of computer architectures equivalent to C S 473 and of operating systems equivalent to C S 474. Crosslisted with: E E564.

C S 574. Operating Systems II
3 Credits
Advanced topics related to operating system principles, guided by the current literature. Students are expected to have knowledge of computer architectures and operating systems equivalent to C S 473 and C S 474.

C S 575. Artificial Intelligence II
3 Credits
Covers advanced theory and application of artificial intelligence. Concentration on several specific research areas, such as knowledge representation, problem solving, common-sense reasoning, natural language understanding, automated tutoring systems, learning systems. Students are expected to have knowledge of artificial intelligence equivalent to C S 475.

C S 579. Special Topics
1-6 Credits
Topic announced in the Schedule of Classes.

C S 581. Advanced Software Engineering
3 Credits
Advanced tools and methods for developing large software systems. Topics include object-oriented modeling and design, component architectures, templates and generic programming, software configuration and revision control, static and dynamic analysis tools, model checking, advanced testing, and verification. Students are expected to have knowledge of software engineering equivalent to C S 371.

C S 582. Database Management Systems II
3 Credits
Advanced data models and abstractions, dependencies, implementations, languages, database machines, and other advanced topics. Students are expected to have knowledge of data base management systems equivalent to CS 482.

C S 584. Computer Networks II
3 Credits
Advanced topics in computer networks. Covers advanced topics in networking, with emphasis on wireless, and IP networks. Students are expected to have knowledge of computer networks equivalent to C S 484, and of statistics equivalent to STAT 371 or STAT 470.

C S 586. Algorithms in Systems Biology
3 Credits
The course will introduce important algorithms and computational models used in systems biology to study molecular mechanisms for cellular dynamics, processes, and systems. Cellular processes, such as metabolism and signal transduction, are studied as systems and networks quantitatively from high throughput molecular measurements. The topics include molecular biological systems, network alignment, model simulation, network inference, model optimization, and hybrid models. Students will be able to construct models and analyze their properties in the context of molecular biological systems. Students are expected to have knowledge of algorithms and data structures equivalent to C S 372.

C S 589. Special Research Problems
1-6 Credits
Faculty-supervised investigation, to culminate in a written report. May be repeated; maximum of 6 credits may be applied toward M.S. degree. Restricted to majors. Prerequisite: written agreement with faculty supervisor.

C S 598. Master’s Project
1-6 Credits
Project-oriented capstone course to be completed by M.S. students under supervision of their advisor. Maximum of 6 credits may be applied toward M.S. degree. Restricted to C S majors. Prerequisite: written agreement with instructor.

C S 599. Master’s Thesis
1-6 Credits (1-6)
Thesis to be developed by M.S. Students under supervision of their advisor. May be repeated for a maximum of 6 credits. Restricted to majors. Prerequisite: consent of instructor.

C S 600. Pre-dissertation Research
1-15 Credits
Pre-dissertation research.

C S 700. Doctoral Dissertation
15 Credits
Dissertation.

CAST-CHILD ADVOCACY STUDIES (CAST)

CAST 201. Introduction to Child Advocacy
3 Credits
This is the introductory course for child advocacy studies (CAST). It covers different models for understanding child maltreatment, types and indicators of child maltreatment, controversial topics in the field, and issues and laws related to child maltreatment in various countries around the world. Students will develop critical thinking and analytical skills in assessing child maltreatment. Restricted to Dona Ana campus only.
CAST 202. Professional and Systems Responses to Child Maltreatment
3 Credits
Course examines the professionals and systems that respond to allegations of child abuse and neglect. Includes the differences between civil and criminal proceedings; components of a court-worthy child abuse and neglect investigation; basic child forensic interviewing; an overview of child sex offenders; and current research and controversial issues affecting the field. Restricted to Dona Ana campus only.
Prerequisite(s): CAST 201.

CAST 203. Prevention, Trauma Informed Treatment and Advocacy
3 Credits
The purpose of this course is to prepare students to recognize the effects of child maltreatment and apply interventions strategies for children and their families. Multidisciplinary approaches to prevention, advocacy and treatment of child maltreatment survivors will be presented and discussed. Topics include violence prevention research, interdisciplinary family programs, how to advocate for survivors of child abuse, case management, working with families, mental health service and controversial issues.
Prerequisite(s): CAST 201.

CAST 301V. Introduction to Child Advocacy
3 Credits
Historical review and evolution of child welfare policies, initiatives and factors that influence child welfare service. Child welfare policies and services specific to the state of New Mexico are infused throughout the course. Taught with MSW 590. Cannot receive credit for CAST 301 and MSW 590.

CAST 302. Professional and Systems Responses to Child Maltreatment
3 Credits
Course examines the professionals and systems that respond to allegations of child abuse and neglect. Includes the differences between civil and criminal proceedings; components of a court-worthy child abuse and neglect investigation; basic child forensic interviewing; an overview of child sex offenders; current research and controversial issues effecting the field. Students majoring in social work, criminal justice, education, sociology, psychology, nursing, and other areas will enhance their capacity to strengthen the safety net that protects children.
Prerequisite(s): CAST 301.

CAST 303. Prevention, Trauma Informed Treatment and Advocacy
3 Credits
The purpose of this course is to prepare students to recognize the effects of child maltreatment and to apply intervention strategies for children and their families. Multidisciplinary approaches to prevention, advocacy, and treatment of child maltreatment survivors will be presented and discussed. Topics include violence prevention research, interdisciplinary family programs, how to advocate for survivors of child abuse, case management, working with families, mental health services and controversial issues. Crosslisted with: FCS 300.
Prerequisite(s): CAST 301.

CAST 501. Introduction to Child Advocacy
3 Credits
This is the introductory course for child advocacy studies (CAST). It covers different models for understanding child maltreatment, types and indicators of child maltreatment, controversial topics in the field, and issues and laws related to child maltreatment in various countries around the world. Students will develop critical thinking and analytical skills in assessing child maltreatment at the graduate level.

CAST 502. Professional and Systems Responses to Child Maltreatment
3 Credits
This graduate level course examines the professionals and systems that respond to allegations of child abuse and neglect. Includes the differences between civil and criminal proceedings; components of a court-worthy child abuse and neglect investigation; basic child forensic interviewing; an overview of child sex offenders; and current research and controversial issues affecting the field.

CAST 503. Prevention, Trauma Informed Treatment and Advocacy
3 Credits
The purpose of this course is to prepare graduate students to recognize the effects of child maltreatment and apply interventions strategies for children and their families. Multidisciplinary approaches to prevention, advocacy and treatment of child maltreatment survivors will be presented and discussed.
Prerequisite(s): A "B" or better in CAST 501.

CCDE-DEVELOPMENTAL ENGLISH (CCDE)

CCDE 105 N. Effective Communication Skills
4 Credits (3+2P)
Instruction and practice in basic communication, to include written and oral presentations. Develops thinking, writing, speaking, reading, and listening skills necessary for successful entry to college and university classes. Provides laboratory. RR applicable.

CCDE 110 N. General Composition
4 Credits (3+2P)
Instruction and practice in preparation for college-level writing. Students will develop and write short essays. Provides laboratory. RR applicable.
Prerequisite: CCDE 105N (C or better) or equivalent.

CCDLE-DEVELOPMENTAL ESL (CCDL)

CCDL 101 N. Basic Skills in English as a Second Language I
4 Credits (3+2P)
Developmental studies course for ESL students. Development of basic skills in speaking, listening, reading, and writing English as a second language with emphasis on speaking and listening. Pronunciation stressed. Course intended for U.S. citizens and residents who are nonnative speakers of English.
Prerequisite: English language screening or consent of instructor.

CCDL 103 N. Basic Skills in English as a Second Language II
4 Credits (3+2P)
Continuation of CCDL 101N for ESL students. Course intended for U.S. citizens and residents who are nonnative speakers of English.
Prerequisite: English language screening or consent of instructor.

CCDL 105 N. Intermediate Skills in English as a Second Language I
4 Credits (3+2P)
Intermediate level with emphasis on reading and writing. Grammar and syntax stressed. Course intended for U.S. citizens and residents who are nonnative speakers of English.
Prerequisite: English language screening or consent of instructor.

CCDL 107 N. Intermediate Skills in English as a Second Language II
4 Credits (3+2P)
Continuation of CCDL 105N. Course intended for U.S. citizens and residents who are nonnative speakers of English.
Prerequisite: English language screening or consent of instructor.
CCDM-DEVELOPMENTAL MATHEMATICS (CCDM)

CCDM 100 N. Mathematics Preparation for College Success 1-4 Credits
Mathematics skills course designed for college students with math skills insufficient for success in CCDM 103N. May be repeated for a maximum of 4 credits. RR applicable.

CCDM 103 N. Pre-Algebra 4 Credits (3+2P)
Fundamental mathematics operations and arithmetic computations. Introduction to algebra and applied geometry. Provides laboratory and individualized instruction. RR applicable.

CCDM 105 N. Mathematics Preparation and Pre-Algebra 5 Credits (4+2P)
A total immersion course that combines CCDM 100N and CCDM 103N using tutorials, manipulatives, and classroom instruction. Completion of this class is equivalent to the completion of CCDM 100N and CCDM 103N. Restricted to: Community Colleges only. 
Prerequisite(s): Math Placement Test.

CCDM 112 N. Developmental Algebra I 4 Credits (3+2P)
Fundamental algebra operations, algebraic expressions, solving linear equations, systems of equations and applications of linear equations. Introduction to exponents and polynomials. Provides laboratory instruction. Completion of CCDM 112N and CCDM 113N is equivalent to completion of CCDM 114N. Graded: Traditional with RR. Restricted to: Community Colleges campuses only. 
Prerequisite(s): Grade of C or better in CCDM 103N or CCDM 105N or adequate placement score.

CCDM 113 N. Developmental Algebra II 4 Credits (3+2P)
Fundamental algebra operations, polynomials, factoring, solving quadratics by factoring, rational expressions, exponents and radical expressions (continuation of CCDM 112N). Provides laboratory instruction. Completion of CCDM 112N and CCDM 113N is equivalent to completion of CCDM 114N. Graded: Traditional with RR. Restricted to: Community Colleges only. 
Prerequisite(s): Grade of C or better in CCDM 112N or consent of instructor.

CCDM 114 N. Algebra Skills 4 Credits (3+2P)
Fundamental algebra operations: algebraic expressions, solving linear and quadratic equations, factoring, radicals, exponents. Provides laboratory and individualized instruction. Completion of CCDM 114N meets basic skills requirement. Graded: Traditional with RR. Restricted to: Community Colleges campuses only. 
Prerequisite(s): C or better in CCDM 103N or CCDM 105N or adequate placement score.

CCDM 117 N. Intermediate Algebra I 3 Credits
Real numbers, linear equations, functions, inequalities, absolute value equations, systems of equations, exponents and scientific notation, polynomials and polynomial functions, rational expressions. Graded S/U. A student who completes CCDM 117N with a grade of S must then continue with a designated section of MATH 120. 
Prerequisite: student must be qualified for MATH 120.

CCDR-DEVELOPMENTAL READING (CCDR)

CCDR 101 N. Introduction to Basic Reading 4 Credits (3+2P)
Provides basic reading skills through comprehension and vocabulary development. Emphasis on oral language literacy and reading fluency. Course earns institutional credit but will not count towards degree requirements. May be repeated up to 4 credits. Restricted to: Community Colleges campuses only. 
Prerequisite(s): Appropriate placement score.

CCDR 103 N. Comprehensive Reading Development 4 Credits (3+2P)
Provides integration of basic reading skills, including vocabulary development, text comprehension, and critical reading skills. Course earns institutional credit but will not count towards degree requirements. May be repeated up to 4 credits. Traditional Grading with RR. Restricted to: Community Colleges campuses only. 
Prerequisite(s): Appropriate placement score.

CCDR 105 N. Fundamentals of Academic Reading 3 Credits (2+2P)
Fundamentals of academic reading skills. Emphasis on vocabulary development and text comprehension through literature based instruction. Course earns institutional credit but will not count towards degree requirements. Graded: Traditional with RR. May be repeated up to 3 credits. Traditional Grading with RR. Restricted to: Community Colleges campuses only. 
Prerequisite(s): Appropriate placement score.

CCDR 110 N. Effective College Reading 3 Credits (2+2P)
Provides a variety of strategies for effective reading and studying at the college level. Emphasis on reading across disciplines. Course earns institutional credit but will not count towards degree requirements. Graded: Traditional with RR. May be repeated up to 3 credits. Traditional Grading with RR. Restricted to: Community Colleges campuses only. 
Prerequisite(s): Appropriate placement score.

CCDS-DEVELOPMENTAL SKILLS (CCDS)

CCDS 104 N. Comprehensive Reading Development 4 Credits (3+2P)
Integration of basic reading skills, including vocabulary development, text comprehension, and critical reading skills. RR applicable.

CCDS 108 N. Effective Reading 4 Credits (3+2P)
Instruction and practice of skills and strategies for effective reading at the college level. Designed to incorporate applied skill practice lab activities. RR applicable.

CCDS 109 N. Study Skills for Reading 1-3 Credits
Individualized reading skill strategies necessary for success in college classroom. May be repeated for a maximum of 3 credits. 

CCDS 111 N. Study Skills for Math 1-3 Credits
Individualized study skill strategies necessary for success in the math classroom. May be repeated for a maximum of 3 credits.
CCDS 113 N. Study Skills for English
1-3 Credits
Individualized study skill strategies necessary for success in the composition classroom. May be repeated for a maximum of 3 credits.

CHEF-CULINARY ARTS (CHEF)

CHEF 101. Culinary Arts Kitchen Orientation
3 Credits
Provides students with basic information and skills necessary for success in the Culinary Arts program. Students learn basic kitchen routines, safety and sanitation, professional conduct and deportment, standard kitchen calculations, knife handling, and are introduced to the laboratories for initial cooking experiences. Restricted to Community Colleges campuses only.

CHEF 125. Introductory Cake Decorating
1 Credit
Introduction to the professional cake decorating techniques used by pastry chefs. Basic skills of piping a variety of icings into different patterns are taught. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 125.

CHEF 126. Intermediate Cake Decorating
1 Credit
Introduction to more advanced professional cake decorating techniques used by pastry chefs. Fondant work and more complex decorating schemes are taught. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 125.

CHEF 127. Chocolate Work
1 Credit
Introduction to working with chocolate utilizing a variety of methods. Tempering, forming, molding, and other professional techniques will be taught. Restricted to Community Colleges campuses only.
Prerequisite(s): Consent of Instructor.

CHEF 128. Advanced Chocolate Work
1 Credit
More advanced treatments of chocolate are explored and professional techniques for the chocolatier are developed. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 127.

CHEF 129. Wedding Cake Design and Construction
1 Credit
Basic skills in designing wedding (or other specialty event) cakes. Includes shaping, icing selection, decorating scheme, presentation, transportation, and remote set up. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 125 and CHEF 126.

CHEF 155. Special Topics
1-3 Credits (3-9P)
Specific subjects to be announced in the Schedule of Classes. May be repeated up to 6 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 233 with a grade of "C-" or better.

CHEF 165. Math for Kitchen Operations
3 Credits
Fundamental mathematical concepts and computations, including measurement, recipe scaling and conversions, metric unit conversion, ingredient yield calculations, ratios and cost extensions are covered. Examples of basic mathematical calculations use kitchen and food service functions, as well as situations to demonstrate principles.

CHEF 211. Food Production Management I
3 Credits (2+2P)
Introduction to kitchen design, workflow, and commercial equipment. Techniques, methods, and application of basic food production principles. Practical experience in cooking processes from a managerial viewpoint. Crosslisted with: HOST 211. Restricted to Community Colleges only.
Prerequisite(s): CHEF 121 or consent of instructor.

CHEF 212. Food Production Management II
3 Credits (2+2P)
Prerequisite(s): CHEF 211 or consent of instructor.

CHEF 213. Bakery Management I
3 Credits (2+2P)
Prerequisite(s): CHEF 213 or consent of instructor.

CHEF 214. Bakery Management II
3 Credits (2+2P)
Advanced techniques and management of bakery operations are explored. Students learn classical forms and techniques. Modern methods of preparing traditional pastry and baked goods are introduced. Crosslisted with: HOST 218. Restricted to Community Colleges only.
Prerequisite(s): CHEF 213 or consent of instructor.

CHEF 233. Culinary Arts Fundamentals I
4 Credits (1+9P)
Introduction to the basics of culinary arts, including ingredients recognition, cooking methods and techniques, knife usage, preparation of basic stocks, mother sauces, starches and vegetables. Students will participate in laboratory work designed to create an understanding of the professional role of the culinarian. Preparation and production of food products integral to service to guests is incorporated in the course. May be repeated up to 4 credits. Consent of Instructor required. Restricted to: CHEF, HOST, HSMG, HOCH majors. Restricted to Community Colleges campuses only.

CHEF 234. Culinary Arts Fundamentals II
4 Credits (1+9P)
Continuation of introductory course focusing on meat cookery, daughter sauces, cold food preparation, poultry and seafood. Safe use of equipment is emphasized while experiencing differing methods of preparation and cooking. Preparation and production of food products integral to service of guests is incorporated in this course. May be repeated up to 4 credits. Restricted to: HOST, HSMG, CHEF majors. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 233 with a grade of "C-" or better.

CHEF 235. Advanced Culinary Arts I
4 Credits (1+9P)
Exploration and experience in preparation techniques beyond the basic level. Nutritional components of food are discussed, as in the application of good nutrition practices in recipe design. Students are encouraged to use creative methods to expand the individual's culinary expressions. Prepares food products for service to guests in both bulk feeding and individual service settings. Plans, prepares, serves and critiques meals provided for students, faculty and staff. Restricted to: CHEF majors. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 234 with a grade of "C-" or better.
CHEF 236. Advanced Culinary Arts II
4 Credits (1+9P)
Advanced techniques and experimental use of food combinations to enhance the student's repertoire of skills and abilities. Utilizes knowledge to develop recipes for unique products. Plans, prepares, serves and critiques meals provided for students, faculty and staff. Restricted to: CHEF majors. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 235 with a grade of "C" or better.

CHEF 237. Banquet/Catering Production
3 Credits (1+6P)
Planning and implementation of the culinary aspects of catered functions. Development of time schedules, work assignments and service plans for catered events and banquet functions. Production of food items in appropriate quantities for catered events. Costing and control functions are covered. May be repeated up to 6 credits. Restricted to: CHEF majors. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 233.

CHEF 238. Production of Simple Desserts & Baked Goods
4 Credits (1+9P)
Introduction to baking techniques, measurement and use of ingredients; equipment use and chemical reactions inherent in the baking process. Production of simple desserts and baked goods. Introduction to working with bread doughs. Restricted to: HOST, CHEF majors. Restricted to Community Colleges campuses only.
Corequisite(s): CHEF 233.

CHEF 239. Intermediate Baking I
4 Credits (1+9P)
More advanced baking and bread making techniques are covered in this course with emphasis on the more advanced elements of quantity production. Students work with a variety of products and ingredients. Restricted to: HOST, CHEF majors. Restricted to Community Colleges campuses only.
Prerequisite(s): grade of "C" or above in CHEF 240.

CHEF 240. Baking Fundamentals II
4 Credits (1+9P)
Introduction to baking techniques, measurement and use of ingredients; equipment use and chemical reactions inherent in the baking process. Production of simple desserts and baked goods. Introduction to working with bread doughs. Restricted to: HOST, CHEF majors. Restricted to Community Colleges campuses only.
Corequisite(s): CHEF 233.

CHEF 241. Baking Fundamentals II
4 Credits (1+9P)
More advanced baking and pastry techniques are covered in this course with emphasis on the more advanced elements of patisserie production. Focus is on preparing students to work in a pastry kitchen. Restricted to: HOST, CHEF majors. Restricted to Community Colleges campuses only.
Prerequisite(s): Grade of "C" or above in CHEF 241.

CHEF 242. Intermediate Baking II
3 Credits (1+6P)
Continuation of work with basic elements of patisserie products including laminated doughs and filled products. Students prepare creams, custards, fillings and are introduced to cake assembly procedures. Restricted to: HOST, CHEF majors. Restricted to Community Colleges campuses only.
Prerequisite(s): Grade of "C" or above in CHEF 241.

CHEF 243. Pastry Art and Techniques
3 Credits (1+6P)
Advanced skills for the pastry chef including pulled sugar work, spun sugar, chocolate art, pastillage, marzipan molding, butter carving and advanced decorating techniques are explored. Students prepare specialty items for display and competition. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CHEF majors. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 240.

CHEF 245. Pastry Art and Techniques
3 Credits
Advanced techniques and experimental use of food combinations to enhance the student's repertoire of skills and abilities. Utilizes knowledge to develop recipes for unique products. Plans, prepares, serves and critiques meals provided for students, faculty and staff. Restricted to: CHEF majors. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 235 with a grade of "C" or better.

CHEF 255. Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated up to 6 credits. Restricted to: CULI, HOST, HSMG majors. Restricted to Community Colleges campuses only.

CHEF 256. International Cuisine
3 Credits (1+6P)
Exploration into a variety of international cuisines is undertaken, including the cultural and historical backgrounds of the foods being prepared. Students work on developing themed menus and production plans for meals utilizing a single international cuisine. May be repeated up to 6 credits. Restricted to: CULI, HOST majors. Restricted to Community Colleges campuses only.
Prerequisite(s): CHEF 234.

CHEF 257. Garde Manger
3 Credits (1+6P)
Traditional garde manger skills are taught, including plated salads, cold foods, entremets, pates, forcemeat, terrines, charcuterie and chaud froid work. The art and craft of food design, preparation and service are emphasized. Restricted to: CHEF & HOST majors. Restricted to Community Colleges only.
Prerequisite(s): CHEF 234.

CHEF 258. Nutrition for Chefs
3 Credits
Aspects of basic human nutritional requirements are covered as are the applications of the standards to the cooking and baking. Meeting the USDA nutrient guidelines while preparing good tasting food is discussed, calorie, fat and sodium reduction techniques are explored.

CHEM-CHEMISTRY (CHEM)

CHEM 100. Basic Chemistry
3 Credits
For students whose preparatory science or math training has been deficient. Does not meet the chemistry requirement in any curriculum.
Prerequisite: Enhanced ACT composite score of at least 18 or a grade of C or better in CCDM 114N.

CHEM 101. General Supplemental Instruction I
1 Credit
Collaborative workshop for students in General Chemistry I. Course does not count toward departmental degree requirements. May be repeated for a maximum of 2 credits.
Corequisite: CHEM 111G.

CHEM 102. General Supplemental Instruction II
1 Credit
Collaborative workshop for students in General Chemistry II. Course does not count toward departmental degree requirements. May be repeated for a maximum of 2 credits.
Corequisite: CHEM 112G.

CHEM 103. Principles of Supplemental Instruction III
1 Credit
Collaborative workshop for students in CHEM 110G, Principles and Applications of Chemistry. Course does not count toward departmental degree requirements. May be repeated for a maximum of 2 credits.
Co-requisite: CHEM 110G.
CHEM 110G. Principles and Applications of Chemistry
4 Credits (3+3P)
A survey of the properties and uses of the elements and their compounds. In addition to classical chemistry, attention is paid to the materials from which consumer products are made, to the production of energy, and to environmental considerations.
**Prerequisite:** 3 years of high school math or CCDM 114N.

CHEM 111G. General Chemistry I
4 Credits (3+3P)
Descriptive and theoretical chemistry. CHEM 111G/112G are General Education alternative to CHEM 110G.
**Prerequisite:** (1) grade of C or better in MATH 120 or a Mathematics Placement Exam Score adequate to enroll in mathematics courses beyond MATH 120; and (2) one of the following: B or better in a second semester high school chemistry course, or grade of at least C in CHEM 100, or an enhanced ACT score of at least 22.

CHEM 112G. General Chemistry II
4 Credits (3+3P)
Descriptive and theoretical chemistry. CHEM 111G/112G are General Education alternative to CHEM 110G.

**CHEM 115. Principles of Chemistry I**
4 Credits (3+3P)
Detailed introduction to analytical, inorganic and physical aspects of chemistry; both descriptive and theoretical explanations. Structured for chemistry and biochemistry majors but appropriate for other physical and life science students. CHEM 115/116 are General Education alternatives to CHEM 110G.
**Prerequisite(s):** CHEM 111G.

**CHEM 116. Principles of Chemistry II**
4 Credits (3+3P)
Recommended for chemistry majors and other qualified students. CHEM 115/116 are General Education alternatives to CHEM 110G.
**Prerequisites:** grade of C or better in CHEM 115.

**CHEM 210. Chemistry for the Allied Health Sciences**
3 Credits
Discussion and application of the established facts and concepts of general organic chemistry and biochemistry to acquire a molecular understanding of a variety of health related issues, from atmospheric ozone holes to human nutrition.
**Prerequisite:** CHEM 110G or CHEM 111G.

**CHEM 211. Organic Chemistry**
4 Credits (3+3P)
A one-semester survey for students requiring a brief coverage of important classes of organic compounds.
**Prerequisite:** CHEM 112G or CHEM 114.

**CHEM 217. General Chemistry III**
3 Credits (2+3P)
Quantitative aspects of general chemistry: solid state structure, equilibrium, thermodynamics, and kinetics. Required of chemical science majors who have taken CHEM 111G/112.
**Prerequisite:** CHEM 112G.

**CHEM 241. Introduction to Research**
1-3 Credits (3+9P)
Techniques and procedures of chemical research. May be repeated for a maximum of 3 credits.
**Prerequisites:** 8 credits of chemistry and a 3.0 GPA in chemistry.

**CHEM 242. Explorations in Chemistry**
1 Credit
Historical and current developments, careers in chemistry, computer applications and use of the library by chemists. To be completed before the end of the sophomore year. Graded S/U.

**CHEM 251. Special Topics in Chemistry**
1-6 Credits (1-6)
Specific subjects in Chemistry. These subjects will be announced in the 'Schedule of Classes'. It may be repeated under different topics for a maximum of 12 credits.

**CHEM 303. Organic Supplemental Instruction I**
1 Credit
Collaborative workshop for students in Organic Chemistry I. Course does not count toward departmental degree requirements. May be repeated for a maximum of 2 credits.
**Corequisite:** CHEM 313.

**CHEM 304. Organic Supplemental Instruction II**
1 Credit
Collaborative workshop for students in Organic Chemistry II. Course does not count toward departmental degree requirements. May be repeated for a maximum of 2 credits.
**Corequisite:** CHEM 314.

**CHEM 313. Organic Chemistry I**
3 Credits
Nomenclature, uses, basic reactions, and preparation methods of the most important classes of aliphatic and aromatic compounds.
**Prerequisite:** CHEM 112G or CHEM 116.

**CHEM 314. Organic Chemistry II**
3 Credits
Nomenclature, uses, basic reactions, and preparation methods of the most important classes of aliphatic and aromatic compounds.
**Prerequisite:** C or better in CHEM 313.

**CHEM 315. Organic Chemistry Laboratory**
2 Credits
Techniques, preparative and analytical methods in organic chemistry.
**Prerequisite:** C or better in CHEM 313 or consent of instructor.
**Corequisite:** CHEM 314.

**CHEM 351. Special Topics**
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.
**Prerequisite:** consent of instructor.

**CHEM 356. Descriptive Inorganic Chemistry**
3 Credits
Occurrence and properties of the elements and the chemistry of their compounds.
**Prerequisites:** CHEM 112G and CHEM 116; and CHEM 211 or CHEM 313.

**CHEM 357. Synthetic Inorganic Laboratory**
2 Credits
Explores synthesis and analysis of main group and transition metal inorganic compounds. Inorganic laboratory and spectroscopic techniques will be used.
**Prerequisites:** CHEM 356.

**CHEM 360. General Geochemistry**
3 Credits
Same as GEOL 360.
CHEM 371. Analytical Chemistry 4 Credits (2+6P)
The fundamentals of quantitative chemical analysis.
Prerequisite: CHEM 112G.

CHEM 422. Environmental Chemistry 3 Credits
Chemistry of organic and metal ion pollutants in the environment and
principles important to their remediation including bioremediation.
Restricted to: Main campus only. Crosslisted with: E S 422
Prerequisite(s): CHEM 112G and either CHEM 211 or CHEM 313.

CHEM 424. Soil Chemistry 3 Credits
Same as SOIL/GEOL 424.

CHEM 431. Physical Chemistry 3 Credits
Principles that govern the physical and chemical behavior of matter. May
not be counted toward Bachelor of Science degree in Chemistry.
Prerequisite(s): CHEM 116 or CHEM 217; MATH 192G; PHYS 212 or
PHYS 222G or PHYS 214 or PHYS 216G.

CHEM 431 H. Physical Chemistry Honors 3 Credits
Same as CHEM 431. Additional work to be arranged.
Prerequisite(s): CHEM 116 or CHEM 217; MATH 192G; PHYS 212G or
PHYS 222G or PHYS 214 or PHYS 216G.

CHEM 433. Physical Chemistry I 3 Credits
Laws and theories underlying chemical phenomena.
Prerequisite(s): CHEM 116 or CHEM 217; MATH 192G; PHYS 214 or
PHYS 216G, or consent of instructor.

CHEM 433 H. Physical Chemistry I Honors 3 Credits
Same as CHEM 433. Additional work to be arranged.
Prerequisite(s): CHEM 116 or CHEM 217; MATH 192G; PHYS 214 or
PHYS 216G, or consent of instructor.

CHEM 434. Physical Chemistry II 3 Credits
Laws and theories underlying chemical phenomena.
Prerequisite: CH E 302 or CHEM 433.

CHEM 435. Physical Chemistry Laboratory 2 Credits
Prerequisite: concurrent registration in CHEM 434.

CHEM 441. Advanced Research 1-3 Credits (3+9P)
Investigation of chemical problems and the development of special
techniques. May be repeated for a maximum of 3 credits.
Prerequisites: consent of instructor, 16 credits of chemistry and 3.0 GPA
in chemistry for nonmajors.

CHEM 443. Senior Seminar 1 Credit
Discussions of current chemical research, impact of chemistry on society
and/or ethics as applied to chemists. Each student will present a written
and an oral report on an approved topic.
Prerequisite: CHEM 431 or CHEM 433.

CHEM 451. Special Topics 1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be
repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.

CHEM 455. Independent Studies 1-3 Credits
Independent studies directed by consulting faculty.
Prerequisite: consent of instructor.

CHEM 456. Inorganic Structure and Bonding 3 Credits
Theoretical principles and a systematic study of the periodic table.
Prerequisite: CHEM 356 or CHEM 431 or CHEM 433.

CHEM 466. Advanced Organic Chemistry 3 Credits
Recent developments in synthesis and theoretical principles of organic
chemistry.
Prerequisite: CHEM 314.

CHEM 466 H. Advanced Organic Chemistry Honors 3 Credits
Same as CHEM 466. Additional work to be arranged.

CHEM 471. Instrumental Methods of Analysis 4 Credits (3+3P)
Analytical techniques, including optical and procedures.
Prerequisites: CHEM 371 and either PHYS 212G or PHYS 216G.

CHEM 500. Seminar in Inorganic Chemistry 1 Credit
Current topics. May be repeated.

CHEM 506. Atomic and Molecular Structure in Inorganic Chemistry 3 Credits
Theories of ionic and molecular bonding.

CHEM 507. Chemistry of the Elements 3 Credits
Discussion of the reactions and structures of inorganic compounds.

CHEM 508. Main Group Chemistry 3 Credits
Chemistry, structure and bonding of main group elements are covered
along with some spectroscopy.

CHEM 509. Transition Metal Chemistry 3 Credits
The chemistry, bonding theory, spectroscopy and industrial applications
of the transition metals will be covered.

CHEM 510. Seminar in Organic Chemistry 1 Credit
Current topics. May be repeated.

CHEM 514. Organic Structure Determination 3 Credits
Modern spectroscopic techniques for characterization of organic
compounds.

CHEM 515. Modern Organic Chemistry 3 Credits
Recent developments in synthesis and theoretical principles of organic
chemistry.

CHEM 516. Physical Organic Chemistry 3 Credits
Physical organic chemistry.
CHEM 517. Synthetic Organic Chemistry  
3 Credits  
Synthetic methods in organic chemistry.

CHEM 520. Seminar in Analytical Chemistry  
1 Credit  
Current topics. May be repeated.

CHEM 521. Chemical Instrumentation  
3 Credits (2+3P)  
Theory and application of electronic devices to chemical analysis.

CHEM 526. Advanced Analytical Chemistry  
3 Credits  
Equilibria, and the theories of gravimetric, volumetric, and instrumental analysis.

CHEM 527. Separations  
3 Credits  
Covers the fundamentals of separation methods and relationships to modern analytical techniques such as gas chromatography and liquid chromatography.

CHEM 528. Electroanalytical Techniques  
3 Credits  
Theory and application of modern electrochemical methods of analysis including voltammetry, amperometry, modern cyclic and pulse methods, and stripping analysis.

CHEM 529. Spectrochemical Analysis  
3 Credits  
Fundamentals, instrumentation, and applications of spectrochemical analysis.

CHEM 530. Seminar in Physical Chemistry  
1 Credit  
Current topics. May be repeated.

CHEM 536. Chemical Thermodynamics  
3 Credits  
First, second, and third laws of thermodynamics, and the concepts, interrelations, and applications of thermodynamic state functions.

CHEM 537. Quantum Chemistry  
3 Credits  
Fundamentals of quantum mechanics.  
Prerequisite: consent of instructor.

CHEM 538. Chemical Kinetics  
3 Credits  
Empirical analysis of rate measurements, collision theory, transition state theory, and chain reactions.

CHEM 539. Spectroscopy  
3 Credits  
Molecular spectroscopy for physical chemistry. Quantum mechanics applied to spectroscopy of polyatomic molecules: UV-Vis, IR, magnetic resonance. CHEM 537 desired but not required. Prerequisite: consent of instructor.  
Prerequisite: consent of instructor.

CHEM 550. Discussions in Inorganic Chemistry  
1 Credit  
Current research problems in inorganic chemistry. May be repeated. Graded S/U.

CHEM 557. Discussions in Analytical Chemistry  
1 Credit  
Current research problems in analytical chemistry. May be repeated. Graded S/U.

CHEM 580. Discussions in Physical Chemistry  
1 Credit  
Current research problems in physical chemistry. May be repeated. Graded S/U.

CHEM 598. Special Research Programs  
1-3 Credits  
Individual investigations, either analytical or experimental. Graded S/U.

CHEM 599. Master's Thesis  
15 Credits  
Thesis preparation.

CHEM 600. Research  
1-15 Credits  
Course used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination.

CHEM 609. Topics in Inorganic Chemistry  
1-3 Credits  
Selected topics of current interest designated by subtitle.

CHEM 619. Topics in Organic Chemistry  
1-3 Credits  
Selected topics of current interest designated by subtitle.

CHEM 629. Advanced Topics in Analytical Chemistry  
3 Credits  
Discussion of advanced topics in the field of analytical chemistry. May be repeated with different subtitles. Consent of instructor required.

CHEM 639. Topics in Physical Chemistry  
1-3 Credits  
Selected topics of current interest designated by subtitle.

CHEM 650. Advanced Seminar  
1 Credit  
Intended for students who have earned a master's degree or the equivalent. A discussion of current topics of interest in chemistry. May be repeated.

CHEM 700. Doctoral Dissertation  
17 Credits  
Dissertation preparation.

CHIN-CHINESE (CHIN)

CHIN 111. Elementary Chinese I  
4 Credits  
Mandarin Chinese for beginners.

CHIN 112. Elementary Chinese II  
4 Credits  
Mandarin Chinese for beginners.  
Prerequisite: C or better in CHIN 111.

CHIN 211. Intermediate Chinese I  
3 Credits  
Speaking, reading and writing Mandarin Chinese. Restricted to Las Cruces campus only.  
Prerequisite(s): C or better in CHIN 112.
CHIN 212. Intermediate Chinese II
3 Credits
Speaking, reading and writing Mandarin Chinese. Restricted to Las Cruces campus only.
Prerequisite(s): C or better in CHIN 211.

CHIN 311. Advanced Chinese Language I
3 Credits
This course emphasizes the development of advanced oral, aural, reading and writing skills in Mandarin Chinese. Expanding of vocabulary and development of reading comprehension will be through different genres of authentic texts. Students will be trained to write short essays on a variety of topics.
Prerequisite(s): Grade of C or better in CHIN 211 and CHIN 212.

CHIN 312. Advanced Chinese Language II
3 Credits
This course emphasizes the development of advanced oral, aural, reading and writing skills in Mandarin Chinese. Expanding of vocabulary and development of reading comprehension will be through different genres of authentic texts. Students will be trained to write short essays on a variety of topics.
Prerequisite(s): Grade of C or better in CHIN 311.

CHME-CHEMICAL & MATERIALS ENGR (CHME)

CHME 101. Introduction to Chemical Engineering Calculations
2 Credits
Introduction to the discipline of chemical engineering, including: an overview of the curriculum; career opportunities; units and conversions; process variables; basic data treatments; and computing techniques including computer programming and use of spreadsheets.
Prerequisite(s)/Corequisite(s): MATH 190G. Restricted to Las Cruces campus only.

CHME 102. Material Balances
2 Credits
Perform material balances in single- and multi-phase, reacting and non-reacting systems under isothermal conditions.
Prerequisite(s)/Corequisite(s): CHEM 111G or CHEM 115. Prerequisite(s): MATH 190G, CHME 101.

CHME 201. Energy Balances & Basic Thermodynamics
3 Credits
Chemical Engineering energy balances; combined energy and material balances including those with chemical reaction, purge and recycle; thermochemistry; application to unit operations. Introduction to the first and second laws of thermodynamics and their applications. May be repeated up to 3 credits. Restricted to Las Cruces campus only.
Prerequisite(s): CHME 102, CHEM 115 or CHEM 111G, and MATH 192G.

CHME 301. Chemical Engineering Thermodynamics I
3 Credits
Applications of the first and second law to chemical process systems, especially phase and chemical equilibria and the behavior of real fluids. Development of fundamental thermodynamic property relations and complete energy and entropy balances.
Prerequisite(s)/Corequisite(s): CHME 392 or MATH 392. Prerequisite(s): CHME 201, MATH 291G. Restricted to: CHME majors.

CHME 302. Chemical Engineering Thermodynamics II
2 Credits
Continuation of CHME 301. Restricted to: CHME majors.
Prerequisite(s): CHME 301 AND (CHME 392 OR MATH 392).

CHME 302 L. Thermodynamic Models of Physical Properties
1 Credit
Prerequisite(s)/Corequisite(s): CHME 302.

CHME 303. Chemical Engineering Thermodynamics
4 Credits
Applications of the First Law and Second Law to chemical process systems, especially phase and chemical equilibria and the behavior of real fluids. Development of fundamental thermodynamic property relations and complete energy and entropy balances. Modeling of physical properties for use in energy and entropy balances, heat and mass transfer, separations, reactor design, and process control. May be repeated up to 4 credits.
Prerequisite(s)/Corequisite(s): MATH 392. Prerequisite(s): CHME 201, MATH 291.

CHME 305. Transport Operations I: Fluid Flow
3 Credits
Prerequisite(s)/Corequisite(s): CHME 392. Prerequisite(s): CHME 201, PHYS 215G, MATH 291G. Restricted to: CHME majors.

4 Credits
Prerequisite(s): CHME 305 and (CHME 392 or MATH 392).

3 Credits
Prerequisite(s): CHME 302, CHME 306.

CHME 311. Engineering Data Analysis
3 Credits
Methodology and techniques associated with analyzing engineering data. Extensive spreadsheet use to analyze data and develop statistically significant conclusions based on the data. Data sets range from single variable experiments to multifactor regression analysis.
Prerequisite(s): MATH 192.
CHME 323 L. Transport Operations and Instrumentation Laboratory I
1 Credit
Laboratory experiments demonstrate the principles of process measurement and instrumentation through the determination of thermodynamic properties, transport phenomena properties, heat transfer, and material physical properties. Treatment of data includes regression techniques, analysis of error, and statistical analysis.
Prerequisite(s)/Corequisite(s): CHME 306. Prerequisite(s): STAT 371 or CHME 311. Restricted to: CHME majors.

CHME 324 L. Transport Operations and Instrumentation Laboratory II
1 Credit
Continuation of CHME 323L. Restricted to: CHME majors.
Prerequisite(s): CHME 323L.

CHME 330. Environmental Management Seminar I
1 Credit
Survey of practical and new developments in environmental management field, hazardous and radioactive, waste management, and related health issues, provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: C E 330, E E 330, E S 330, E T 330, I E 330, M E 330 and WERC 330

CHME 352 L. Simulation of Unit Operations
1 Credit
Definition, specification, and convergence of basic unit operations in a process simulator. Course will cover pipe networks, pressure changers, heat exchangers, distillation columns, and chemical reactors.
Prerequisite(s)/Corequisite(s): CHME 307, CHME 441. Restricted to: CHME majors.

CHME 361. Engineering Materials
3 Credits
Prerequisite(s): (CHEM 111G or CHEM 114 or CHEM 115) and MATH 190G.

CHME 391. Industrial Employment
1-2 Credits
Employment in chemical, petroleum, food, biotechnology, materials, environmental, pharmaceutical, or other industry relevant to the discipline, with opportunity for professional experience and training in chemical engineering. Requires written report covering work period approved by employer. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CHME majors.
Prerequisite(s): Consent of department head.

CHME 392. Numerical Methods in Engineering
3 Credits
Study and application of numerical methods in solving problems commonly encountered in engineering. The numerical methods are motivated by engineering problems rather than by mathematics. However, sufficient mathematical theory will be provided so that students can appreciate the insight into the techniques and their shortcomings of different methods. MATLAB will be used as the working environment for implementing and performing the numerical methods in computers. This course is an engineering elective open to all engineering majors. May be repeated up to 3 credits.
Prerequisite(s): MATH 392.

CHME 395V. Brewing Science and Society
3 Credits
An overview of the science of brewing and the interrelationships between society, technology, business, and the evolution of the current beer market. Topics covered are history of brewing and the interrelationships between societal attitudes, technology, and cultural preferences; beer styles and evaluation techniques; production and characteristics of ingredients used in brewing; brewing unit operations; biochemistry of malting, mashing, and fermentation; engineering in the brewery; homebrewing; and societal and health issues related to beer and alcohol. Students must be at least 21 years of age by the first day of instruction of the semester to enroll in this course.

CHME 412. Process Dynamics and Control
3 Credits
Prerequisite(s): CHME 441.

CHME 423 L. Unit Operations Laboratory I
1 Credit
Experiments with chemical engineering unit operations including the use of computer data acquisition. Covers control system instrumentation and development of empirical models from process data. Includes written and oral reports. Restricted to: CHME majors.
Prerequisite(s): CHME 307, CHME 441, CHME 324L.

CHME 424 L. Process Control Laboratory
1 Credit
Experiments with chemical engineering process control including the use of computer data acquisition and closed-loop process control. Covers control system instrumentation. Includes written and oral reports. Restricted to: CHME majors.
Prerequisite(s): CHME 412, CHME 423L.

CHME 430. Environmental Management Seminar II
1 Credit
Survey of practical and new developments in environmental management field, hazardous and radioactive, waste management, and related health issues, provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: C E 430, E E 430, E S 430, E T 430, I E 430, M E 430 and WERC 430

CHME 441. Chemical Kinetics and Reactor Engineering
3 Credits
Analysis and interpretation of kinetic data and catalytic phenomena. Applied reaction kinetics; ideal reactor modeling; non-ideal flow models. Mass transfer accompanied by chemical reaction. Application of basic engineering principles to design, operation, and analysis of industrial reactors.
Prerequisite(s)/Corequisite(s): CHME 307. Prerequisite(s): CHEM 313, CHME 302. Restricted to: CHME,CH E majors.

CHME 443. Industrial Catalysis
3 Credits
Fundamentals of catalytic processes, including chemistry, catalyst preparation, properties and reaction engineering. Addresses heterogeneous catalytic processes employed by industry. Detailed analysis of existing catalysts and catalytic reactions, and process design in chemical engineering.
Prerequisite(s): CHME 441.
CHME 448. Industrial Safety
3 Credits
An introduction to the fundamentals of chemical process safety, including toxicology, industrial hygiene, source models, fires and explosions, relief systems, hazard identification, risk assessment, environmental fate and transport, hazardous waste generation, pollution prevention, and regulatory requirements.
Prerequisite(s): CHEM 115 or CHEM 111G.

CHME 449. Intellectual Property for Engineers and Scientists
3 Credits
An overview of intellectual property with an emphasis on patents. Terminology, patentability requirements, invention disclosures, inventorship, scope of claims, patent application content and the patent prosecution process, and post-allowance matters including infringement and enforcement. Taught with CHME 549.
Prerequisite(s): CHEM 110G, CHEM 111G, or CHEM 115G; and senior standing in engineering or a fundamental science major; or consent of instructor.

CHME 452. Chemical Process Design & Economic Evaluation
3 Credits
Concepts in chemical engineering process design, including: capital and manufacture cost estimation; discounted cash flows; interest; taxes; depreciation; profitability analysis; project specifications. Restricted to: CHME, CHEE majors.
Prerequisite(s): CHME 307, CHME 441.

CHME 452 L. Chemical Process Simulation
1 Credit
Construction and convergence of chemical processes in a process simulator. Students will understand how to access variables, define and converge design specifications and converge tear/recycle streams.
Prerequisite(s)/Corequisite(s): CHME 452. Prerequisite(s): CHME 352L. Restricted to: CHME majors.

CHME 455. Chemical Plant Design
3 Credits
Design and analysis of integrated process plants. Consideration given to optimizing performance, operability, reliability, safety, control, energy integration, and cost effectiveness. Requires written report covering solution of a capstone design problem. Restricted to: CHME majors.
Prerequisite(s): CHME 452.

CHME 455 L. Chemical Plant Simulation
1 Credit
Construction, convergence, and optimization of chemical processes in a process simulator. Dynamic process simulation and control.
Prerequisite(s)/Corequisite(s): CHME 455. Prerequisite(s): CHME 412, CHME 452L. Restricted to: CHME majors.

CHME 461. Calculation of Material and Molecular Properties
3 Credits
The aim is to describe and apply techniques for computing common properties of materials and molecules: optimized geometries, transition states, vibrational spectra, energies (electronic, internal energy, enthalpy, and Gibbs free energy), heat capacities, net atomic charges, atomic spin moments, and effective bond orders. These techniques allow one to estimate the thermodynamic properties of a chemical, as well as to compute the mechanisms and energy barriers for chemical reactions and catalytic processes, and to quantify the electronic, magnetic, and chemical ordering in materials. The theory behind these techniques will be described and students will perform hands-on computer exercises using common computational chemistry programs. Taught with CHME 561.
Prerequisite(s): CHEM 116, MATH192G, (PHYS 214 or PHYS 216).

CHME 462. MEMs, BioMEMs, and Nano Devices & Technologies
3 Credits
Device-fabrication approaches and testing methodologies for micro-electro-mechanical (MEM) systems and nanoscale devices. Applications of such devices, and their working principles will also be part of this course. A laboratory component of this course will also be included. Taught with CHME 562. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): CH E 361, CHEM 111.

CHME 463. Soft Matter
3 Credits
Prerequisite(s): CH E 302, CH E 305, CH E 361.

CHME 464. Polymer Science & Engineering
3 Credits
This course covers concepts in science and engineering of macromolecules, such as synthesis and chemistry, characterization of molecular weight, morphology, rheology, and mechanical behavior, structure and property relationships, and polymer processing. Taught with CHME 564. May be repeated up to 3 credits.
Prerequisite(s): CHEM 314.

CHME 465. Rheology and Viscoelasticity
3 Credits
Navier-Stokes equation; non-Newtonian fluids; flow fields; rheometry; viscoelastic models; non-linear viscoelasticity; material functions; complex fluids, including emulsions, suspensions and nanocomposites. Taught with CHME 565. Consent of Instructor required.
Prerequisite(s): CHEM 306.
CHME 467. Nanoscience and Nanotechnology  
3 Credits  
This is a lecture/laboratory course designed to present the basic concepts, the techniques and the tools to synthesize and characterize nanometer scale materials, and the latest achievements in current and future nanotechnology applications in engineering, materials, physics, chemistry, biology, electronics and energy. It is intended for a multidisciplinary audience with a variety of backgrounds. This course should be suitable for graduate students as well as advanced undergraduates. Topics covered will include: nanoscience and nanotechnology, nanofabrication, self-assembly, colloidal chemistry, sol-gel, carbon nanotubes, graphene, thin film, lithography, physical vapor deposition, chemical vapor deposition, quantum dots, lithium batteries, X-ray diffraction, scanning electron microscopy, transmission electron microscopy, nanoelectronics, nanophotonics and nanomagnetics, etc. Taught with PHYS 520 and CH E 567. Crosslisted with: PHYS 520 and microscopy, nanoelectronics, nanophotonics and nanomagnetics, etc.

Prerequisite(s): PHYS 467.

CHME 468. Adsorption  
3 Credits  
Introduction to adsorption science and technology, which includes adsorption equilibrium and kinetic theories, adsorbent materials and characterization, adsorption processes and design. Selected applications of adsorption processes in chemical and pharmaceutical industries and environmental protections will also be discussed. Taught with CHME 568. Restricted to: CHME, CH E majors.

Prerequisite(s): CHME 201.

CHME 470. Introduction to Nuclear Energy  
3 Credits  
Atomic and nuclear structure, nuclear stability and radioactivity, nuclear reactions, detection and measurement of radiation, interaction of radiation with matter, radiation doses and hazard assessment, principles of nuclear reactors, and applications of nuclear technology.

Prerequisite(s): CHEM 111G, MATH 192G.

CHME 471. Health Physics  
3 Credits  
Introduction to radiation protection, radiation/ radioactivity, radioactive decay/fission, interactions of radiation and matter, biological effects of radiation, radiation measurement and statistics, sampling for radiation protection, radiation dosimetry, environmental transport, radiation protection guidance, external and internal radiation protection, and hazards analysis.

Prerequisite(s): MATH 192G, CHME 470.

CHME 472. Detection Techniques for Radionuclides and Volatile Organic Compounds  
3 Credits  
Basics of analytical techniques used to detect and quantify the presence of radionuclides, with focus on lung and whole-body counting by gamma-ray spectrometry and gas chromatography/mass spectrometry techniques. Course also covers sampling techniques, chain-of-custody methods, and includes hands-on instrument experience at the Carlsbad Environmental Monitoring & Research Center (CEMRC). Course fee required for travel to CEMRC.

Prerequisite(s): CHME 470.

CHME 473. Nuclear Regulations and Compliance Practices  
3 Credits  
Introduction, through the use of case studies, to the best technical compliance practices for regulations governing the siting, licensing, constructing, operating and decommissioning of nuclear fuel cycle facilities. Consent of Instructor required.

Prerequisite(s): MATH 191G, (CHEM 111G or CHEM 115), CHME 470.

CHME 474. Power Plant Design  
3 Credits  
Principles of electric power generation. Review of DC and AC systems, energy sources, and prime movers. Analysis of hydroelectric, fossil fuel, nuclear, and alternative power systems. Environmental and economic considerations.

Prerequisite(s): MATH 191G, CHEM 111G.

CHME 475. Nuclear Reactor Theory  
3 Credits  
An overview of the properties of nuclei, nuclear structure, radioactivity, nuclear reactions, fission, resonance reactions, moderation of neutrons, will be followed by mathematical treatment of the neutronics behavior of fission reactors, primarily from a theoretical, one-speed perspective. Criticality, fission product poisoning, reactivity control, reactor stability and introductory concepts in fuel management, slowing down and one-speed diffusion theory.

Prerequisite(s): (CHEM 112G or CHEM 116G) PHYS 215G, MATH 291G, CHME 470.

CHME 476. Nuclear Fuel Cycles  
3 Credits  
Physical and chemical processes in the conventional nuclear fuel cycle: uranium mining and milling, conversion, enrichment, fuel fabrication, reactor operations, interim storage, reprocessing and recycling, waste treatment and disposal. Alternative fuel cycles and future prospects. Consent of Instructor required.

Prerequisite(s): CHME 470.

CHME 477. Corrosion and Degradation of Materials  
3 Credits  
Failure of engineering materials in aggressive environments. Chemical and electrochemical mechanisms of corrosion. Influence of chemical composition and microstructure on corrosion behavior. Types of corrosion and chemical attack, including uniform corrosion, galvanic corrosion, pitting and other forms of localized corrosion, stress corrosion cracking, and corrosion fatigue. Methods of corrosion mitigation including cathodic protection, coatings, passivation, and corrosion inhibitors. Corrosion in nuclear reactors and nuclear waste repositories.

Prerequisite(s): CHME 361.

CHME 481. Biomedical Engineering and Engineering Healthcare  
3 Credits  
Orientation to solving human and world health issues with biological engineering systems, tools, and analysis methods. Introduces general concepts including applied biology for engineers, biophotonics, biosensing, bioinstrumentation, tissue and biomaterials engineering, biomedical engineering research practices, and physical bioanalytical methods. Taught with CHME 581. Restricted to: CHME, CH E majors.

Prerequisite(s): CHEM 116G, CHME 201.
CHME 485. Materials from Biorenewable Resources  
3 Credits  
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Taught with CHME 585. Crosslisted with: AGRO 485 and HORT 486.  
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

CHME 486. Biofuels  
3 Credits  
Introduction to the fundamentals and applications of biofuels and bioenergy production; biomass resources and their composition; types of biofuels; conversion technologies (thermochemical and biochemical conversion processes); biodiesel production, algae to biofuels; economic and environmental assessments; term paper of selected topics relevant to biofuels. May be repeated up to 3 credits. Consent of Instructor required.  
Prerequisite(s): CHME 201.

CHME 488. Elements of XRD  
3 Credits  
Introduction to x-ray diffraction and reflectivity spectra. Topics include X-ray sources and detectors, atomic spectra, characteristic x-rays, thermionic emission, synchrotron radiation, instrument components, and beam conditioners. Crosslisted with: PHYS 468.  
Prerequisite(s)/Corequisite(s): Phys 315 and Phys 315 L.

CHME 489. Introduction to Modern Materials  
3 Credits  
Structure and mechanical, thermal, electric, and magnetic properties of materials. Modern experimental techniques for the study of material properties. Crosslisted with: PHYS 489.  
Prerequisite(s): PHYS 315 or engineering equivalent.

CHME 490. Senior Seminar  
1 Credit  
Research seminar attended by graduate students is open to CHME undergraduates who are research active. May be repeated up to 2 credits.  
Prerequisite(s)/Corequisite(s): CHME 498. Prerequisite(s): Senior Standing. Restricted to: CHME, CH E majors.

CHME 491. Special Topics  
3 Credits  
Lecture and/or laboratory instruction on special topics in chemical engineering. May be repeated to a maximum of 6 credits under different subtitles listed in the Schedule of Classes. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CHME, CH E majors.  
Prerequisite(s): Consent of instructor.

CHME 495. Brewing Science & Engineering  
4 Credits (3+3P)  
Details of beer production, fermentation science, brewery operation, and process design & economics. Engineering considerations including process safety, fermentation kinetics, unit operations, and economies of scale. Beer styles, recipe formulation, product quantification for tax purposes, and brew analytical methods will also be discussed. Restricted to: CHME CH E majors.  
Prerequisite(s): CHME 441, CHME 452.

CHME 498. Undergraduate Research  
1-3 Credits (1-3P)  
Provides an opportunity for undergraduate students to work in research or areas of special interest such as design problems and economic studies under the direction of a faculty member. Written report covering work required. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: CHME, CH E majors.  
Prerequisite(s): Consent of instructor and department head.

CHME 501. Graduate Thermodynamics for Chemical Engineers  
3 Credits  
Advanced applications of the first and second law to chemical process systems. The calculus of thermodynamics, equilibrium and stability criteria. Properties relationships for real fluids, both pure materials and mixtures. An introduction to molecular thermodynamics and statistical mechanics. Restricted to: CHME, CH E majors.

CHME 506. Graduate Transport Phenomena(s)  
3 Credits  

CHME 513. Intermediate Chemical Engineering Data Analysis (s)  
3 Credits  
Intermediate topics in the design and analysis of typical chemical engineering experiments. Topics covered include: linear models, constrained experimental space, non-linear models, model discrimination, and response surface methodologies. Restricted to: CHME, CH E majors.

CHME 516. Numerical Methods in Chemical Engineering  
3 Credits  
Survey of numerical methods for solving problems commonly encountered in heat and mass transfer, fluid mechanics, and chemical reaction engineering.

CHME 530. Environmental Management Seminar I  
1 Credit  

CHME 541. Chemical Kinetics and Reactor Engineering  
3 Credits  
Same as CHME 441 with differentiated assignments for graduate students. Consent of Instructor required.  
Prerequisite(s): Consent of instructor.

CHME 542. Graduate Reactor Analysis and Design (s)  
3 Credits  
Application and analysis of equations of continuity to multicomponent reaction systems. Introduction to homogeneous and heterogeneous catalysis, single-phase combustion, and shock reaction systems.

CHME 549. Intellectual Property for Engineers and Scientists  
3 Credits  
An overview of intellectual property, including patents, trade secrets, copyright, and trademark. Specialized terminology; protectable subject matter and applicable legal standards; inventorship, authorship and ownership; application content and preparation; procedural and substantive application components; and infringement and enforcement. Taught with CHME 449.  
Prerequisite(s): CHEM 111G or CHEM 115.
CHME 561. Calculation of Material and Molecular Properties
3 Credits
The aim is to describe and apply techniques for computing common properties of materials and molecules: optimized geometries, transition states, vibrational spectra, energies (electronic, internal energy, enthalpy, and Gibbs free energy), heat capacities, net atomic charges, atomic spin moments, and effective bond orders. These techniques allow one to estimate the thermodynamic properties of a chemical, as well as to compute the mechanisms and energy barriers for chemical reactions and catalytic processes, and to quantify the electronic, magnetic, and chemical ordering in materials. The theory behind these techniques will be described and students will perform hands-on computer exercises using common computational chemistry programs. Taught with CH E 461. Consent of Instructor required.
Prerequisite(s): CHEM 116, MATH 192G, and (PHYS 214 or PHYS 216G).

CHME 563. Soft Matter
3 Credits
The physiochemistry of soft materials including gels, polymers and colloids, self-assembly, intermolecular forces, and colloidal forces. Taught with CHME 463.
Prerequisite(s): CHME 302, CHME 305, CHME 361.

CHME 564. Polymer Science & Engineering
3 Credits
Synthesis, structure, property relationships of synthetic polymers. Taught with CHME 464. May be repeated up to 3 credits.
Prerequisite(s): CHME 201, CHEM 314.

CHME 565. Rheology and Viscoelasticity
3 Credits
This course is an introduction to rheology and viscoelasticity. In particular, the flow behavior of Non-Newtonian Fluids and Viscoelastic Fluids will be covered. Rheometry, the technique for characterization of fluids, will be discussed. Most of the course is quantitative and uses mathematical modeling. Taught with CHME 465.
Prerequisite(s): CHME 306.

CHME 567. Nanoscience and Nanotechnology
3 Credits
This is a lecture/laboratory course designed to present the basic concepts, the techniques and the tools to synthesize and characterize nanometer scale materials, and the latest achievements in current and future nanotechnology applications in engineering, materials, physics, chemistry, biology, electronics and energy. It is intended for a multidisciplinary audience with a variety of backgrounds. This course should be suitable for graduate students as well as advanced undergraduates. Topics covered will include: nanoscience and nanotechnology, nanofabrication, self-assembly, colloidal chemistry, sol-gel, carbon nanotubes, graphene, thin film, lithography, physical vapor deposition, chemical vapor deposition, quantum dots, lithium batteries, X-ray diffraction, scanning electron microscopy, transmission electron microscopy, nanoelectronics, nanophotonics and nanomagnetics, etc. Taught with CHME 467.
Prerequisite(s): (CHEM 112G or CHEM 116G) and (PHYS 211G or PHYS 215G).

CHME 568. Intermediate Adsorption
3 Credits
Introduction to the fundamentals and applications of biofuels and bioenergy produced from biomass; renewable feedstocks, their production, availability and attributes for biofuel/bioenergy production; types of biomass-derived fuels and energy; thermochemical conversion of biomass to heat, power, and fuel; biochemical conversion of biomass to fuel; biodiesel production; environmental impacts of biofuel production; economics and life-cycle analysis of biofuel; value-added processing of biofuel residues; term paper of selected topics relevant to biofuels. Taught with CHME 468.
Prerequisite(s): CHME 201.

CHME 579. Corrosion and Degradation of Materials
3 Credits
Failure of engineering materials in aggressive environments. Chemical and electrochemical mechanisms of corrosion. Influence of chemical composition and microstructure on corrosion behavior. Types of corrosion and chemical attack, including uniform corrosion, galvanic corrosion, pitting and other forms of localized corrosion, stress corrosion cracking, and corrosion fatigue. Methods of corrosion mitigation including cathodic protection, coatings, passivation, and corrosion inhibitors. Corrosion in nuclear reactors and nuclear waste repositories. Taught with CHME 479.
Prerequisite(s): CHME 361.

CHME 581. Biomedical Engineering & Healthcare Engineering
3 Credits
Orientation to solving human and world health issues with biological engineering systems, tools, and analysis methods. Introduces general concepts including applied biology for engineers, biophotonics, biosensing, bioinstrumentation, tissue and biomaterials engineering, biomedical engineering research practices, and physical bioanalytical methods. Taught with CHME 481.
Prerequisite(s): CHEM 116G, CHME 201.

CHME 585. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing and applications of biomass materials to fulfill food, feed, fiber, fuel and chemical feedstock needs with energy, water, cost, sustainability, and waste management considerations. Taught with CHME 485.
Prerequisite(s): CHEM 211 or 313 or consent of instructor.

CHME 586. Biofuels
3 Credits
Introduction to the fundamentals and applications of biofuels and bioenergy production; biomass resources and their composition; types of biofuels; conversion technologies (thermochemical and biochemical conversion processes); biodiesel production, algae to biofuels; economic and environmental assessments; term paper of selected topics relevant to biofuels. May be repeated up to 3 credits. Restricted to: CHME, CH E majors.
Prerequisite(s): CHME 201.

CHME 588. Elements of XRD
3 Credits
Introduction to x-ray diffraction and reflectivity spectra. Topics include X-ray sources and detectors, atomic spectra, characteristic x-rays, thermionic emission, synchrotron radiation, instrument components, and beam conditioners. Crosslisted with: PHYS 568.
CHME 589. Modern Materials
3 Credits
Same as PHYS 489 with differentiated assignments for graduate students. Crosslisted with: PHYS 589.
Prerequisite(s): PHYS 455 or PHYS 554.

CHME 590. Graduate Seminar
1 Credit
Presentations on topics of professional interest in chemical engineering. Includes seminars by faculty, graduate students, and invited speakers from academia, government, and industry. May be repeated for a total of 6 credits. May be repeated up to 6 credits. Restricted to: CHME majors.

CHME 594. Professional Communication in Chemical Engineering
2 Credits
Connections between interpersonal relationships and the effective communication of information. Strategies for formal and informal written and verbal communication in the context of presentations, interviews, reports and publications. Factors affecting non-verbal communication. Special focus will be given to understanding and adapting to the audience's perspective. 2 credits. Open to chemical engineering graduate students or by permission of instructor. This class will prepare you to communicate technical information effectively within a variety of contexts and to a variety of audiences. Class assignments will be partially based on current student needs such as preparing presentations for professional conferences, giving research progress reports, and writing research manuscripts. Restricted to: CHME majors.
Prerequisite(s): CHME graduate student standing.

CHME 598. Ph.D. Research- Level I
1-9 Credits (1-9)
Individual investigations either analytical or experimental. May be repeated up to 6 credits.

CHME 599. Master's Thesis
15 Credits
Thesis.

CHME 690. Graduate Seminar
1 Credit
Presentations on topics of professional interest in chemical engineering. Includes seminars by faculty, graduate students, and invited speakers from academia, government, and industry. Required each semester for every Ph.D. student. All candidates for graduate degrees required to give seminar. May be repeated for a maximum of 8 credits. May be repeated up to 8 credits. Restricted to: CHME majors.

CHME 698. Ph.D. Research- Level II
1-9 Credits (1-9P)
Advanced topics for current research. Course subtitled in the Schedule of Classes. May be repeated up to 99 credits. Consent of Instructor required.
Prerequisite(s): successful completion of Ph D qualifying exam.

CHME 700. Doctoral Dissertation
15 Credits (15)
Individual research in selected topics of current interest in chemical engineering. May be repeated up to 88 credits. Thesis/Dissertation Grading.
Prerequisite(s): CHME 698 (9 credits) and successful completion of comprehensive exam.

CHSS - COMM HEALTH/SOC SRVCS (CHSS)

CHSS 101. Overview of Health and Community Services
3 Credits
Health and community service professions with emphasis on public health, community health education, and environmental/occupational health.

CHSS 216. Ethical and Research Issues in Human and Community Service
3 Credits
Ethical and legal responsibilities of health personnel with emphasis on research applications. May not receive credit for both CHSS 216 and CHSS 316. Community Colleges only.

CHSS 295. Leadership/Mentorship Training for the CHSS Ambassadors Program
1 Credit
Leadership development for volunteers serving as CHSS ambassadors. Focus on public relations and CHSS undergraduate degree programs.
Graded S/U.
Prerequisite: consent of instructor.

CHSS 299. Service Learning Experience in Human and Community Services
3 Credits
Exploration of contemporary social, civic, economic and ethical problems that require student participation in collaborative efforts within the community. Requires 30 clock hours of community based service for each credit. Graded: S/U. Contact instructor for approval.
Prerequisite(s): CHSS 101, HL S 150 and HL S 275 or consent of instructor.
Corequisite(s): HL S 295 or CHSS 216.

CMI - CINEMA & FILM/VIDEO PROD (CMI)

CMI 100. Introduction to the Creative Media Industry
3 Credits
This class is an introductory course for students interested in learning about the creative media industry and the Creative Media Institute. It offers a broad view of the entire industry including Marketing, Production, Budgets, Jobs, New Media Literacy, and Industry Standards. Students will learn to experts in the field, and become involved in open discussions about the industry and use new information to complete hands-on assignments in the laboratory. Restricted to Las Cruces campus only.

CMI 200. Sound Design 1
3 Credits
Focuses on the techniques for creating, recording and manipulating sounds through challenging sound design projects. May be repeated up to 3 credits. Crosslisted with: CMT 206.
Prerequisite(s)/Corequisite(s): CMI 100. Restricted to: DFM,ANVE majors. Restricted to Las Cruces campus only.

CMI 205. Cinematography I
3 Credits
Theories and techniques of visual design in videography and the aesthetics of lighting. Crosslisted with: CMT 205.
Prerequisite(s)/Corequisite(s): CMI 100. Restricted to: ANVE, DFM majors. Restricted to Las Cruces campus only.
CMI 216. Editing I
3 Credits
Focuses on individual editing skills including capture, interface, basic cuts, and transitions. May be repeated up to 3 credits. Crosslisted with: CMT 195.
Prerequisite(s)/Corequisite(s): CMI 100. Restricted to: DFM, ANVE majors. Restricted to Las Cruces campus only.

CMI 220. Drawing for Animation
3 Credits (2+4P)
Introductory study of the human and animal form in relation to animation. Students learn fundamentals and exaggeration of the figure, as related to proportion, rhythm, mechanics, and motion. Areas of focus are: basic form, proportion, shape, contour, gesture, anatomy, portraiture, perspective, clothing effects and drawing from observation. Restricted to: ANVE, DFM, and CMT majors.

CMI 231. History of Animation
3 Credits
Explores the history of Animation as an art form and industry through readings, screenings, lecture and periodic guest speakers. May be repeated up to 3 credits. Restricted to: DFM, ANVE, G-CMI majors. Restricted to Las Cruces campus only.

CMI 232. Storyboarding
3 Credits
Examines effective writing principles for creating storyboards that communicate the overall picture of a project. There are timing, scene complexity, emotion and resource requirements. Crosslisted with: CMT 232 and ENGL 232. Restricted to: DFM, ANVE majors. Restricted to Las Cruces campus only.

CMI 233. Light, Shade, Render
3 Credits
This course will explore the theory and practice of 3D lighting and rendering methodologies. Techniques covered will implement cameras, lighting sources, textures, surface-mapping and algorithmic rendering to produce stylized and photo realistic images. Topics covered will include direct and indirect lighting, shaders that simulate physical substances and effects, rendering multiple passes and simulating physical lens effects. Restricted to: Main campus only. Restricted to DFM, ANVE majors.
Prerequisite(s): CMI 260, CMI 280, or Consent of Instructor.

CMI 235. Narrative: Principles of Story Across the Media
3 Credits
Examines the various strategies of written and visual storytelling: narrative structure and its principle components (plot, theme, character, imagery, symbolism, point of view), with an attempt to connect them to elements of contemporary forms of media expression, including screenwriting, playwriting, writing for documentaries and animation, etc. Crosslisted with: ENGL 235. Restricted to Las Cruces campus only.

CMI 240. Digital Illustration
3 Credits
Introductory course examining traditional artistic expressions and translating visual art experiences into a digital art medium to enhance visual storytelling. Students acquire basic principles of drawing and painting through hands-on experience manipulating tonal value, composition, form development, light and shadow, color theory, rendering realism, and graphic design. Restricted to: ANVE, DFM majors. Restricted to Las Cruces campus only.

CMI 245. 2-D COMPOSITING & FX
3 Credits (3+3P)
The purpose of this course is to familiarize students with the powerful compositing and special effects tools of Adobe After Effects for 2D, traditional animation. Students will learn how to assemble an existing unrendered animation into a final piece with advanced 3D lighting, spacing, and digital effects so that it can achieve a dynamic, professionally rendered look. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

CMI 250. Beginning 2-D Animation
3 Credits
Learn the basics of digital 2D animation by creating an animated short from a storyboarded scene using professional animation, imaging, and editing software. May be repeated up to 3 credits. Restricted to: ANVE, DFM majors. Restricted to Las Cruces campus only.

CMI 255. Foundations of 3D Animation
3 Credits
The objective of this course is to provide a hands-on overview of the 3D animation production process. Students will be introduced to basic story development and the creation of computer generated assets and cinematic sequences. The course will survey specialty areas of digital animation and various software and techniques applied in entertainment and information media. Restricted to: Main campus only. Restricted to ANVE, DFM majors.
Prerequisite(s): CMI 235, CMI 232 or consent of instructor.

CMI 270. Rigging for 3D Animation
3 Credits
This course will introduce principles and practices of current 3D animation rigging. Students will develop fundamental methods necessary to create character rigs. Students will learn aesthetic, technical, and optimization concepts as they apply to organic and mechanical designs. Topics will include: hierarchies, constraints, deformation rigging, skeleton creation, skinning, forward and inverse kinematics, controls, body and facial rigging. Restricted to: ANVE, DFM majors.
Prerequisite(s): CMI 260.

CMI 280. Modeling
3 Credits
This course will introduce 3D modeling methods and current practices. Students will learn preliminary and detailed modeling techniques using industry standard software. Methods will emphasize formal and functional aspects of modeling as they apply to mechanical, organic, and sculpted topology for application in animation, games, and information media. Restricted to: Main campus only. Restricted to ANVE, DFM majors.

CMI 290. 3-D Animation
3 Credits
Overview of the essentials and principles of 3D animation; creative methods for using industry standard tools to produce the illusion of movement for storytelling. Topics include, keyframe and curve animation, kinematics, cycle animation, camera animation, deformers, and constraints. Restricted to: Main campus only. Restricted to ANVE, DFM majors.
Prerequisite(s): CMI 260, CMI 250 or consent of instructor.
CMI 300. History of Cinema
3 Credits
In-depth analysis of cinema’s history looking at each aspect of film from inception to current development. It focuses on the historical aspects of sound production, cinematography, technological advances, music scoring, foley, animation, and narrative development. Students will see examples of movies throughout the semester and will take part in discussions. May be repeated up to 6 credits. Restricted to Las Cruces campus only.

CMI 301. Sound Design II
3 Credits
Mixing and balancing dialogue, sound effects and music in postproduction. Study the role of sound effects, foley, soundtrack choices, and music supervision. Prerequisite: CMI 200

CMI 303. Cinema Review and Critique
3 Credits
This course is for the student who wants to learn to be a more active, intelligent film viewer. It encourages critical thinking about films and educates students on how to write a film review. Students will meet in the movie theater to watch essential films that serious movie watchers should see from classic motion pictures, to current release major motion pictures, independent films and world cinema features. The course will serve as a guide to the illuminating process of evaluating, analyzing, and reviewing movies. Students’ reviews will be published publicly.

CMI 305. Business of Filmmaking/Animation
3 Credits
Explores the roles of unions, basic contracts, legal arrangements, and the economics of the production process, distribution, and financing. Prerequisite: CMI 235.

CMI 308. Writing for Animation
3 Credits
This course is for students who want to learn to be a more active, intelligent animation viewer. It encourages critical thinking about films and educates students on how to write a film review. Students will meet in the movie theater to watch essential films that serious animation watchers should see from classic motion pictures, to current release major motion pictures, independent films and world cinema features. The course will serve as a guide to the illuminating process of evaluating, analyzing, and reviewing movies. Students’ reviews will be published publicly.

CMI 309. Screenwriting I
3 Credits
Writing intensive. Students learn the craft of screenwriting, honing skills in writing dialogue and visual narrative, crafting dynamic characters and dramatic action. Original student scripts will be performed and discussed in class. Crosslisted with: ENGL 309 and THTR 306. Prerequisite(s): ENGL/CMI 235 or consent of instructor.

CMI 310. Cinematography II
3 Credits
Advanced tools of the cinematographer, lighting and composition techniques. Artistic and technological elements of cinematography. Prerequisite(s): CMI 205, CMT 205. Restricted to DFM, ANVE majors.

CMI 311. Editing II
3 Credits
Advanced techniques in digital films using professional non-linear editing systems. Restricted to: ANVE, DFM majors. Prerequisite(s): CMI 216.

CMI 313. Animated Film Review
3 Credits
This course will enhance student literacy in analyzing and writing about animated films. Through screenings, readings, discussion and lectures, students will acquire conceptual tools for viewing and evaluating films. Through analysis, students will identify cinematic elements.

CMI 314. Acting for Film
3 Credits
Techniques for film and television acting. In-depth analysis of film performance creation among actor, director, writer, cinematographer, and editor. Restricted to: DFM, THTR majors, or Consent of Instructor. Prerequisite(s): CMI 235. Restricted to DFM, ANVE majors.

CMI 315. Adventures in Genre
3 Credits
Students learn storytelling strategies for the screen by studying various structural genres and components of screenplays and films. Utilizing these strategies, students develop a number of their own original screenplay ideas. Additionally, pitch workshops are held and students learn to present their ideas in various, practical situations. Prerequisite(s): CMI 235. Restricted to DFM, ANVE majors.

CMI 316. Border Cinema Around the World
3 Credits
What is the relationship between borders, identity, and vulnerability - and how is this relationship explored in cinema? How are borderlands testing grounds - the sites of serious ethical dilemmas? By examining powerful feature films from such regions as the Middle East, the Balkans, and the US/Mexico border, we will explore ways in which personal, familial, communal, and national identities are defined through the complex process of bordering. We will investigate the role of cinema in reflecting and/or facilitating this process. May be repeated up to 3 credits.

CMI 318. Documentary Production
3 Credits
Survey of theory and history of documentary film making including viewings and discussions of notable films and directors. Class works with actual documentary project. May be repeated up to 6 credits. Restricted to: ANVE, DFM majors. Prerequisite(s): CMI 216, CMI 205.

CMI 320. Race and Gender in Film
3 Credits
In this course students will analyze film as an art form as well as be exposed to Race and Gender Feminist Film Theory. We will consider the role of film in our understandings of sex, gender and sexuality. Through discussions and writing we will work to discern relevant social, political, ideological, and aesthetic concepts in the media we examine. Crosslisted with: ENGL 399, W S 450 and W S 550.

CMI 328. Producing
3 Credits
Examines the role of the Producer, essential to every film production. The course will revolve around the best practices in organizational design, the production process, the budgeting process, financial controls, scheduling, insurance and distribution. Prerequisite(s)/Corequisite(s): CMI 200, 216, 235. Restricted to: ANVE, DFM majors.
CMI 329. Studies in Drama
3 Credits
Students will draw on a group of related American and European dramatic works to examine various areas of 20th century culture. Topics will vary. Restricted to DFM, ANVE, ENGL, THTR majors. Crosslisted with: ENGL 329 and THTR 329

CMI 330. Developing the Animated Project
3 Credits
This course will cover fundamental theories and elements of the production and development processes for animated projects. Concept, story, and story and character development will be addressed as well as storyboarding, layout, sound, voice recording and basic editing. Students will develop at least one animated project, and construct an animatic to be used for future production. Restricted to: ANVE, DFM majors.

CMI 332. 3-D Character Animation
3 Credits
Essentials and principles of 3D character animation. Techniques and craft of breathing life into characters through movement, including dynamic poses, blocking action, run and walk cycles, lip synching and realism. THTR 110, Acting and CMI 200, Sound Design are recommended. May be repeated up to 3 credits. Restricted to: DFM, ANVE majors.
Prerequisite(s): THTR 105 (or CMI 314 or CMI 348), CMI 260 and CMI 290 or consent of instructor.

CMI 341. Visual Effects I
3 Credits
Fundamentals and principles of live action footage and computer generated imagery integration, including 3D animation, matchmoving, green screen setup, keying and compositing. Restricted to: ANVE, DFM majors.
Prerequisite(s): CMI 205, CMI 260, 280 (or consent of instructor).

CMI 348. Acting and Directing for Voiceover
3 Credits
Students will explore methods for approaching voiceover and for improving acting and directing skills. Exercises will promote ease with collaboration in the studio setting, written work will focus on viewing voiceover in an analytical and discerning light. Restricted to ANVE, DFM majors.

CMI 350. Intermediate 2-D Animation
3 Credits
Learn the more refined aspects of motion for character animation by focusing on Disney's 12 Principles of Animation, practicing these advanced drawing techniques in exercises and incorporating them into a brief final short.
Prerequisite(s): CMI 250.

CMI 360. Previsualization
3 Credits
Implements 3D animation tools in preproduction shot and sequence design for motion picture and broadcast industries; including 3D storyboarding, technical planning and editing basics. LC Campus Only.
Prerequisite(s): CMI 260, CMI 280, and CMI 290 or consent of instructor. Restricted to ANVE, DFM majors.

CMI 362. Motion Graphics
3 Credits
Students will learn the basics of Motion Graphics by working through a variety of exercises and a final project that will combine animation, text, visual effects, and sound using Adobe After Effects, Photoshop, and Illustrator. Restricted to: ANVE, DFM majors.

CMI 365. Character Design and Development
3 Credits
Digital character design for the entertainment industry. Provides insight into the process of creating iconic characters. Traditional and contemporary character designers are explored. Industry workflow is introduced and necessary skills are developed to design detailed 3D characters from concept through production.
Prerequisite(s): CMI 250, CMI 260 and CMI 280, or consent of instructor. Restricted to ANVE, DFM majors.

CMI 395. Directing I
3 Credits
Study and application through short scene work of the basic tools of a director and relationships with actors, designers, playwright, and stage managers. Interpreting as well as organizing. May be repeated up to 3 credits. Restricted to: DFM, ANVE majors.
Prerequisite(s): CMI 200, AND CMI 205, AND CMI 216.

CMI 396. Directing II
3 Credits
Addresses pre-production concerns including script breakdown, casting ground plans and coverage. The criteria employed when selecting the creative team including a director of photography, art director, light, sound and wardrobe designers. Introduction to budgeting, scheduling, and script breakdowns. Prerequisite: CMI 395

CMI 397. Practicum
1-3 Credits (2-6P)
Practical application of the student's field of study in a project environment. May be repeated up to 9 credits. Consent of Instructor required.

CMI 398. Special Topics
3 Credits
This course addresses specific subjects and issues as identified by the department. Topics and credits to be announced in the Schedule of classes. May be repeated up to 12 credits.

CMI 400. Directed Studies
1-6 Credits (1-6)
Directed study course in CMI under the supervision of a CMI faculty member. May be repeated up to 9 credits.

CMI 401. Motion Capture Techniques
3 Credits
Implement industry standard motion capture techniques to capture and integrate performance for movie making, 3D animation and game production. Restricted to: ANVE, DFM majors.
Prerequisite(s): CMI 260, CMI 290 and CMI 270 (or consent of instructor).

CMI 410. Cinematography III
3 Credits
This class is geared towards those who want to learn more about cinematography, color grading, and digital technology as it pertains to cinematography. Shooting high-end codecs (ProRes/DNxHD) or RAW are becoming more and more popular in filmmaking as camera manufactures and computer processing get better. This class will be a mix of production and post-production as learning how to shoot these higher end codecs do not end with the camera. Focus will be on techniques of shooting raw, understanding how to operate a camera capable of high end image acquisition, properly building up the camera rig and accessories, managing data and the post-production workflow. Consent of Instructor required. Restricted to: DFM, ANVE majors.
Prerequisite(s): CMI 310.
CMI 420. Short Film Production  
3 Credits  
Students work in teams with rotating crews to write, produce, direct, and edit individual and group projects—ultimately demonstrating growing confidence with production equipment and professional practices. May be taken up to 6 credits. Consent of instructor required. Pre/Prerequisite(s): CMI 200, CMI 216, CMI 205, CMI 235, CMI 309 and CMI 395. Corequisite(s): CMI 328. Restricted to ANVE, DFM majors.

CMI 421. Short Film Post-Production  
3 Credits  
Students work together to complete short films shot in CMI 420. This course focuses on advanced post-production techniques, including editing and sound design, as student directors, editors, and producers continue to learn to work together. In the last half of the course, students will build marketing campaigns and submit their finished film to festivals. May be repeated up to 6 credits. Restricted to: DFM, ANVE majors. Prerequisite(s): CMI 420.

CMI 433. Sets and Environments  
3 Credits  
Digital environment design and creation for movies and games from concept to production; including illustration, modeling, matte painting, texturing, lighting, rendering, integration, and camera projection. May be repeated up to 3 credits. Restricted to: DFM, ANVE majors. Prerequisite(s): CMI 260, CMI 280, and CMI 233 or consent of instructor.

CMI 450. Advanced 2-D Animation  
3 Credits  
Advanced techniques in two dimensional animation including motion graphics and integration of live action. Restricted to: ANVE, DFM majors. Prerequisite(s): CMI 350.

CMI 470. Short 2-D Animation Production  
3 Credits  
This is a full-scale animation production class where students will be divided into teams according to the animation skills they have demonstrated in the beginning, intermediate, and advanced classes. Each team member will specialize in one important facet of the production process: character animation, background painting, technical direction, coloring, or story development and storyboarding. 4 to 8 minute animated shorts will be produced. Restricted to: ANVE, DFM majors. Prerequisite(s): CMI 450, CMI 361.

CMI 480. Screenwriting II  
3 Credits  
Students will write 2 short scripts, 10-15 pages each throughout the semester. Focus will be on learning how to take notes and rewrite. Script analysis will be in a workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. Crosslisted with: ENGL 480 Prerequisite(s): ENGL 309 or CMI 309 or THTR 306 or consent of instructor. Restricted to: ENGL, DFM, ANVE majors.

CMI 490. Advanced Screenwriting  
3 Credits  
Students will prepare a 30-60 page screenplay. Script analysis will be in an advanced workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. This course is aimed at preparing writers for the professional market. Consent of instructor required. Restricted to ENGL, DFM, ANVE majors. Crosslisted with: ENGL 491

CMI 491. 3D Production Studio I  
6 Credits  
The course is the first semester of a year-long effort to complete a Senior Project. The project will be narrative-driven short form, 3D animation or visual effects movie. Emphasis will be on pre-production and some production depending on ongoing CMI productions. You will produce a professional quality product with the aim to assist you in gaining entry into professional employment or graduate school. The course may be adapted toward a specific concentration in animation, visual effects, or digital film making, for group and individual productions. Each project must be approved by the Instructor and work within departmental policies and procedures. Prerequisite(s): CMI 332, CMI 360, CMI 365, CMI 433. Prerequisite(s): CMI 308. Restricted to: ANVE majors.

CMI 492. 2D Production Studio I  
6 Credits  
In CMI 498, Pre-Production, students will write a script, create a storyboard, record voice over and/or dialogue and time these storyboards to this dialogue/voice over creating an Animatic. For those doing demo reels, students will start to compile exercises from all of all their prior classes. Additional exercises will then be assigned to augment the skill set of the student according to the needs of each student. Restricted to: ANVE majors. Prerequisite(s): CMI 350, CMI 361.

CMI 493. 3D Production Studio II  
6 Credits  
The course is the final semester of a year-long concentration on your Senior Project. Emphasis will be on the production, post-production, and distribution of the work created in the first semester. You will produce a professional quality product that will help you gain entry into professional employment or graduate school. The overall objective is that you will demonstrate mastery of craft through synthesis of concept and technique, resulting in an original cinematic experience. Restricted to: ANVE majors. Prerequisite(s): CMI 491.

CMI 494. 2D Production Studio II  
6 Credits  
Students will complete an animated short, trailer, or demo reel for their portfolios by the end of Senior Project II. In CMI 494, Production and Post-Production, students will animate their stories according to the layout set in the animatic from Senior Project I. Lastly, they will composite and edit their shorts into a final piece that will be viewable in time for the Senior Showcase. For demo reels, students will continue to hone their reel into a finished piece that can be presented at the Senior showcase. Restricted to: ANVE majors. Prerequisite(s): CMI 492.

CMI 495. Internship  
1-12 Credits (1-12)  
Placement in a production facility and supervised experience required. With CMI advisor approval only. May be repeated up to 18 credits. Consent of Instructor required. Restricted to: DFM, ANVE majors.

CMI 496. Media Law/Ethics  
3 Credits  
Overview of legal & ethical issues in creative media elements of business and commercial law. This class will focus on the fundamentals of entertainment law by exploring the business and legal relationships within film industries, and animation. Learn to anticipate and avoid legal problems prior to production. Key issues in the area of copyright law, sources of financing, distribution agreements; insurance and union consideration will be discussed. Restricted to ANVE, DFM majors.
CMI 497. Portfolio Design and Development
3 Credits
Advanced graphic design projects with an emphasis on conceptual development, portfolio preparation, and professional practices. Refine general marketing strategies, personal portfolio, and resumes. Define, target, and penetrate personal target markets. Students develop individual promotional/demo packages. May be repeated up to 3 credits. Restricted to: DFM, ANVE majors.

CMI 498. Final Year Senior Project I: Production and Post Production 3-6 Credits (3-6)
Senior Project I is the first half of a year long concentration on a pre-approved creative project guided by a faculty member. Projects are narrative-driven and have an end product: screen-play, short film, documentary, 2-D or 3-D animated short, or pilot with treatment for television. Consent of Instructor required. Restricted to: ANVE, DFM majors.
Prerequisite(s): Consent of instructor.

CMI 499. Final Year Senior Project II: Production and Post Production 3-6 Credits (3-6)
Senior Project II is the second half of a year long concentration on a pre-approved project, guided by a faculty member. Projects are narrative driven and have an end product: short film, documentary, 2-D or 3-D animated short, or pilot and treatment for television. Consent of Instructor required. Restricted to: ANVE, DFM majors.
Prerequisite(s): CMI 498 and Consent of Instructor.

CMT - CREATIVE MEDIA TECHNOLOGY (CMT)

CMT 100. Introduction to Visual Communications
3 Credits
Overview of the process of crafting a digital product from conception to final. Incorporates basic principles of art and design, typography, layout, color and imagery, logos and advertising basics. Same as OEGR 105.

CMT 108. Introduction to Media Technologies
1-3 Credits (1-3)
Introduction to various media technologies. Restricted to: Community Colleges only. Cross-listed: OEGR 108

CMT 110. Introduction to Web Design
1 Credit
Basics of creating simple web sites for personal use.

CMT 115. Digital Photography and Imaging I
3 Credits (2+2P)
Principles and techniques of photography using digital equipment with an emphasis on lighting, focus, and composition.

CMT 120. Introduction to Creative Media
3 Credits (2+2P)
Exploration and discovery of the creative processes through art, music, theater, narrative, and other avenues.

CMT 126. Film Crew Training I
9 Credits
This course was designed in collaboration with the NM IATSE Local 480 union and the NM Film Office and focuses on providing hands-on training for students wishing to work on film crews. The course will offer an overview of the primary below-the-line craft areas of film production. Restricted to: Community Colleges only.

CMT 130. Introduction to Web Design
3 Credits (2+2P)
Introduction to web development techniques, theory, and design. Incorporates HTML and industry-standard web editing software in developing various web sites. May be repeated up to 6 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): ART 161 OR CMT 145.

CMT 135. Introduction to 3D Computer Animation
3 Credits (2+4P)
Learning to work in a 3D environment. Introduction to the basics of modeling, animation, dynamics, and rendering. Working with polygons, NURBS and subdivisions, and editing in multiple interfaces. May be repeated for a maximum of 6 credits.

CMT 140. Print Media I
3 Credits (2+2P)
Creation and design of publications and presentation materials using page layout software. May be repeated for a maximum of 6 credits.

CMT 142. Computer Illustration
3 Credits (2+2P)
Preparation of digital graphics with a vector or draw program for use in print, web, video, animations, and multimedia. May be repeated for a maximum of 6 credits.

CMT 145. Image Processing I
3 Credits (2+2P)
Design and creation of digital graphics using a raster or bitmap program for use in print, multimedia, video, animation and web. May be repeated for a maximum of 6 credits.

CMT 150. 2D Animation
3 Credits (2+2P)
Concepts and techniques in storyboarding and creating interactive 2D animations for web, multimedia and video.
Prerequisites: CMT 142 or CMT 146.

CMT 151. Evolution of Electronic Games
3 Credits (2+2P)
Focus on the evolution of video games and how they have shaped mainstream entertainment. May be repeated up to 6 credits.

CMT 155. Selected Topics
1-4 Credits
Specific titles to be announced in the Schedule of Classes. May be repeated for a maximum of 18 credits. Same as OEGR 155.

CMT 156. Film Crew Training II
9 Credits
The purpose of this course is to provide applied training in a specific film production crew craft area, in which a student has decided to specialize. The various craft areas include but are not limited to, Art Dept., Grip., Electric, Sound, Production Office, Script Supervision, Props, Set Dressing, Locations, Special Effects, Hair/Makeup, Wardrobe, Production Assistant/Set Operations. Restricted to: Community Colleges only.
Prerequisite(s): CMT 126.

CMT 160. Modeling and Animation
3 Credits (2+2P)
Building on student’s knowledge of 2D animation, covers modeling, animating objects and scenes in a 3D environment using various camera and lighting effects. May be repeated for a maximum of 6 credits. Restricted to: Community Colleges only.
CMT 165. Writing and Storyboarding
3 Credits (2+2P)
Learning good writing principles to create storyboards and scripts that communicate the overall picture of the project, timing, scene complexity, emotion, and resource requirements.
Prerequisite: CMT 135 or CMT 160.

CMT 170. History of Film: A Global Perspective
3 Credits
Explores the history of film from the earliest 19th century developments to the present digital video revolution. Offers students a broader base of understanding of the tools and methodologies used in the craft.

CMT 175. 3-D Character Design
3 Credits (2+4P)
Focus on designing a character and then taking that design and building it in 3D using intermediate modeling techniques. May be repeated for a maximum of 6 credits.
Prerequisite: CMT 135 or CMT 160.

CMT 180. Design Principles
3 Credits (2+2P)
Techniques and theories of design principles, including layout foundations, logo building, type, color, and story-boarding and their application to print, web, animation and video. Restricted to: Community Colleges only.
Prerequisite: CMT 135 or CMT 160.

CMT 182. Environmental Modeling, Shading and Lighting
3 Credits (2+4P)
Modeling design techniques to create natural and architectural environments to be used for animated films and gaming. Study of various lighting techniques, shading and shadowing.
Prerequisite: CMT 135 or CMT 160.

CMT 185. 3D Shading and Lighting Techniques
3 Credits (2+4P)
Study of various global, scene and character lighting techniques, shading and shadowing, and creating atmospheres and reflections that bring computer generated 3D scenes to life. Examines environmental and studio lighting to bring real life experience into the digital production process.
Prerequisite: CMT 135 or CMT 160.

CMT 190. Digital Video Production I
3 Credits (2+4P)
A hands-on study of the tools and techniques used to produce the independent video. Through the production of various short projects, the student explores how the ideas of the writer/director are translated into a visual story. May be repeated for a maximum of 6 credits.

CMT 192. Acting for the Camera
3 Credits (2+2P)
Covers acting techniques, body movement, monologues and auditioning. Students will gain professional acting experience on camera as well as learn what is expected on a film or video set. Restricted to: Community College only.

CMT 195. Digital Video Editing I
3 Credits (2+2P)
A study of the basic tools and techniques of non-linear digital video editing. May be repeated for a maximum of 6 credits.

CMT 200. Critical Game Studies
3 Credits (2+2P)
Focus on creating a complete design document utilizing techniques and standards used in the industry today. May be repeated for up to 6 credits. Restricted to: Community Colleges only.

CMT 205. Cinematography
3 Credits (2+2P)
Theory and techniques of visual design in cinematography and the aesthetics of lighting. May be repeated for a maximum of 6 credits. May be repeated up to 6 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): CMT 190.

CMT 206. Principles of Sound
3 Credits (2+2P)
Study of soundtrack design theory, and the use of audio editing software that is compatible with media editing software to create soundtracks for different visual media. Pre/ Restricted to: Community Colleges only.
Corequisite(s): CMT 195.

CMT 210. Digital Video Production II
3 Credits (2+2P)
Advanced techniques of the tools and application of professional film making. May be repeated for a maximum of 6 credits.
Prerequisite: CMT 190.

CMT 215. Digital Video Editing II
3 Credits (2+2P)
Advanced features of digital video, audio/music, and titling production software. Included are color correction, vector scopes, motion effects, and advanced editing techniques used by filmmakers. May be repeated for a maximum of 6 credits. Same as OEGR 215.
Prerequisite: CMT 195 or OEGR 210.

CMT 216. Digital Photography and Imaging II
3 Credits (2+2P)
Provide understanding and skills needed for advanced digital capture, editing, optimizing and manipulating photographic images for print, web and multimedia applications. The course will prepare students to make more advanced technical and more refined aesthetic decisions relative to specific photographic applications. Restricted to: Alamogordo campus, Carlsbad campus, Dona Ana campus.
Prerequisite(s): CMT 115.

CMT 217. Layer Animation & 3D Applications in Photoshop
1 Credit
This is an advanced course in Photoshop 2D techniques and motion graphic applications pertaining to the animation of Photoshop Layers juxtaposed over time and space relationships. Restricted to: CMT majors. Restricted to Community Colleges only.
Prerequisite(s): CMT 145.

CMT 218. Video for Social Interaction and Informal Commerce
3 Credits
The use of DSLR video has opened the way for photographers to be able to add video as a component of expression. This course shows the ways that this tool can be used for on-line instructional videos, demonstrations and presentations. As more and more commercial entities become involved in YouTube and other social media, this becomes a vocationally viable form of visual communication. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: Community Colleges only.
CMT 220. Environmental Scene Design
3 Credits (2+4P)
Modeling design techniques used to create environments and scenes for use in animated films and games. Investigation of both natural and architectural environments to be recreated in the virtual world.
Prerequisite: CMT 135 or CMT 160.

CMT 221. Internship
1-3 Credits
Work experience that directly relates to a student’s major field of study that provides the student an opportunity to explore career paths and apply knowledge and theory learned in the classroom. Internships may be paid or unpaid. Students are supervised/evaluated by both the employer and the instructor. May be repeated up to 9 credits. Consent of Instructor required. S/U Grading (S/U, Audit). Restricted to Community Colleges campuses only.
Prerequisite(s): Consent of instructor.

CMT 222. Pre-production Management
3 Credits (2+2P)
Pre-production planning paperwork breakdowns, budgeting, and scheduling; taking a project from start to finish from a producers standpoint.
Prerequisite: CMT 190.

CMT 223. Media Production Services
1-3 Credits
A design studio environment in which students obtain real-world experience while providing service to college and non-profit associations with faculty supervision using a variety of media. Can be used with permission to fulfill cooperative requirement. May be repeated for a maximum of 6 credits.
Prerequisite: CMT 180 or ART 163.

CMT 224. Environmental Scene Design II
3 Credits
Second level of modeling design techniques used to create environments and scenes for use in animated films and games. Investigation of both natural and architectural environments to be recreated in the virtual world. Restricted to Community Colleges campuses only.
Prerequisite(s): CMT 220.

CMT 225. Anatomical Character Design
3 Credits (2+4P)
Focus on building anatomy-based 3D characters. Advanced study in NURBS, subdivisions, and polygon modeling techniques used to create fully functional and realist models. May be repeated for a maximum of 6 credits.
Prerequisite: CMT 175.

CMT 226. Film Crew Cooperative Experience
3-6 Credits (3-6)
Industry production experience in specific craft areas for film crew technicians who have successfully completed two semesters of FTTP. Restricted to: Dona Ana campus, Carlsbad campus.
Prerequisite(s): CMT 156.

CMT 227. Advanced Character Animation
3 Credits (2+2P)
Focus on complex rigging techniques as well as utilizing advanced animation functions to blend multiple animations into complex animations. May be repeated for a maximum of 6 credits. Restricted to: Community Colleges only.
Prerequisite(s): CMT 160.

CMT 228. Level Design Concepts
3 Credits (2+2P)
Focus on the design and creation of video game levels. Dealing with the challenges and pitfalls of different video game genres. May be repeated for a maximum of 6 credits. Prerequisite: CMT 200

CMT 229. 3D Digital Sculpting
3 Credits
Introduce students to the 3D Sculpting programs which are the industry standard sculpting programs. Students will learn how to create complex high polygon sculpts and normal maps and transfer the models into 3D studio Max and Autodesk Maya. May be repeated up to 6 credits. Restricted to: Community Colleges only.
Prerequisite(s): CMT 160.

CMT 230. Web Design II
3 Credits (2+2P)
Creating and managing well-designed, organized web sites using HTML and web development software. May be repeated for a maximum of 6 credits. Restricted to: Community Colleges only. Cross-listed: OEGR 230
Prerequisite(s): CMT 130.

CMT 235. Web Design for Small Businesses
3 Credits (2+2P)
Technology and techniques for designing and building a web presence for small business. May be repeated for a maximum of 6 credits. Restricted to: Community Colleges only. Cross-listed: OEGR 235
Prerequisite(s): CMT 130.

CMT 236. Digital Audio Fundamentals
3 Credits (2+2P)
Advanced digital audio post production and recording techniques using current entertainment industry-standard software and hardware. Restricted to: Community Colleges only.

CMT 237. Digital Audio Editing
3 Credits (2+2P)
Techniques in digital audio composing, recording, editing, processing, MIDI & virtual instruments. Additional course topics include signal routing and processing, digital console design, audio signal paths, digital plug-ins, audio file management. Restricted to: Community Colleges only.

CMT 240. Print Media II
3 Credits (2+2P)
Refining of technical design skills using advanced features of page layout software in preparing a variety of business-related documents. May be repeated for a maximum of 6 credits.
Prerequisite: CMT 140 or OEGR 140.

CMT 242. Advanced Computer Illustration
3 Credits (2+2P)
Advanced techniques in 2D vector drawing and fundamentals of 3D illustration for use in print, web, and multimedia applications. May be repeated for a maximum of 6 credits. Same as OEGR 270.
Prerequisite: CMT 142.

CMT 245. Image Processing II
3 Credits (2+2P)
Advanced techniques in editing and manipulation of raster images for digital graphics for print, multimedia and web. May be repeated for a maximum of 6 credits. Same as OEGR 260.
Prerequisite: CMT 145.
CMT 247. Production Audio
3 Credits (2+2P)
Essential tools and techniques in: field and studio recording and mixing, environmental assessment, film set protocol, various microphones, audio documentation, wildlines, ambient audio. Restricted to: Community Colleges only.
Prerequisite(s): CMT 190 and CMT 236.

CMT 248. Music Production and Mastering
3 Credits (2+2P)
Introduction to fundamental tools and techniques in music production and mastering. Including: microphones and microphone techniques, live and studio recording, editing, mixing, and introduction to mastering digital audio. Restricted to: Community Colleges only.
Prerequisite(s): CMT 206 and CMT 236.

CMT 249. Layer Animation and 3D Applications in Photoshop
3 Credits
This is an advanced course in Photoshop 3D techniques and motion graphic applications pertaining to the animation of Photoshop Layers juxtaposed over time and space relationships. May be repeated up to 6 credits. Restricted to Community Colleges only.
Prerequisite(s): CMT 245.

CMT 250. Advanced Graphics for Digital Media
3 Credits (2+2P)
Advanced techniques in design and creation of high-level 2D animations and interactive interfaces for web, multimedia, and video. May be repeated for a maximum of 6 credits.
Prerequisite: CMT 150.

CMT 252. Game Tools and Techniques
3 Credits (2+2P)
Focus on the different engines and gaming technologies that power the games of today. May be repeated for a maximum of 6 credits.
Prerequisite: CMT 200.

CMT 253. History of Animation
3 Credits
Exploration of animation as art form and industry. Material spans from the roots of animation before film technology to modern commercial and artistic animated productions. Restricted to: Community Colleges only.

CMT 254. History of Media Design
3 Credits
An introduction to the principles of design history and theory within a chronological framework of historical and emerging media.

CMT 255. Special Topics
1-4 Credits
Specific topics to be announced in the Schedule of Classes. May be repeated for a maximum of 18 credits.

CMT 256. Typography
3 Credits
Foundation in typography with an emphasis on history of typography and the practical application and impact of font choices for print, web, animation and video. Deals with studies in font or letter construction and font choices focusing on design, application, incorporation, and visual impact. Restricted to: Community Colleges only.
Prerequisite(s): CMT 142.

CMT 258. Advanced Camera Techniques
3 Credits (2+2P)
Professional camera techniques and training for electronic news gathering and studio filmmaking. Utilizes high-end handheld shooting techniques, cranes, dollies, and steadicam training. May be repeated for a maximum of 6 credits.
Prerequisite: CMT 190.

CMT 260. 3D Special Effects
3 Credits (2+4P)
Creating advanced virtual special effects for both rigid and soft bodies. Using MEL, dynamic principles, mixing nodes, and advanced particle systems. How to drive particles over surfaces, add texture to flow, create surface tensions, and use collision events to drive texture. Study of integrating computer-generated images with real-life video and audio.
Prerequisite: CMT 160 or CMT 225.

CMT 265. Personal Character Development
3 Credits (2+4P)
Focus on the development of personal character(s), from sketch to render. Develop complete biographies of character, then build, skin and animate with as many personal attributes as possible.
Prerequisite: CMT 225.

CMT 266. Audio Postproduction
3 Credits (2+2P)
Application of techniques for the final postproduction phase of audio track editing, mixing and mastering for film, music, and animation; including Automated Dialog Replacement (ADR) and foley. Restricted to: Community Colleges only.
Prerequisite(s): CMT 206, CMT 236, CMT 237, CMT 247 & CMT 248.

CMT 275. Advanced Web Techniques
3 Credits (2+2P)
Creating and managing complex web sites using advanced techniques and tools. May be repeated for a maximum of 6 credits. Restricted to: Community Colleges only.
Prerequisites: CMT 145 and CMT 230.

CMT 276. Advanced Photography Workshops
1 Credit
This is a series of 1-credit workshops offering specialized and intense advanced skill training and upgrading applications of photography for commercial purposes and training in photographic skills and styles presented by a variety of professional lecturers. May be repeated up to 7 credits. Restricted to Community Colleges only.
Prerequisite(s): CMT 115.

CMT 285. Print Media III
3 Credits (2+2P)
Refinement of skills needed to prepare a variety of documents for print and the service bureau. May be repeated for a maximum of 6 credits.
Prerequisite: CMT 140 or CMT 240.

CMT 290. Advanced 3d Animation Workshop A
3 Credits (2+4P)
Program capstone. Students will utilize the skills learned in the program to produce their final animation. Group integrated projects are strongly recommended to emulate a real-work animation studio environment. May be repeated for a maximum of 9 credits.
Prerequisite: consent of instructor.
Corequisite: CMT 291.
CMT 291. Advanced 3d Animation Workshop B
3 Credits (2+4P)
Program capstone. Students will utilize the skills learned in the program to produce their final animation. Group integrated projects are strongly recommended to emulate a real-work animation studio environment. May be repeated for a maximum of 9 credits.
Prerequisite: consent of instructor.
Corequisite: CMT 290.

CMT 292. Creative Media Studio
3 Credits (2+2P)
A studio environment where students specialize in creating film-festival quality and portfolio-ready projects under the supervision of faculty. May be repeated for a maximum of 6 credits.
Prerequisites: CMT 190 and CMT 195 or CMT 160.

CMT 294. Creative Media Studio II
3 Credits
Second level of studio environment where students specialize in creating film-festival quality and portfolio ready projects under the supervision of faculty. Restricted to Community Colleges campuses only.
Prerequisite(s): CMT 292.

CMT 295. Professional Portfolio Design and Development
1-3 Credits
Personalized design and creation of the student's professional portfolio including hard-copy, demo reel, and online. May be repeated for a maximum of 6 credits. Same as OEGR 280.
Prerequisite: consent of instructor.

CMT 298. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval of department head. May be repeated for a maximum of 6 credits. Same as OEGR 298.
Prerequisite: minimum GPA of 3.0 and sophomore standing.

COLL-COLLEGE (COLL)

COLL 101. College/Life Success
1-3 Credits
Provides students with an opportunity to cultivate the skills, values, and attitudes necessary to become confident, capable students, and contributing community members. Topics include time management, memory techniques, relationships, health issues, money management, and college and community resources.

COLL 103. Managing Your Money
1 Credit
Principles and strategies for effective money management. Includes financial goal setting, both short and long term. Explores the relationship between career and income earning potential. Explores issues of credit and debt management and prevention of identity theft.

COLL 108. Academic Reading and Study Skills
1-4 Credits
Introduction to and practice with strategies for effective reading and studying at the college level. Provides laboratory.

COLL 111. Academic Skills for Mathematics
1-3 Credits (1-3)
Emphasis on study skills for success in math, up to the calculus level, tailored to meet individual student needs. Topics include test preparation strategies, efficient time management and practice methods, and introduction to and practice with learning software. Consent of instructor required.

COLL 120. Career Exploration
1 Credit
Survey of careers possible with community college associate degrees. Information on how to make a career choice.

COLL 155. Special Topics
1-4 Credits
Covers specific study skills and critical thinking topics. Specific sub-titles to be listed in the Schedule of Classes. May be repeated for a maximum of 8 credits.

COLL 201. Critical Thinking Skills
3 Credits
Introduction to critical thinking processes. Develops higher order thinking necessary to evaluate clearly, logically, and accurately one's academic and life experiences. Practical emphases on assertive thinking and perspectives.
Prerequisite: placement scores for CCDE 110N or higher.

COMM-COMMUNICATION (COMM)

COMM 253G. Public Speaking
3 Credits
Principles of effective public speaking, with emphasis on preparing and delivering well-organized, logical, and persuasive arguments adapted to different audiences.

COMM 265G. Principles of Human Communication
3 Credits
Study and practice of interpersonal, small group, and presentational skills essential to effective social, business, and professional interaction.

COMM 285. Survey of Communication Theory
3 Credits
Exploration of major theories, concepts and methods of research in the study of human communication. Primarily for majors.

COMM 290. Independent Study
1-3 Credits
Individualized, self-paced projects for students with a special interest in communication topics. May be repeated for a maximum of 6 credits.
Prerequisites: COMM 265G and sophomore standing.

COMM 291. Special Topics
1-3 Credits
Specific subjects and credits to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

COMM 305. Communication Research Methods
3 Credits
Introductory course in communication research. Emphasis on how to be an effective consumer of research.

COMM 351. Persuasion Theory and Practice
3 Credits
Training in understanding and applying the principles and techniques of argumentation and persuasion.

COMM 370. Organizational Communication
3 Credits
Communication strategies and patterns of private and governmental organizations, including research on the communication process.

COMM 376. Communication and Culture
3 Credits
Cultural and intercultural communication theory and behavior, with a concentration on the development of specific communication skills which should facilitate effective intercultural communication.
COMM 384. Interpersonal Communication
3 Credits
Theories of interpersonal communication and relational communication including study of relevant models, contexts and constructs.

COMM 425. Small Group Communication
3 Credits
Principles and methods of modern group discussion with emphasis on the role of the group in problem solving.

COMM 440. Political Communication
3 Credits
Presidential and congressional campaigns, political persuasion techniques, political advertising, power in language, and media aspects of political information. Ideology, resistance to political manipulation, and dependence of democracies on communication.

COMM 450. Technologies of Human Communication
3 Credits
Development and evolution of human communication technologies from prehistory through the future of computer-mediated communication networks. Examines behavioral, cognitive, social, cultural, and political issues of new communication technologies and their use and management.
Prerequisite: junior or senior standing.

COMM 455. Fundamentals of Communication and National Security
3 Credits
This course addresses communication perspectives informing national security, strategic intelligence, and the intelligence process. Students will examine U.S. national security history, policy, the development of the Intelligence Community, and intelligence as processes of communication. This course serves as an introduction to national security studies.

COMM 456. Communication and the Intelligence Cycle
3 Credits
The course addresses communication requirements and the technical, cognitive, and cultural complexity of the collaborative research environment. Students participate in novel, team-based problem scenarios that provide the foundation for acquiring advanced cognitive analytic methods and strategies. Students will engage in interdisciplinary information science processes and will develop and present analytic products responding to national security requirements.

COMM 457. Strategic Communication and Public Diplomacy
3 Credits
This course covers history, theory, and research related to the use of communication to change attitudes in favor of U.S. national security interests. Students will examine the use of strategic communication and influence in diplomacy, intelligence, and military communities in terms of specific strategies, effects, and issues. Students will learn to distinguish public diplomacy, information operations, public affairs, and other forms of political communication that are used by the U.S. government to persuade target populations about American interests and goals. Topics include soft power, intelligence-based negotiation processes, and research methods used to identify influence techniques or groups that threaten U.S. national security.

COMM 458. Intercultural Communication and National Security
3 Credits
This course provides a concentration on cultural factors in international affairs and conflicts, how culture affects perceptions of national interests, and the relationship of U.S. national security to understand the general and political cultures of other nations. Students will integrate cultural and intercultural communication theory and behavior, with an emphasis on the development of specific communication skills to facilitate developing cultural knowledge in government and political contexts. Students will learn how to study the cultural factors that affect international conflicts and how strategic communication should address such cultural factors.

COMM 460. Deception and Communication
3 Credits
Deceptive communication including nonverbal indicators of lies, types of lies, and influence of relationships on lying behavior and interpretation.

COMM 462. Family Communication
3 Credits
A communication perspective on traditional and nontraditional family configurations, roles, interaction patterns, and conflict. Includes an examination of media depictions of families and family interaction, as well as current social and political issues related to the family.

COMM 465. Nonverbal Communication
3 Credits
Study of and experimentation with nonverbal aspects of human communication as vital components of the total communication process.

COMM 470. Leadership Communication
3 Credits
Examination of traditional theories and concepts of leader-follower dynamics; presentation of cognitive, systems, and symbolic interpretative views of leadership with an emphasis on persuasion and motivation in leader-follower interactions.

COMM 471. Sports Communication
3 Credits
This course provides a senior-level exploration of the role sports and sports communication plays in contemporary culture. Readings will examine the interrelationship between sports and media in society, the identities that fans assume when engaging in fandom and sports viewership, the pervasiveness of sports communication practices in the sports industry, the role of media in story telling, and the way cultural identifiers of class, ethnicity, and gender play out in the media. This is taught with COMM 571.

COMM 475. International Communication
3 Credits
Exploration of the forms and channels of communication substantially influenced by international cultural and political factors. Covers: global communication technology; news, information and entertainment flows; international diplomacy and negotiation, communication in war and peace.

COMM 477. Environmental Communication
3 Credits
Examines the link between communication and environment within the context of communication scholarship. Topics include sense of place, cultural approaches to interacting with environment as well as exploring current themes surrounding environment.
COMM 480. Health Communication  
3 Credits  
Examination of central issues in communication theory and practice as applied to health care. Includes communication in health care organizations, media dissemination of health information, role of communication in disease prevention and health promotion, and symbolic meaning of illness within cultures.

COMM 484. Verbal Communication  
3 Credits  
Examination of rules governing conversational structures such as speech acts, action sequences, topics and topic shifts. Also covers humor in conversation and conversational control.

COMM 485. International Teaching Assistant Development  
3 Credits  
International teaching assistants will receive instruction in communicative skills to enable them to meet their responsibilities at NMSU. Course includes lectures, seminars, video-taped presentations, and tutorial sessions emphasizing pedagogic and presentation skills and styles.

Prerequisite: consent of instructor.

COMM 490. Independent Study  
1-3 Credits  
Individualized, self-paced projects for advanced students. May be repeated for a maximum of 6 credits.

Prerequisites: COMM 265G and junior standing with consent of participating instructor.

COMM 491. Selected Topics  
1-6 Credits  
Individual and/or group study of selected topics. To be identified by subtitle. May be repeated for a maximum of 12 credits.

Prerequisite: prior arrangement with faculty supervisor(s).

COMM 495. Communication Internship  
3 Credits  
Internship opportunity to apply what has been learned to a real-world situation. May be repeated for a maximum of 6 credits. Restricted to majors.

Prerequisite: junior standing and 3.0 GPA in major.

COMM 505. Research Methods  
3 Credits  
Seminar in the quantitative study of human communication phenomena, research design, and statistical analysis.

COMM 506. Qualitative Research Methods in Communication  
3 Credits  
Survey of qualitative research methods in the study of human communication, including historical and critical approaches, interviewing, participant-observation, and communication ethnography. Students apply methods to their own research.

COMM 540. Seminar in Political Communication  
3 Credits  
Political communication theory, research, and issues. Empirical studies of campaigns, movements, news media, voter decision-making, political participation, socialization, and knowledge. Political theory, field research, communication science findings and research methods.

COMM 545. Seminar in Ethicism, Racism, and Communication  
3 Credits  
Course focuses on theories and research concerning the social, cognitive, and communication aspects of ethnic and racial prejudice. Specific psychological and communication processes of person and group categorization are explored along with findings about the effects of ethnic prejudice on everyday communication (and vice versa).

COMM 550. Seminar in Communication Technologies  
3 Credits  
Seminar on design, usage, and social impact of electronic mail, communication through computer networks, and new technologies of organizational communication such as group decision support systems (GDSS). Each student will study an actual application of a major communication technology in an organization.

COMM 551. Seminar in Persuasion  
3 Credits  
Work with an actual persuasion campaign, such as public information, political, or commercial marketing campaigns. Includes case studies of large-scale persuasion efforts, current theoretical models of persuasion processes, and methods for studying, evaluating, and refining messages for optimal effects.

Prerequisite: COMM 351 or consent of instructor.

COMM 555. Seminar Fundamentals of Communication and National Security  
3 Credits  
This seminar course addresses communication perspectives informing national security, strategic intelligence, and the intelligence process. Students will examine U.S. national security history, policy, the development of the Intelligence Community, and intelligence as processes of communication. This course serves as an introduction to national security studies. Graduate students are required to fulfill advanced research and presentation requirements.

COMM 556. Seminar Communication and the Intelligence Cycle  
3 Credits  
This seminar course addresses communication requirements and the technical, cognitive, and cultural complexity of the collaborative research environment. Students participate in novel, team-based problem scenarios that provide the foundation for acquiring advanced cognitive analytic methods and strategies. Students will engage in interdisciplinary information science processes and will develop and present analytic products responding to national security requirements. Graduate students will be required to fulfill advanced research and presentation requirements.

COMM 557. Seminar Strategic Communication and Public Diplomacy  
3 Credits  
The seminar course covers history, theory, and research related to the use of communication to change attitudes in favor of U.S. security interests. Students will examine the use of strategic communication and influence in diplomacy, intelligence, and military communities in terms of specific strategies, effects, and issues. Students will learn to distinguish public diplomacy, information operations, public affairs, and other forms of political communication that are by the U.S. government to persuade target populations about American interests and goals. Topics include soft power, intelligence-based negotiation processes, and research methods used to identify influence techniques of groups that threaten U.S. national security. Graduate students will be required to fulfill advanced research and presentation requirements.
COMM 558. Seminar Intercultural Communication and National Security
3 Credits
The seminar course provides a concentration on cultural factors in international affairs and conflicts, how culture affects perceptions of national interests, and the relationship of U.S. national security to understand the general and political cultures of other nations. Students will integrate cultural and intercultural communication theory and behavior, with an emphasis on the development of specific communication skills to facilitate developing cultural knowledge in government and political contexts. Students will learn how to study the cultural factors that affect international conflicts and how strategic communication should address such cultural factors. Graduate students will be required to fulfill advanced research and presentation requirements.

COMM 562. Seminar in Family Communication
3 Credits
This course examines cutting edge research on family communication, as well as classic theories and research findings that have influenced and revolutionized the way scholars conceptualize family interaction. Topics include basic family communication processes, communication in family subsystems, communication during family stress, and the role of family interaction in health and well-being. Students will explore how family relationships are built, maintained, and destroyed by communication as well as the potentially important and long lasting effects of family relationships on individuals.

COMM 565. Seminar in Nonverbal Communication
3 Credits
This course focuses on human physical behaviors as the basis of communication between persons. This physical behavior includes such variables as the voice, face, eyes, posture, gesture, space, territory, clothing, and touch. The content of the course considers the individual and social factors affecting the production of such behaviors, and the effects of such behaviors on others' attitudes, perceptions, cognitions, and relationships. Applications of research and theory in nonverbal communication to infant development, personality, sex differences, marital satisfaction, relationship development, culture, aging, and brain functioning are also studied throughout the course.

COMM 570. Seminar in Organizational Communication
3 Credits
Communication strategies and patterns of private and governmental organizations, including research on communication systems.

COMM 571. Seminar in Sports Communication
3 Credits
This seminar provides a graduate-level exploration of the role sports and sports communication plays in contemporary culture. Readings will examine the interrelationship between sports and media in society, the identities that fans assume when engaging in fandom and sports viewership, the pervasiveness of sports communication practices in the sports industry, the role of media in story telling, and the way cultural identifiers of class, ethnicity, and gender play out in the media. This is taught with COMM 471.

COMM 576. Seminar on Communication and Culture
3 Credits
Cultural and intercultural communication theory and research. Focuses on discovering and describing distinctive ways of speaking within and between cultures.

COMM 583. Seminar in Theories of Communication
3 Credits
Communication systems, symbolic processes, analysis of messages.

COMM 584. Seminar in Interpersonal Communication
3 Credits
Theories of interpersonal communication and communication within a relationship, including study of relevant models, contexts, and constructs.

COMM 590. Independent Study
1-6 Credits
Individualized, self-paced projects.
Prerequisite: consent of instructor.

COMM 591. Special Topics
1-9 Credits
Individual and/or group study of special topics. To be identified by subtitle.
Prerequisite: prior arrangement with faculty supervisor(s).

COMM 595. Communication Internship for Graduate Students
3 Credits
Internship opportunity to apply what students have learned to the real world. Restricted to majors.
Prerequisite: 9 credits of M.A. degree.

COMM 599. Master's Thesis
15 Credits
Thesis.
CTFM 366. Historic Fashion
3 Credits
The study of clothing styles from 3500 BC through the 20th century. Restricted to: CTFM majors.
Prerequisite(s): CTFM 255 and CTFM 270.

CTFM 371. Textile Science
3 Credits (1+4P)
Study of fabrics used for modern clothing, furnishings, and miscellaneous end uses. Textiles testing procedures explored.
Prerequisites: CHEM 110G or consent of instructor.

CTFM 372. Fashion Merchandising
3 Credits
The apparel industry from designing through manufacturing and distribution to retailers.
Prerequisites: CTFM 178, and CTFM 255.

CTFM 373. Advanced Apparel Techniques
3 Credits
This course builds upon concepts introduced in Concepts in Apparel Construction. An in-depth study of fabric selection, advanced garment construction and tailoring. New technologies applied to sewing construction will be explored. The use of computerized sewing machines will be incorporated. Restricted to CTFM majors.
Prerequisite(s): CTFM 255 and CTFM 273.

CTFM 374. The Production of Textile and Fashion Accessories
3 Credits
The production of textiles and fashion accessories for retail. Merchandising techniques for wholesale and retail companies. Consent of Instructor required. Restricted to: CTFM majors.
Prerequisite(s): CTFM 178 and CTFM 270.

CTFM 384. Clothing for Special Needs
3 Credits
Selection, adaptation, and design of clothing that is functional and attractive for special needs populations such as for active sportswear, the handicapped, the elderly, and various specialty populations.
Prerequisite: consent of instructor.

CTFM 402. Field Experience Marketing Training
1-3 Credits (1-3)
Practical experience in clothing manufacturing or retailing. Supervised by resident faculty and supervisor at the work site. Report required. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: CTFM majors.

CTFM 460. Cultural Perspectives in Dress
3 Credits
Explores the social, psychological and cultural aspects of dress and appearance which includes the relationship of dress to physical and social environments, aesthetic and personal expression and cultural ideas and values.
Prerequisite(s): CTFM 255 and CTFM 366.

CTFM 474. Fashion Promotion
3 Credits
This class focuses on the comprehensive nature of promotion in the merchandising environment of fashion related goods. Consent of Instructor required. Restricted to: CTFM majors.
Prerequisite(s): CTFM 255 and CTFM 372.

CTFM 475. Fashion Buying
3 Credits
Fundamental principles and procedures for successful merchandising of fashion goods, responsibilities of buyers, fashion trends, consumer demands, and merchandising arithmetic.
Prerequisites: ACCT 251, CTFM 372, and CTFM 474.

CTFM 476. Apparel Design by Draping and Pattern Drafting
3 Credits (1+4P)
Theory and application of draping and drafting garment patterns (required lab). Consent of Instructor required. Restricted to: CTFM majors.
Prerequisite(s): CTFM 255, CTFM 270 CTFM 273, and CTFM 373.

CTFM 492. Special Problems
1-4 Credits
Individual research study in a selected subject area of family and consumer sciences. Maximum of 4 credits per semester and a total of 6 credits toward a degree.

CTFM 571. Textile Science
3 Credits (1+4P)
Fabrics used for modern clothing, furnishings, and miscellaneous end uses. Explores textiles testing procedures. Students enrolling in the 500-level class will be required to complete additional assignments beyond what is required for CTFM 371.
Prerequisite: CHEM 110G or consent of instructor.

CTFM 572. Fashion Merchandising
3 Credits
Covers the apparel industry from designing through manufacturing and distribution to retailers. Students enrolling in the 500-level class will be required to complete additional assignments beyond what is required for CTFM 372.
Prerequisites: CTFM 178 and CTFM 255 or consent of instructor.

CTFM 584. Graduate Study in Clothing for Special Needs
3 Credits (1+4P)
Graduate study in the selection, adaptation, and design of clothing that is functional and attractive for special needs populations such as active sportswear, handicapped, elderly, and various specialty populations.
Prerequisites: CTFM 472 and CTFM 476.

CTFM 598. Special Research Programs
1-4 Credits
Individual investigations, either analytical or experimental. May be repeated for a maximum of 4 credits per semester and no more than 6 credits toward a degree.

DANC-DANCE (DANC)

DANC 101G. Dance Appreciation
3 Credits
An investigation of movement, dance and choreographic work as a vehicle for understanding culture. Includes concepts in dance appreciation, themes and purposes of dance analysis of dance works, exposure to different styles of dance and understanding the roles and effects of major historical periods. Restricted to: Main campus only.

DANC 102. Introduction to Hip-Hop Dance
1 Credit
This course is an introduction to Hip-Hop dance. The movement material will cover West coast and Southern styles with the inclusion of the history and evolution of Hip-Hop dance. No previous dance experience required. May be repeated up to 4 credits. Restricted to Las Cruces campus only.
DANC 109. Argentine Tango I  
1 Credit  
Introduction to skills and techniques of Argentine Tango.

DANC 118. West Coast Swing I  
1 Credit  
Students will learn to dance the smooth style of Swing. The West Coast Swing may be danced to ANY style of music that has a beat (Country, R&B, Hip Hop, Disco, House). Also featured is the Hustle (fast paced and exhilarating). May be repeated up to 4 credits. Restricted to Las Cruces campus only.

DANC 120. Ballet Folklorico I  
1 Credit  
Introductory course in folklorico dances of New Mexico and Mexico. May be repeated for a maximum of 2 credits.

DANC 121. Beginning Country Western Dance  
1 Credit  
Beginning County Western dance, including Country Western two-step, nightclub two-step, polka, and Country Western line dance. May be repeated up to 2 credits. Restricted to Las Cruces campus only.

DANC 122. Introduction to Latin Social Dance  
1 Credit  
Introduction to Latin social dance for non dance majors. Students will learn basic Latin dance technique and partnering work. May be repeated up to 2 credits. Restricted to Las Cruces campus only.

DANC 123. Ballet Technique I  
1 Credit  
Introduction to basic ballet technique, vocabulary, and history. Includes practical application of anatomical placement, posture and control through participation and academic study. May be repeated for a maximum of 2 credits.

DANC 124. Jazz Technique I  
1 Credit  
Introduction to basic jazz technique, styles, and history through participation and academic study. May be repeated for a maximum of 2 credits.

DANC 125. Introduction to Ballroom Dance  
1 Credit  
Introduction to ballroom dance for non dance majors. Students will learn basic ballroom technique and partnering work. May be repeated up to 2 credits. Restricted to Las Cruces campus only.

DANC 126. Modern Dance Technique I  
1 Credit  
Introduction to and development of basic modern dance technique, history, and aesthetics through participation and academic study. May be repeated for a maximum of 2 credits.

DANC 127. Tap Dance I  
1 Credit  
Introduction to skills and techniques of tap dance. May be repeated for a maximum of 2 credits.

DANC 128. Latin Club Dance  
1 Credit  
Introduction to the most popular Latin Club Dances to include the Salsa, Merengue, and Bachata. May be repeated up to 2 credits. Restricted to Las Cruces campus only.

DANC 129. Flamenco I  
1 Credit  
Introduction to skills and techniques of flamenco dance. May be repeated for a maximum of 2 credits.

DANC 151. Master Works  
1 Credit  
This course investigates the work of master choreographers in contemporary, Spanish, and social dance styles. Students will engage in exploring concepts in dance appreciation, themes and purposes of dance by analyzing dance works using principles, elements, and process of compositional design. This course will require students to communicate their opinions through verbal discussions, group projects, and written assignments. Restricted to Las Cruces campus only.

DANC 200. Dance Pedagogy: Educational Theory  
1 Credit  
This course will examine how people learn cognitively, physically, and emotionally so that students can become better at self-teaching and self-assessment. Students will study several educational theories and how they relate to dance. Restricted to Las Cruces campus only.

DANC 202. Dance Ensemble  
1 Credit  
This course will include learning the elements of dance composition. The students in this course will be the dancers for the students in Dance Choreography II. This course is a requirement for freshman dance majors whose emphasis is in contemporary dance. May be repeated up to 2 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 203. Dance Production I  
1 Credit  
Students will learn the production process of dance events which may include performances, festivals, workshops, conferences. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 204. Dance Sport I  
1 Credit  
Performance-based, team formation dance in a variety of Latin and ballroom dances. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 205. Contemporary Dance Ensemble I  
1 Credit  
Performance-based instruction for students pursuing a career in contemporary dance. Instruction includes contemporary dance repertory and choreography for stage, outdoor arenas, and site-specific areas. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 206. Spanish Dance Ensembles I  
1 Credit  
Performance-based instruction for students pursuing a career in dance with an emphasis in Spanish Dance. Instruction includes dance repertory and choreography for stage, outdoor arenas, and site-specific areas. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.
DANC 209. Argentine Tango II
1 Credit
Intermediate study in Argentine tango. Learn advanced patterns, techniques and partnering skills. May be repeated up to 2 credits. Consent of Instructor required. Restricted to Las Cruces campus only.
Prerequisite(s): Consent of instructor.

DANC 210. Classical Spanish II
2 Credits (1+3P)
The study of theory, techniques, and practice of Classical Spanish at the intermediate level. Includes historical and cultural contexts of this art form. May be repeated up to 8 credits. Consent of Instructor required. Restricted to Las Cruces campus only.
Prerequisite(s): DANC 129.

DANC 212. Intermediate Hip-Hop Dance
2 Credits
This course is for students who have experience in Hip-Hop dance. The movement material will cover West coast and Southern styles with the inclusion of the history and evolution of Hip-Hop dance. May be repeated up to 8 credits. Restricted to Las Cruces campus only.

DANC 218. West Coast Swing II
2 Credits
Students will take their West Coast Swing & Hustle to the next level. Learn Intermediate and Advanced figures and techniques in both dances. Students will also enjoy advanced study on musicality and blending to create new amalgamations as well as practice in advanced leading & following techniques. May be repeated up to 8 credits. Consent of Instructor required. Restricted to Las Cruces campus only.
Prerequisite(s): DANC 118.

DANC 221. Country Western Dance
2 Credits
Intermediate skills in country/western two-step, nightclub two-step, polka, and Western line dances. May be repeated up to 4 credits. Restricted to Las Cruces campus only.
Prerequisite(s): DANC 121 or consent of instructor.

DANC 222. Bronze American Rhythm
2 Credits (1+2P)
Bronze level American Rhythm patterns, techniques, and partnering with emphasis on elements of dance. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 223. Ballet Technique II
2 Credits
Continued study of classical ballet technique, vocabulary, and history through participation and academic study. May be repeated up to 8 credits. Restricted to Las Cruces campus only.

DANC 224. Jazz Technique II
2 Credits
Continued study of jazz technique and history through participation and academic study. May be repeated up to 8 credits. Restricted to Las Cruces campus only.

DANC 225. Bronze American Smooth
2 Credits (1+2P)
Bronze level American Smooth patterns, technique, and partnering with an emphasis on the elements of dance. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.
Prerequisite(s): DANC 125 or consent of instructor.

DANC 226. Modern Dance Technique II
2 Credits
Continued study of postmodern dance technique and history through participation and academic study. May be repeated up to 8 credits. Restricted to Las Cruces campus only.

DANC 227. Tap Dance II
1 Credit
Continued study of skills and techniques of tap dance at the advanced level. May be repeated for a maximum of 2 credits.
Prerequisite: DANC 127 or consent of instructor.

DANC 229. Flamenco II
2 Credits
The study of theory, techniques and practice of Flamenco at the intermediate level. Includes historical and cultural contexts of this art form. May be repeated up to 8 credits. Restricted to Las Cruces campus only.
Prerequisite(s): Dance 129.

DANC 232. Bronze International Latin
2 Credits
This is the style of Latin dance that is danced around the globe and is featured in the World DanceSport Championships. Students will learn the Bronze Level figures and techniques in four (4) International Style dances: Rumba, Cha Cha, Samba & Jive and the techniques. May be repeated up to 8 credits. Consent of Instructor required. Restricted to Las Cruces campus only.
Prerequisite(s): DANC 222.

DANC 235. Bronze International Standard
2 Credits
This is the style of Ballroom dance that is performed around the globe and is featured in the World DanceSport Championships. Learn the Bronze Level figures and techniques in five (5) International Style dances: Waltz, Tango, Viennese Waltz, Foxtrot & Quickstep. Students will focus on understanding technical Elements of Dance, memorizing and performing routines. May be repeated up to 8 credits. Consent of Instructor required. Restricted to Las Cruces campus only.
Prerequisite(s): DANC 225.

DANC 269. DanceSport Choreography I
2 Credits
An introduction to the process and theory behind creating original choreography for both performance and competition level dance. With focus on the individual couple, gain necessary skills, knowledge and practice in choreographing Ballroom, Latin, Swing &/or Nightclub dance routines in various practical settings. Consent of Instructor required. Restricted to Las Cruces campus only.

DANC 275. Dance Studio Management
3 Credits
The study and practice of studio management. Includes study of financial procedures, marketing, entrepreneurship, leadership, management, fundraising and other related topics. Restricted to majors and minors.

DANC 279. Flamenco Choreography I
2 Credits
Students develop and perform solo dance studies with an emphasis placed on the development of personal movement vocabulary, phrase building, and the exploration of choreographic tools for Flamenco on stage. Discussion, critiquing, and descriptive writing about their choreographic processes will supplement direct physical work. May be repeated up to 4 credits. Consent of Instructor required. Restricted to Las Cruces campus only.
DANC 280. Improvisation I
1 Credit
Introduction and development of basic movement improvisation skills.

DANC 289. Principles of Choreography I
2 Credits
Solo dance choreography technique. Course must be passed with a grade of C or higher. Consent of instructor required. Restricted to: Main campus only. Restricted to Dance Majors Dance Minors majors.

DANC 300. Dance Pedagogy: Creative Movement
3 Credits
Teaching methods and class planning for creative movement dance curriculum at preschool and elementary school levels. Restricted to Las Cruces campus only.

DANC 301. Flamenco Pedagogy I
3 Credits
The methods and theory of teaching Flamenco dance forms particularly in the studio environment. Consent of Instructor required.
Prerequisite(s): DANC 229 AND DANC 206.

DANC 303. Dance Production II
1 Credit
Students will learn the production process of dance events which may include performances, festivals, workshops, conferences.
Prerequisite(s): DANC 203.

DANC 304. Dance Sport II
1 Credit
Advanced performance-based, team formation dance in a variety of Latin and social dances. May be repeated up to 4 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor and one of DANC 121, DANC 122, DANC 125, or DANC 128.

DANC 305. Contemporary Dance Ensemble II
1 Credit
Advanced performance-based instruction for students pursuing a career in contemporary dance. Instruction includes contemporary dance repertory and choreography for stage, outdoor arenas, and site-specific areas. May be repeated up to 6 credits. Consent of Instructor required.

DANC 306. Spanish Dance Ensemble II
1 Credit
Performance-based instruction for students pursuing a career in dance with an emphasis in Spanish Dance. Instruction includes dance repertory and choreography for stage, outdoor arenas, and site-specific areas. May be repeated up to 4 credits. Consent of Instructor required.

DANC 310. Classical Spanish Dance III
3 Credits
Advanced study of Classical Spanish Dance with castanets, cultural history, and pedagogy methods. A expanded focus on integration of different classical genres with focus on solo work. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 210.

DANC 322. Silver American Rhythm
3 Credits (2+2P)
Silver level American Rhythm patterns and technique with emphasis on performance. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 222.

DANC 323. Ballet Technique III
3 Credits
Intermediate/advanced study of ballet technique, including vocabulary and history. May be repeated for a maximum of 12 credits.
Prerequisite: DANC 223 or consent of instructor.

DANC 324. Jazz Technique III
3 Credits
Advanced study of jazz dance, including vocabulary and history. May be repeated for a maximum of 12 credits.
Prerequisite: DANC 224 or consent of instructor.

DANC 325. Silver American Smooth
3 Credits (2+2P)
Silver level American Smooth patterns and technique with emphasis on performance. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 225.

DANC 326. Modern Dance III
3 Credits
Intermediate/advanced-level modern dance technique and study of current dance aesthetics. May be repeated for a maximum of 12 credits.
Prerequisite: DANC 226 or consent of instructor.

DANC 329. Flamenco III
3 Credits
Advanced study in flamenco dance technique, its cultural history and pedagogy methods. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

DANC 332. Silver International Latin
3 Credits
Students will learn Silver Level syllabus figures in four (4) International Style dances: Rumba, Cha Cha, Samba & Jive and Bronze Level figures in Paso Doble. Continued training and practice in International Style Latin dance technique. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 232.

DANC 335. Silver International Standard
3 Credits
Learn Silver Level syllabus figures in the five (5) International Style Standard dances: Waltz, Tango, Viennese Waltz, Foxtrot & Quickstep. Students will focus on increased technical understanding to increase their ability in partnering and musicality. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 235.

DANC 339. Flamenco Structure and Improvisation
3 Credits
A Study of various elements necessary in an improvisational setting in Flamenco. Using a cross section of Flamenco forms as a format. Students study the compass of each palo, then move to several traditional letras appropriate to these forms. May be repeated up to 9 credits. Consent of Instructor required.
Prerequisite(s): DANC 229.
DANC 342. DanceSport Pedagogy: Rhythm
3 Credits
In this teacher education course, students will begin to develop skills necessary in becoming a successful, professional Ballroom Dance Instructor. Students will gain technical mastery of Bronze level figures in four (4) Rhythm Dances to include the Rumba, Cha Cha, East Coast Swing and Mambo. Students will gain practical teacher education in the area of Private Lesson Instruction with required in class practicums. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): DANC 222.

DANC 345. DanceSport Pedagogy: Smooth
3 Credits
In this teacher education course, students will begin to develop skills necessary in becoming a successful, professional Ballroom Dance Instructor. Students will gain technical mastery of Bronze level figures in the four (4) American Style Smooth Ballroom Dances to include the Waltz, Foxtrot, Tango and Viennese Waltz. Students will gain practical teacher education in the area of Group Class Instruction with required in class practicums. May be repeated up to 9 credits. Consent of instructor required.
Prerequisite(s): DANC 225.

DANC 365. Dance Pedagogy: Dance in Education
2 Credits
This course provides the student with methods and theories of dance education. This course will cover methods of teaching core curriculum subjects in an elementary school through body movement. This course will focus on the special needs of a kinesthetic learner.

DANC 369. DanceSport Choreography II
2 Credits
Take DanceSport choreography to the next level. With focus on group formation dance, gain necessary skills, knowledge and practice in choreographing Ballroom, Latin, Swing &/or Nightclub dance routines for groups in artistic and competition settings. Consent of instructor required.

DANC 379. Flamenco Choreography II
2 Credits
Students develop and perform group studies with an emphasis placed on the development of ensemble movement vocabulary, phrase building, and the exploration of choreographic tools for Flamenco on stage. Discussion, critiquing, and descriptive writing about their choreographic processes will supplement direct physical work. Level II will advance to small group work as well as mentoring level I students. Consent of Instructor required.
Prerequisite(s): DANC 279.

DANC 380. Improvisation II
1 Credit
Continued practice in movement improvisation with more complex examination of improvisational structures.
Prerequisite: DANC 280.

DANC 389. Principles of Choreography II
2 Credits
Continued investigation of the choreographic process with an emphasis on group choreography. Course must be passed with a grade of C or higher. Consent of instructor required. Restricted to: Main campus only. Restricted to Dance majors Dance minors majors.
Prerequisite(s): DANC 289.

DANC 400. Dance Pedagogy II
3 Credits
Teaching methods and class planning for dance curriculum at middle school and high school levels.
Prerequisite: DANC 300 or consent of instructor.

DANC 401. Flamenco Pedagogy II
3 Credits
Advanced methods and theory of teaching Flamenco dance forms particularly in the studio environment. Includes a practicum of eight onsite teaching units in a location to be determined by the designated study. Consent of Instructor required.
Prerequisite(s): DANC 229 AND DANC 206.

DANC 411. Flamenco Practicum
1 Credit
Directed learning experiences for careers in dance. Provides the student with actual classroom teaching experience for all ages and all levels of dance students. May be repeated up to 4 credits. Consent of instructor required.
Prerequisite(s): DANC 301.

DANC 412. DanceSport Practicum
1 Credit
Directed learning experiences for careers in dance. Provides the student with actual classroom teaching experience for all ages and all levels of dance students. May be repeated up to 4 credits. Consent of instructor required.
Prerequisite(s): DANC 342 or DANC 345.

DANC 413. Dance Practicum II
1 Credit
This course provides the student with actual classroom teaching experience for all ages and all levels of dance students. With the supervision of the instructor, students will design a practicum experience, choose a site, and implement dance lessons. Course must be passed with a grade of C or higher. May be repeated up to 2 credits. Consent of Instructor required.
Prerequisite(s): DANC 413.

DANC 422. Gold American Rhythm
3 Credits (2+2P)
Advanced level American Rhythm dance technique and partnering work with choreography and performance emphasized. Includes cultural history and pedagogy methods. May be repeated up to 6 credits. Consent of instructor required. Restricted to: DANC majors.
Prerequisite(s): DANC 322.

DANC 423. Ballet Technique IV
3 Credits
Advanced study of ballet technique including vocabulary and history. May be repeated for a maximum of 12 credits.
Prerequisite: DANC 323 or consent of instructor.

DANC 424. Jazz Dance Technique IV
3 Credits
Advanced study of jazz dance techniques, including history and aesthetics. May be repeated for a maximum of 6 credits.
Prerequisites: DANC 324 or consent of instructor.

DANC 425. Gold American Smooth
3 Credits (2+2P)
Gold level American Smooth technique and choreography with an emphasis on performance and competition dancing. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: DANC majors.
Prerequisite(s): DANC 325.
DANC 426. Modern Dance Technique IV
3 Credits
Advanced study of modern technique, including history and aesthetics. May be repeated for a maximum of 12 credits.
Prerequisite: DANC 326 or consent of instructor.

DANC 432. Gold International Latin
3 Credits
Students will complete all syllabus figures through the Gold level in the Rumba, Cha Cha, Samba, Jive and Paso Doble. Advanced training and practice in International Style Latin dance technique. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 332.

DANC 435. Gold International Standard
3 Credits
Students will learn Gold Level syllabus figures in the five (5) International Style Standard dances: Waltz, Tango, Viennese Waltz, Foxtrot & Quickstep. Students will focus on physical and cognitive mastery of standard dance technique and elements as well as high-level performance ability, musicality and choreography. May be repeated up to 12 credits. Consent of Instructor required.
Prerequisite(s): DANC 335.

DANC 442. DanceSport Pedagogy: Latin
3 Credits
This teacher education course is designed to prepare future dance professionals in the teaching of the International Style Latin dances: Cha Cha, Samba, Rumba, Paso Doble & Jive. Gain a deep understanding of all elements and be well prepared to take the DVIDA or ISTD professional certification exams. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): DANC 232 & 342.

DANC 445. DanceSport Pedagogy: Standard
3 Credits
This teacher education course is designed to prepare future dance professionals in the teaching of the International Style Standard dances: Waltz, Tango, Foxtrot & Viennese Waltz. Students will gain a deep understanding of all elements and be well prepared to take the DVIDA or ISTD professional certification exam. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): DANC 235 & DANC 345.

DANC 447. DanceSport Certification Preparation
3 Credits
The Professional Certification process offers extraordinary benefits to dance teachers, deeply enriching their dancing and teaching, and greatly expanding their career opportunities. This intensive course is designed to fully prepare students in taking the DVIDA and/or ISTD exams in the Smooth, Rhythm, Standard or Latin dances depending on course offered. See subtitle for specific style being taught in schedule of classes. May be repeated up to 12 credits. Consent of Instructor required.

DANC 450. Special Topics
1-3 Credits (1-3)
Specific subjects to be announced in the Schedule of Classes. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

DANC 451V. World Dance
3 Credits
Examination of dance forms from a cross-cultural perspective, focusing on the role of dance in different cultures around the globe. Same as HON 347V.

DANC 460. Dance History
3 Credits
History and development of dance forms from ancient cultures to today.

DANC 462. Flamenco Dance History
3 Credits
An in depth study of the cross section of Flamenco and Spanish Dance traditions and genres from Spain with the influence of her colonies and the modern world from the early 1400s to Present.

DANC 465. Senior Culminating Experience
1-6 Credits (1-6)
Exit course for graduating seniors. Students will apply comprehensive knowledge of performance and production and/or pedagogy experience, to culminate in a dance production and/or teaching project. Restricted to majors and minors. A minimum of 2 credit hours required for graduation.

DANC 466. Dance Pedagogy: Dance Technique
3 Credits
Students will learn to develop a curriculum design, apply teaching methods, and structure lesson plans for teaching specific dance styles. Course must be passed with a grade of C or higher. Consent of Instructor required.
Prerequisite(s): DANC 300 or consent of instructor.

DANC 489. Advanced Choreographic Project
2 Credits
Individual directed studies in choreography with a culminating performance. Consent of Instructor required.

DANC 499. Problems
1-6 Credits (1-6)
Problems in dance education, dance pedagogy, dance performance and independent work in their solutions. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

DANC 501. Directed Studies
1-4 Credits (1-4)
Supervised projects and/or research in theoretical studies, inclusive of community service projects. May be repeated up to 4 credits. Consent of Instructor required.

DANC 505. Dance Ensemble III
1 Credit
Rehearsal and performance of dance repertory with emphasis on advanced understanding of musicality, dynamic phrasing, artistic expression, and athletic versatility within a broad range of styles. May be repeated up to 4 credits. Consent of Instructor required.

DANC 510. Advanced Theory of Classical Spanish Technique
1 Credit
Advanced study of dance pedagogy and theory with practice in Classical Spanish technique May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 310.

DANC 522. Advanced Theory of American Rhythm Technique
1 Credit
Advanced study of dance pedagogy and theory with practice in American Rhythm technique May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 322.

DANC 523. Advanced Theory of Ballet Technique
1 Credit
Advanced study of dance pedagogy and theory with practice in ballet technique May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 423.
DANC 525. Advanced Theory of American Smooth Technique
1 Credit
Advanced study of dance pedagogy and theory with practice in American Smooth technique. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 325.

DANC 529. ADV THRY FLAM
1 Credit
Advanced study of dance pedagogy and theory with practice in Flamenco technique. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 329.

DANC 550. Special Topics
1-6 Credits (1-6)
Specific subjects offered in addition to standard academic curriculum. Course title to be announced in the Schedule of Classes. May be repeated up to 6 credits. Consent of Instructor required.

DANC 551. Movement as Social Text
3 Credits
Investigation of the meaning of movement and dance in different cultural, social, and historical contexts in both Western and non-Western dance forms. Emphasis will be placed on the nature of movement, its unique properties, the ways in which it conveys meaning, and its relationship to culture and society. Consent of Instructor required.

DANC 566. Advanced Theory of Dance Pedagogy
1-6 Credits (1-6)
Advanced study of dance pedagogy and theory with practice. May be repeated up to 6 credits. Consent of Instructor required.

DANC 567. Dance Internship I
2 Credits
Internship opportunities in either dance education, dance performance/production, or dance administration. Internship site determined by both Director of Dance Program and graduate student. Consent of Instructor required.

DANC 568. Advanced Theory of Modern Dance Technique
1 Credit
Advanced study of dance pedagogy and theory with practice in Modern dance technique. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: DANC 426.

DANC 569. Master's Thesis
1-6 Credits (1-6)
This course is for graduate dance students who choose to write a thesis instead of a performance or teaching project. May be repeated up to 6 credits. Thesis/Dissertation Grading.

DANC 600. Dance Research
3 Credits
Literature review and development of research in the field of dance.

DANC 670. Dance Internship II
3 Credits
Internship opportunities in either dance education, dance performance/production, or dance administration. Internship site determined by both Director of Dance Program and graduate student.

DANC 700. Doctoral Dissertation
3 Credits
This course is for graduate dance students working toward their EdD or PhD in dance. A dissertation is required. Topic and format to be determined by dissertation committee chair and graduate student. Consent of Instructor required. Restricted to Graduate Dance Majors majors.

DAS-DENTAL ASSISTING (DAS)

DAS 101. Introduction to Dental Assisting
2 Credits
An introduction to the duties and responsibilities of a dental assistant. Includes brief lessons on head and neck anatomy, chair side assisting, sterilization techniques, dental office emergencies, and dental office management. Restricted to: Community Colleges only.

DAS 111. Bio-Dental Science
4 Credits (3+3P)
An introduction to biomedical and dental sciences with emphasis on head and neck anatomy and tooth morphology. Includes microbiology, general anatomy and physiology, histology and embryology of the oral cavity, pathology and pharmacology as they relate to dentistry.

Corequisite(s):
DAS 113, DAS 115, and DAS 117.

Prerequisite(s)/Corequisite(s):
PSY 201G, PHLS 150G, and HNDS 251.
Prerequisite(s):
ENGL 111G, BIOL 154, and (COMM 253G or COMM 265G).
Restricted to: OEDA majors. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.

DAS 113. Dental Assisting I
4 Credits (2+6P)
Introduction to chair side assisting procedures, instrumentation, infection control, equipment safety and maintenance, dental office emergencies, and management of pain and anxieties.

Corequisite(s):
DAS 111, DAS 115, and DAS 117.

Prerequisite(s)/Corequisite(s):
PSY 201G, PHLS 150G, and HNDS 251.
Prerequisite(s):
ENGL 111G, BIOL 154, and (COMM 253G or COMM 265G).
Restricted to: OEDA majors. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.

DAS 115. Dental Radiology
3 Credits (2+3P)

Corequisite(s):
DAS 111, DAS 113, and DAS 117.

Prerequisite(s)/Corequisite(s):
PSY 201G, PHLS 150G, and HNDS 251.
Prerequisite(s):
ENGL 111G, BIOL 154, and (COMM 253G or COMM 265G).
Restricted to: OEDA majors. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.

DAS 117. Dental Materials
3 Credits (2+3P)
Composition, chemical and physical properties, manipulation and uses of dental materials. Laboratory experiences include the application and manipulation of various materials used in dentistry.

Corequisite(s):
DAS 111, DAS 113, and DAS 115.

Prerequisite(s)/Corequisite(s):
PSY 201G, PHLS 150G, and HNDS 251.
Prerequisite(s):
ENGL 111G, BIOL 154, and (COMM 253G or COMM 265G).
Restricted to: OEDA majors. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.
DAS 123. Dental Assisting Practicum
6 Credits (1+15P)
This course is the clinical component of the program that combines general practice and experiences in the work place. Seminar topics focus on the practicum experiences and critique of performance. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.
Prerequisite(s): DAS 111, DAS 113, DAS 115, and DAS 117.
Corequisite(s): DAS 125, DAS 127, and DAS 129.

DAS 125. Professional Concepts
3 Credits
Emphasis on the development of professionalism for the dental office. Includes oral communication, psychology, patient relations, problem-solving skills, stress management, and employability in addition to dental jurisprudence and ethics. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.
Prerequisite(s): DAS 111, DAS 113, DAS 115, and DAS 117.
Corequisite(s): DAS 123, DAS 125, and DAS 129.

DAS 127. Dental Office Management
2 Credits
This capstone course is an introduction to business office procedures, including telephone management, appointment control, accounts payable, completion of third party reimbursement forms, inventory control data entry for charges and payments, management recall, basic dental computer software and operating basic business equipment. Restricted to: OEDA majors. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.
Prerequisite(s): DAS 111, DAS 113, DAS 115, and DAS 117.
Corequisite(s): DAS 123, DAS 125, and DAS 129.

DAS 129. Preventive Dentistry
2 Credits
Prevention of dental diseases, oral hygiene instruction, fluoride, community dental health, and nutrition. Development, implementation and evaluation of a community dental health project. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.
Prerequisite(s): DAS 111, DAS 113, DAS 115, and DAS 117.
Corequisite(s): DAS 123, DAS 125, and DAS 127.

DAS 130. Dental Assisting II
4 Credits (2+6P)
Continuation of chair side assisting skills and techniques with a major emphasis on four-handed dentistry. This capstone course includes specialties within dentistry and expanded chair side functions. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.
Prerequisite(s): DAS 111, DAS 113, DAS 115, DAS 117, DAS 123, DAS 125, DAS 127, and DAS 129.

DAS 131. Dental Office Management I
3 Credits
Introduction to the field of dental office management with emphasis placed on professional verbal and written communication skills utilized within the dental office. Content includes dental terminology, charting, and back office experience as they relate to dental reception and management.
Prerequisite(s)/Corequisite(s): DAS 101, AHS 120, and AHS 202. Prerequisite(s): ENGL 111G. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.

DAS 133. Dental Office Management II
3 Credits
Places emphasis on computer programs specifically designed for dental office management (Dentrix, Sof Dent, etc.) Expanded course content on oral communication and telephone skills, appointment scheduling, patient relations, stress management solutions, and comprehensive critical thinking/problem solving skills.
Prerequisite(s)/Corequisite(s): AHS 202. Prerequisite(s): ENGL 111G, DAS 101, and AHS 120. Restricted to Alamogordo, Carlsbad and Dona Ana campuses.

DAS 155. Special Topics
1-6 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.

DENTAL HYGINE/HYGIENIST (DHYG)

DHYG 110. Preclinical Dental Hygiene
3 Credits
Basic scientific principles and current theory, prevention of disease transmission, ethical and professional treatment of patients, clinical learning preparation, and introduction to comprehensive patient care. Offered concurrently with DHYG 112 to provide dental hygiene students with introductory knowledge, skills and attitudes to function in the clinical setting. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 112. Preclinical Dental Hygiene Lab
3 Credits
Clinical application to basic theories and procedures used in dental hygiene practice. Techniques of instrumentation used in performing diagnostic, preventive and therapeutic services utilized when providing comprehensive patient care. Student will practice these techniques on manikins and student partners in the clinic. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 114. Oral Histology and Embryology
2 Credits
Introduction and description of general histology and embryology with emphasis on the microscopic structures of enamel, dentin, pulp, cementum, periodontal ligament, bone, oral mucosa, epithelial attachment and development of orofacial structures. May be repeated up to 2 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 116. Head and Neck Anatomy
3 Credits
Comprehensive study of the anatomy of the head and neck regions, including skeletal, nervous, circulatory, lymphatic, and muscular systems. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 117. Dental Anatomy
2 Credits (2+1P)
A detailed study of nomenclature, morphologic characteristics, and physiologic relationships of human primary and permanent teeth as related to the clinical practice of dental hygiene. Laboratory activities develop observation and dexterity skills. May be repeated up to 2 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.
DHYG 118. Dental Radiology
3 Credits (3+4P)
Study of radiation physics, hygiene and safety theories. Fundamentals of oral radiographic techniques and interpretation of radiographs. Includes exposure of intra-oral radiographs, quality assurance, radiographic interpretation, patient selection criteria, ancillary radiographic techniques and application to dental hygiene treatment. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 120. Dental Hygiene Theory I
3 Credits
Continuation of the theoretical basis for dental hygiene clinical practice. Emphasis on emergency care, planning dental hygiene care, health promotion and disease prevention, oral rehabilitation and care of appliances, modifications of dental hygiene care through the life-span, and an introduction to medically comprised patients. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 122. Clinical Dental Hygiene I
3 Credits
Application of dental hygiene procedures on a variety of clinical patients under direct supervision of faculty. Emphasis on patient assessment and diagnosis, treatment procedures, appointment planning and prevention techniques. Theory is simultaneously related to practical experience. Offered concurrently with DHYG 120. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 124. General and Oral Pathology
3 Credits
Introduction to general pathology with focused study of diseases and disorders of the oral cavity and their interrelationship with body systems; developmental anomalies of the teeth and jaws; manifestations of disease in the oral cavity, head and neck. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 126. Periodontology
3 Credits
Study of normal and diseased periodontium to include the structural, functional and environmental factors. Emphasis on etiology, pathology, evaluation of disease, treatment modalities, and therapeutic and preventative periodontics relative to the hygienist's role as a co-therapist in a contemporary practice setting. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 132. Clinical Dental Hygiene II
2 Credits
Continuation of clinical skills, patient assessment and diagnosis, treatment and appointment planning, preventive techniques and application of dental hygiene procedures at an intermediate level under the direct supervision of faculty. Clinical-based instruction helps students synthesize new knowledge, apply previous knowledge, and gain experience managing the workflow. Theory is simultaneously related to practical experience. May be repeated up to 2 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.
Prerequisite(s): "C" or above in DHYG 120, DHYG 122, DHYG 124, DHYG 126, DHYG 134.
Corequisite(s): DHYG 218.

DHYG 134. Dental Materials
3 Credits (2+2P)
Study of the composition, chemical and physical properties, manipulations, and uses of dental materials. Emphasis on materials and procedures for which the dental hygienist is directly responsible. Laboratory experiences include application and manipulation of various materials used in dentistry. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 210. Dental Hygiene Theory III
2 Credits
Advanced theory of dental hygiene and information on periodontal therapies relative to the hygienist's role as a co-therapist in clinical practice. Continuation of the study of dental hygiene care for medically comprised patients and an introduction to special needs patients. May be repeated up to 2 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 212. Clinical Dental Hygiene III
4 Credits
Continuation of clinical skills, patient assessment and diagnosis, treatment and appointment planning, preventive techniques and applications of dental hygiene procedures at the intermediate to competent level under supervision of faculty. Emphasis on dental hygiene treatment for the medically compromised and periodontally involved patients. Theory is simultaneously related to practical experience. Offered concurrently with DHYG 210. May be repeated up to 4 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 214. Dental Pharmacology
3 Credits
Study of the pharmacologic aspects of drugs and drug groups with which the dentist and dental hygienist are directly and indirectly concerned. Emphasis is placed on nomenclature, origin, physical and chemical properties, preparation, modes of administration and effects of drugs upon the body systems. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 215. Medical and Dental Emergencies
2 Credits
This course provides an overview of medical and dental emergencies encountered most frequently in the dental setting. It also provides the student with knowledge and techniques on how to address those emergencies should they occur. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 217. Research Methodology
2 Credits
This course provides an introduction to the principles and application of research methods in social, behavioral and medical research. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 218. Pain and Anxiety Management
2 Credits
Study of the application of various physical, chemical, and psychological modalities to the prevention and treatment of preoperative and postoperative patient anxiety and pain. Emphasis on administration of local anesthesia and nitrous oxide. May be repeated up to 2 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.
DHYG 219. Pain and Anxiety Management Clinical
1 Credit
Clinical application of concepts learned in DHYG 218. Emphasis on the administration and techniques of local anesthesia and monitoring nitrous oxide. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.
Prerequisite(s): DHYG 218.

DHYG 220. Dental Hygiene Theory IV
3 Credits
Theoretical preparation for advanced clinical practice. In-depth study of dental hygiene care for patients with special needs. Case Study presentations and a Board Review are utilized to demonstrate the synthesis of comprehensive dental hygiene knowledge, skills and attitudes. The most current dental and dental hygiene technology will be reviewed as it related to clinical practice. May be repeated up to 3 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 222. Clinical Dental Hygiene IV
4 Credits
Clinical sessions combine basic and advanced dental hygiene skills with time management techniques essential for private practice. Comprehensive patient care to include assessment, dental hygiene diagnosis, treatment planning, implementation and evaluation of dental care, nonsurgical periodontal therapy, adjunct clinical procedures, ultrasonic instrumentation, patient management, sealants, and comprehensive programs for control of oral diseases will be emphasized. Theory is simultaneously related to practical experience. Students are encouraged to develop independent decision-making with minimal faculty supervision. May be repeated up to 4 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 224. Principles of Practice
2 Credits
Examination of the dental hygienist’s role in both traditional and non-traditional employment settings. Career planning, resume preparation and interviewing are practices. An understanding of the law, professional ethics of dental hygiene and the need for lifelong learning are emphasized. Future roles of the dental hygienist and emerging issues in dental hygiene will be explored. May be repeated up to 2 credits. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 225. Dental Public Health Education
3 Credits
Study of principles and concepts of community public health and dental health education. Emphasis on dental epidemiology and statistical methods, community assessment, educational planning, implementation, and evaluation, scientific review of literature, and classroom presentation. Restricted to: DHYG majors. Restricted to Community Colleges campuses only.

DHYG 255. Special Topics in Dental Hygiene
1-6 Credits (1-6)
Study of special topics related to the advanced practice of dental hygiene. May include educational methodology as well as applications in clinical practice, research, or community service. Consent of instructor required. Restricted to: Community Colleges only. Restricted to DHYG majors.

DMS-DIAGNOSTIC MED SONOGRAPHY (DMS)

DMS 101. Introduction to Sonography
2 Credits
Introduction to the principles of ultrasound, terminology, scanning planes and applications of ultrasound. Includes observation in an ultrasound facility. All DMS courses are restricted to students who have been accepted into the Diagnostic Medical Sonography Program. Restricted to: Community Colleges only. Restricted to DMS majors.
Corequisite(s): DMS 112, DMS 113.

DMS 110. Ultrasound Physics
4 Credits
Properties of sound and its use in diagnostic imaging; technical components involved in ultrasound imaging; how to use ultrasound equipment during lab sessions; the bioeffects of high-frequency sound; and artifacts created during imaging. Restricted to: DMS majors. Restricted to Dona Ana campus only.

DMS 112. Abdominal Sonography I
4 Credits (3+3P)
Includes anatomy, physiology, and pathology of the abdominal organ systems; scanning techniques, ultrasound appearance of normal structures, and changes seen with pathologic conditions. Restricted to: DMS majors. Restricted to Community Colleges campuses only.
Corequisite(s): DMS 116,DMS 101,DMS 113.

DMS 113. GYN Sonography
3 Credits (2+2P)
Includes female pelvic anatomy, scanning techniques, pelvic pathology, sonography, and Doppler findings in normal and abnormal exams, introduction to human embryology, and first trimester pregnancy. Restricted to: Community Colleges only. Restricted to DMS majors.
Corequisite(s): DMS 116, 101, 113.

DMS 114. OB Sonography
4 Credits (3+2P)
Includes review of human embryology, normal fetal anatomy, obstetrical scanning techniques, fetal biometry, fetal abnormalities, fetal Doppler, the role of ultrasound in genetic testing and chromosome abnormalities, fetal echocardiography, and congenital heart abnormalities. Restricted to: DMS majors. Restricted to Community Colleges campuses only.

DMS 115. Abdominal Sonography II
3 Credits (2+2P)
Includes anatomy, physiology, and pathology of superficial structures, including female breast, thyroid, and neck structures, male pelvis, and musculoskeletal system; scanning techniques, ultrasound appearance of normal structures, and changes seen with pathologic conditions; abdominal Doppler principles of applications and organ transplant sonography. Restricted to: DMS majors. Restricted to Dona Ana campus only.

DMS 116. Introduction to Vascular Technology
3 Credits (2+2P)
Basic ultrasound physics and principles, peripheral vascular anatomy, hemodynamics, Doppler evaluation, peripheral vascular scanning techniques, physiologic testing and the more common pathologies of the carotid arteries, and the peripheral vascular system. Restricted to: Community Colleges only. Restricted to DMS majors.
Corequisite(s): DMS 101, DMS 112, DMS 113.
DMS 117. Advanced Sonographic Procedures  
2 Credits  
This course will focus on the anatomy, pathology, laboratory values and sonographic appearances of organ transplants, the musculoskeletal system, and the breast. Students will demonstrate knowledge in age-related competency (i.e., neonates, pediatric patients, adolescents, adults, and Obstetric patients) and be able to respond appropriately to parental needs. Restricted to: DMS majors. Restricted to Community Colleges campuses only.

DMS 118. Neurosonography  
2 Credits (1+3P)  
This course will cover detailed anatomy of neonatal brain and central nervous system. This course includes scanning techniques and indications for performing neurosonograms of the newborn, as well as common pathologies seen in the fetal and newborn brain and central nervous system. Restricted to: DMS majors. Restricted to Community Colleges campuses only.

DMS 120. Clinical Internship I  
4 Credits  
Provides the practical, hands-on experience required for both the national registry exam and for quality patient care. Students will spend approximately 32 hours per week at their assigned clinical site performing ultrasound exams under the supervision of the clinical staff. Students return to campus periodically to participate in advanced seminars. Six-week course. Restricted to: DMS majors. Restricted to Community Colleges campuses only.

DMS 122. Clinical Internship II  
4 Credits  
Provides the practical, hands-on experience required for both the national registry exam and for quality patient care. Students will spend approximately 32 hours per week at their assigned clinical site performing ultrasound exams under the supervision of the clinical staff. Students return to campus periodically to participate in advanced seminars. Six-week course. Restricted to: DMS majors. Restricted to Community Colleges campuses only.

DMS 124. Clinical Internship III  
8 Credits  
Provides the practical, hands-on experience required for both the national registry exam and for quality patient care. Students will spend approximately 32 hours per week at their assigned clinical site performing ultrasound exams under the supervision of the clinical staff. Students return to campus periodically to participate in advanced seminars. Restricted to: DMS majors. Restricted to Community Colleges campuses only.

Prerequisite(s): DMS 122 or Consent of Instructor.

DMS 126. Clinical Internship IV  
8 Credits  
Provides the practical, hands-on experience required both for national certification and for quality patient care. Students will spend approximately 32 hours per week at their assigned clinical site performing ultrasound exams under the supervision of the clinical staff. Students will learn more difficult exams and will work on case reports and course review materials. Restricted to: DMS majors. Restricted to Community Colleges campuses only.

Prerequisite(s): DMS 124 or consent of instructor.

DRFT-DRAFTING (DRFT)

DRFT 101. Introduction to Drafting and Design Technologies  
1 Credit  
Professional and student organizations associated with the Drafting and Design Technologies program, degree requirements, employment skills and work habits, and university and college policies and procedures will be explored. Students will be introduced to the current learning management system and career-readiness certification. Restricted to Community Colleges only.

DRFT 105. Technical Drawing for Industry  
3 Credits (2+2P)  
Technical sketching, basic CAD, and interpretation of drawings with visualization, speed and accuracy highly emphasized. Areas of focus include various trades such as machine parts, welding, heating and cooling, and general building sketches/plan interpretation.

DRFT 108. Drafting Concepts/Descriptive Geometry  
2 Credits (1+2P)  
Basic manual drafting skills, sketching, terminology and visualization. Graphical solutions utilizing applied concepts of space, planar, linear and point analyses. Metric and S.I. units introduced.

DRFT 109. Computer Drafting Fundamentals  
3 Credits (2+2P)  

DRFT 112. Drafting Concepts/Computer Drafting Fundamentals I  
4 Credits (2+4P)  
Basic drafting skills, terminology, and visualization. Introduction to principles and fundamentals of computer-aided drafting. Same as E T 106.

Prerequisites: O ECS 207, O ECS 125 or consent of instructor.

DRFT 113. Drafting Concepts/Computer Drafting Fundamentals II  
4 Credits (2+4P)  
Drafting for mechanical/industrial applications; machine part detailing, assemblies in orthographic, isometric, auxiliary, oblique, and sectional views. Two-dimensional AutoCAD with introduction to 3-D AutoCAD. Same as E T 216. Restricted to: Community Colleges only.

Prerequisite: DRFT 112.

DRFT 114. Introduction to Solid Modeling  
3 Credits (2+2P)  
2D mechanical drafting and 3D mechanical solid modeling utilizing the latest version of AutoCAD software. Industry dimensioning and annotation standards will be emphasized. 2D multi-view working drawings, 3D solid models, and basic 3D model assemblies will be introduced. Restricted to Community Colleges campuses only.

Prerequisite(s): DRFT 109.

DRFT 115. General Construction Safety  
3 Credits  
Overview of general construction safety related to building, highway and road construction, and surveying field work for entry-level individuals. Students will also have the opportunity to earn a 10-hour construction industry OSHA card. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
DRFT 120. Survey Equipment Fundamentals
2 Credits
Introduces the application and the setup to the following surveying equipment: Automatic Level, Total station, and Global Positioning Systems. Field safety knowledge is required. Restricted to Community Colleges only.

DRFT 130. General Building Codes
3 Credits (2+2P)
Interpretation of the Building Code, local zoning codes, A.D.A. Standards and the Model Energy Code to study construction and design requirements and perform basic plan checking. Restricted to: Community Colleges only.

DRFT 135. Electronics Drafting I
3 Credits (2+2P)
Drafting as it relates to device symbols; wiring, cabling, harness diagrams and assembly drawings; integrated circuits and printed circuit boards; schematic, flow and logic diagrams; industrial controls and electric power fields. Drawings produced using various CAD software packages. Prerequisite(s): DRFT 108 and DRFT 109.

DRFT 143. Civil Drafting Fundamentals
3 Credits (2+2P)
Introduction to drafting in the field of Civil Engineering. Drawings, projects, and terminologies related to topographic, contour drawings, plan and profiles, and street/highway layout. Crosslisted with: E T 143. Restricted to Community Colleges only. Prerequisite(s): DRFT 109.

DRFT 151. Construction Principles and Print Reading
3 Credits (2+2P)
Introduction to construction materials, methods, and basic cost estimating and print reading applicable in today’s residential, commercial, and public works industry. Instruction by print reading and interpretation, field trips, and actual job-site visits and progress evaluation.

DRFT 153. Survey Drafting Applications
3 Credits (2+2P)
Introduction to drafting in the field of survey engineering. Drawings, projects and terminologies related to Point Data, topography, land/boundary surveys, legal descriptions and plat surveys. Using the current Autodesk software. Crosslisted with: SUR 143. Restricted to: Community Colleges only. Prerequisite(s): DRFT 109.

DRFT 160. Construction Take-Offs and Estimating
3 Credits (2+2P)
Computing and compiling materials and labor estimates from working drawings using various techniques common in general building construction and in accordance with standard specifications and estimating formats. Use of spreadsheets and estimating software introduced. Prerequisite: DRFT 151.

DRFT 161. Introduction to Construction Management
3 Credits
Introduction to the construction industry and construction management; construction documents and contracts; project planning, scheduling and administration; construction site management; and the role of Building Information Modeling (BIM) in construction management. Pre/ Restricted to: Community Colleges only. Corequisite(s): DRFT 151 or consent of instructor.

DRFT 164. Intermediate Mechanical Drafting/Solid Modeling
3 Credits (2+2P)
Intermediate 3D mechanical parametric solid modeling and assembly creation utilizing the latest version of Autodesk Inventor software. The creation of 2D working drawings from 3D solid models will be emphasized. Geometric Dimensioning and Tolerancing (GD&T), basic material properties, and industry standard fastening and manufacturing methods will be introduced. Prerequisite(s)/Corequisite(s): DRFT 114. Restricted to Community Colleges campuses only.

DRFT 165. Introduction to Building Information Modeling
3 Credits (2+2P)
Introduction to Building Information Modeling (BIM) in the development of virtual 3D building models, construction documents, renderings and basic animations related to architectural, structural, and mechanical/electrical/plumbing building components. Utilizes the latest BIM technologies in the integration one, parametric BIM. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

DRFT 166. Solid Modeling, Rendering and Animation
3 Credits (2+2P)
Introduction to three dimensional drafting and solid modeling, rendering and animation for architecture and engineering fields. Material application, mapping, and scene lighting will be introduced. Restricted to: Community Colleges only. Prerequisite(s): DRFT 109.

DRFT 167. Computer Rendering and Animation I
3 Credits (2+2P)
Introduction to technical applications of computer generated renderings and animations for the architecture and engineering fields. 3D models, photo-realistic renderings, and basic animation movie files will be produced utilizing Autodesk VIZ and Google SketchUp software. May be repeated for a maximum of 6 credits. Prerequisite: DRFT 109.

DRFT 180. Residential Drafting
3 Credits (2+2P)
Basic residential drafting including, floor plans, foundation plans, sections, roof plans, exterior and interior elevations, and site plans. Applicable residential building and zoning codes, construction methods and materials, adaptable residential design, and drawing and sheet layout for architectural drafting will be introduced. May be repeated up to 3 credits. Restricted to Community Colleges campuses only. Prerequisite(s): DRFT 109.

DRFT 181. Commercial Drafting
3 Credits (2+2P)
Drafting principles, plan coordination, and code analysis applicable in the development of working drawings for commercial, public, and industrial building projects. Students will utilize National Cad Standards, ADA Standards, and will be introduced to modern office practice. Pre/ Restricted to: Community Colleges only. Prerequisite(s): DRFT 109.

DRFT 190. Finding and Maintaining Employment
2 Credits
Techniques in self-evaluations, resume writing, application completion, job interviewing, and job retention. Exposure to work ethics, employee attitudes, and employer expectations.
DRFT 204. Geographic Information Systems Technology  
3 Credits (2+2P)  
The use of digital information for which various digitized data creation methods are captured. Users will capture, store, analyze and manage spatially referenced data in a modeled mapping procedure. Restricted to: Community Colleges only.  
Prerequisite(s): DRFT 109.  

DRFT 214. Advanced Solid Modeling  
3 Credits (2+2P)  
Advanced 3D mechanical parametric solid modeling and assembly creation utilizing the latest version of Solidworks software. The creation of 2D working drawings from 3D solid models and the creation of 3D models for machining/manufacturing will be emphasized. Geometric Dimensioning and Tolerancing (GD&T), material properties, and industry standard fastening and manufacturing methods will be further explored.  
Prerequisite(s)/Corequisite(s): DRFT 114. Restricted to Community Colleges campuses only.  

DRFT 215. Construction Site Safety Management  
3 Credits  
Construction safety, compliance, documentation, and reporting requirements for individuals with construction site safety management responsibilities. Students will have the opportunity to earn a 30-hour construction industry OSHA card. Consent of Instructor required. Restricted to Community Colleges campuses only.  

DRFT 222. Surveying Fundamentals  
3 Credits (2+2P)  
Elementary surveying and civil drafting theory and techniques for non engineering majors. Includes traverse plotting, site plans, mapping, cross sections, and development of plan and profile drawings. Actual basic field measurement/surveying as well as extensive manual and CAD projects will be assigned. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.  
Prerequisite(s): DRFT 109 and MATH 190G.  

DRFT 230. Building Systems Drafting  
3 Credits (2+2P)  
Development of working drawings for electrical, plumbing, and HVAC systems, for residential and commercial building through the applications of both 2D Drafting and 3D Building Information Modeling (BIM) techniques. Basics of project setup, National CAD Standards, ADA Standards, modern office practice, code analysis, as well as Sustainability and LEED for new construction. Restricted to: Community Colleges only.  
Prerequisite(s): DRFT 180 or DRFT 181.  

DRFT 240. Structural Systems Drafting  
3 Credits (2+2P)  
Study of foundations, wall systems, floor systems and roof systems in residential, commercial and industrial design/construction. Produce structural drawings including foundation plans, wall and building sections, floor and roof framing plans, shop drawings and details; schedules, materials lists and specifications. Use of various software. Restricted to: Community Colleges only.  
Prerequisite(s): DRFT 180 or DRFT 181.  

DRFT 242. Roadway Development Drafting  
3 Credits (2+2P)  
Advanced civil/survey technology and drafting related to roadway development. Emphasis is on relevant terminology, codes/standards, and the production of complex working drawings such as topographical/grading, drainage, master utilities, roadway P P/details/etc., according to agency standards. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.  
Prerequisite(s): DRFT 143.  

DRFT 243. Land Development Drafting  
3 Credits (2+2P)  
Advanced civil/survey technology and drafting related to land development. Emphasis is on relevant terminology codes/standards, and the production of complex working drawings such as subdivision plats, local utility and drainage plans, construction details roadway P P, etc., according to local development/agency standards.  
Prerequisite: DRFT 143 and DRFT 153.  

DRFT 244. Advanced Building Information Modeling Applications  
3 Credits (2+2P)  
Advanced applications of Building Information Modeling (BIM) including the creation of, and practice in collaborative work sets, data and design analyses, energy modeling and analysis, preliminary LEED analysis, construction take-offs & estimation, and construction animation, through use of various BIM and related software. Restricted to: Community Colleges only.  
Prerequisite(s): DRFT 165.  

DRFT 274. GIS Theory and Analysis  
3 Credits (2+2P)  
Analyzes the hypothesis in which location and spatial data sufficiently quantifies the appropriate statistical methodology. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.  
Prerequisite(s): DRFT 254.
DRFT 276. Computer Rendering and Animation I
3 Credits (2+2P)
Introduction to technical applications of computer generated renderings and animations for the architecture and engineering fields. 3D models, photo-realistic renderings, and basic animation movie files will be produced utilizing industry standard modeling and animation software.

DRFT 277. Computer Rendering and Animation II
3 Credits (2+2P)
Continuation of DRFT 276. Covers advanced modeling and animation techniques using 3-D animation software.
Prerequisite: DRFT 276.

DRFT 278. Advanced CAD Applications
3 Credits (2+2P)
Introduction to advanced CAD commands, applications, usage techniques, and user customization. The latest version of the National CAD Standards will also be explored. Restricted to: Community Colleges only.
Prerequisite(s): DRFT 276.

DRFT 288. Portfolio Development
3 Credits (2+2P)
Production of a portfolio consisting of previously produced student work related to the student’s individualized degree option. Process shall include the compilation and organization of working and presentation drawings, construction documents, BIM models, and renderings/animations. Students will learn the basics of design layout and online portfolio documentation. Job search and resume preparation activities will also be required. Production of new material and content may also be required. This course is designed as a last semester course in the Drafting & Design curricula. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

DRFT 290. Special Topics
1-4 Credits (1-4)
Topics subtitled in the Schedule of Classes. May be repeated for a maximum of 12 credits.

DRFT 291. Cooperative Experience
1-6 Credits (1-6)
Supervised cooperative work program. Student is employed in an approved occupation and supervised and rated by the employer and instructor. Student meets with advisor weekly. Graded S/U.
Prerequisite: consent of instructor.

DRFT 295. Professional Development and Leadership DAGA
1 Credit
Students gain experience in leadership, team building, performing community service, and membership and/or leadership in a student organization. May be repeated up to 6 credits. Restricted to Community Colleges campuses only.

E E 109. The Engineering of How Things Work
4 Credits (3+3P)
This class provides Integrated Learning Community students with an introduction to various aspects of engineering.

E E 112. Embedded Systems
4 Credits (3+3P)
Introduction to programming through microcontroller-based projects. Extensive practice in writing computer programs to solve engineering problems with microcontrollers, sensors, and other peripheral devices.
Prerequisite(s): C- or better in E E 100.

E E 161. Computer Aided Problem Solving
4 Credits (3+3P)
Introduction to scientific programming. Extensive practice in writing programs to solve engineering problems. Items covered will include: loops, input and output, functions, decision statements, and pointers.
Pre/Corequisite(s): MATH 190G.

E E 162. Digital Circuit Design
4 Credits (3+3P)
Design of combinational logic circuits based on Boolean algebra. Introduction to state machine design. Implementation of digital projects with hardware description language.
Prerequisite(s): C or better in E E 161 and MATH 190G.

E E 200. Linear Algebra, Probability and Statistics Applications
4 Credits (3+3P)
The theory of linear algebra (vectors and matrices) and probability (random variables and random processes) with application to electrical engineering. Computer programming to solve problems in linear algebra and probability.
Prerequisite(s): C- or better in E E 112 and MATH 192G.

E E 201. Electric Circuit Analysis
3 Credits
Electric component descriptions and equations. Kirchhoff’s voltage and current laws, formulation and solution of RLC network equations using time domain concepts. For nonmajors only. Minimum 2.0 GPA.
Prerequisite(s): C or better in MATH 192G.

E E 212. Introduction to Computer Architecture and Organization
4 Credits (3+3P)
Introduction to computer architecture and performance analysis techniques. Design and optimization of systems such as personal mobile devices and cloud computing systems.
Prerequisite(s): C- or better in E E 112 and MATH 190G.

E E 230. AC Circuit Analysis and Introduction to Power Systems
4 Credits (3+3P)
Electric component descriptions and equations; complete solutions of RLC circuits; steady-state analysis of AC circuits; introduction to frequency response techniques; introduction to power systems in the steady-state. May be repeated up to 4 credits. Restricted to: E E majors.
Prerequisite(s): C- or better in E E 100, PHYS 215G and MATH 192G.

E E 240. Multivariate and Vector Calculus Applications
3 Credits
Vector algebra, cylindrical and spherical coordinates, partial derivatives, multiple integrals. Calculus of vector functions through electrostatic applications. Divergence, gradient, curl, divergence theorem, Stokes's theorem, Coulomb's Law, Gauss's Law, electric field, electric potential. Applications in Matlab.
Prerequisite(s): C- or better in MATH 192G and E E 112.
E E 260. Embedded Systems
4 Credits (3+3P)
Applications of microcontrollers, FPGAs, interfaces and sensors. Introduction to Assembly language programming.
Prerequisite(s): C or better in E E 162.

E E 280. DC and AC Circuits
4 Credits (3+3P)
Electric component descriptions and equations; Kirchhoff's voltage and current laws; formulation and solution of network equations for dc circuits; ideal op-amp circuits. Complete solutions of RLC circuits; steady-state analysis of ac circuits, ac power; introduction to frequency response techniques.
Prerequisite(s): C or better in MATH 192G and PHYS 216G.

E E 300. Cornerstone Design
2 Credits
Application and realization of engineering principles to a guided team-based design project. Formulation and implementation of test procedures, evaluation of alternate solutions and oral and written communication of the design and test results. May be repeated up to 6 credits. Restricted to: E E majors. Restricted to Las Cruces campus only.
Prerequisite(s): C- or better in E E 212 and E E 230.

E E 310. Engineering Analysis II
3 Credits
Prerequisite(s): C- or better in E E 210 and MATH 291G.

E E 312. Signals and Systems I
3 Credits
Continuous and discrete time signals and systems. Linear, time-invariant systems. Fourier series, continuous and discrete time Fourier transforms. Time and frequency characterization of signals and systems. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 392. Prerequisite(s): C- or better in E E 210 and E E 280.

E E 314. Signals and Systems II
4 Credits (3+3P)
Introduction to communication systems including amplitude, frequency, and pulse-amplitude modulation. Introduction to control systems including linear feedback systems, root-locus analysis, Nyquist criterion. Introduction to digital signal processing including sampling, digital filtering, and spectral analysis. May be repeated up to 4 credits.
Prerequisite(s): C- or better in E E 312 and MATH 392.

E E 330. Environmental Management Seminar I
1 Credit

E E 351. Fields and Waves
4 Credits (3+3P)
Static electromagnetic field. Maxwell's equation and time-varying electromagnetic fields. Generalized plane wave propagation, reflection, transmission, superposition and polarization. Transmission line theory. Extensions to optical wave propagation. Applications including Time Domain Reflectometry (TDR) and fiber optic transmission. Laboratory experience with RF/microwave test equipment and optical apparatus. Restricted to Majors: Electrical Engineering.
Prerequisite(s): C- or better in E E 310.

E E 363. Computer Systems Architecture
4 Credits (3+3P)
Concepts of modern computer architecture. Processor microarchitectures, hardwired vs. micro-programmed control, pipelining and pipeline hazards, memory hierarchies, bus-based system architecture and memory mapping, hardware-software interface, and operating system concepts. Comparison of architectures to illustrate concepts of computer organization; relationships between architectural and software features.
Prerequisite(s): C or better in C S 273 or E E 260.

E E 380. Semiconductor Devices and Electronics
4 Credits (3+3P)
Prerequisite(s): C- or better in E E 230.

E E 390. Introduction to Electric Power Engineering
4 Credits (3+3P)
Introduction to the principles, concepts, and analysis of the major components of an electric power system. Basic electromechanics, energy conversion and source conversion, transformers, transmission lines, rectifiers, regulators, and system analysis.
Prerequisite(s): C or better in E E 280.

E E 395. Introduction to Digital Signal Processing
3 Credits
Undergraduate treatment of sampling/reconstruction, quantization, discrete-time systems, digital filtering, Z-transforms, transfer functions, digital filter realizations, discrete Fourier transform (DFT) and fast Fourier transform (FFT), finite impulse response (FIR) and infinite impulse response (IIR) filter design, and digital signal processing (DSP) applications.
Prerequisite(s): C or better in E E 314.

E E 400. Undergraduate Research
1-3 Credits
Directed undergraduate research. May be repeated for a maximum of 9 credits.
Prerequisite: consent of the department head.

E E 402. Capstone Design
3 Credits (2+3P)
Application and realization of engineering principles to a significant team-based design project with significant student management and autonomy. Determination of performance requirements, including safety, economics, ethics and manufacturability; extensive communication of design choices and test results to broad audiences; and interfacing of design with other hardware and software. May be repeated up to 3 credits. Restricted to: E E majors.
Prerequisite(s): C- or better in E E 300, E E 314, E E 351, and E E 380.
E E 418. Capstone Design I
3 Credits (1+6P)
Application of engineering principles to a significant design project. Includes teamwork, written and oral communications, and realistic technical, economic, and public safety requirements.
Prerequisite(s)/Corequisite(s): E E 461. Prerequisite(s): C or better in E E 260, E E 314, E E 351, E E 380, and E E 391.

E E 419. Capstone Design II
3 Credits (1+6P)
Realization of design project from E E 418 within time and budget constraints.
Prerequisite(s)/Corequisite(s): E E 461. Prerequisite(s): (C or better in E E 260, E E 314, E E 351, E E 380, and E E 391) OR (C or better in E E 418).

E E 425. Introduction to Semiconductors Devices
3 Credits
Energy bands, carriers in semiconductors, junctions, transistors, and optoelectronic devices, including light-emitting diodes, laser diodes, photodetectors, and solar cells. Taught with E E 525.
Prerequisite(s): C or better in E E 380 and E E 351.

E E 426. Introduction to Smart Grid
3 Credits
The course will serve as an introduction to the technologies and design strategies associated with the Smart Grid. The emphasis will be on the development of communications, energy delivery, coordination mechanisms, and management tools to monitor transmission and distribution networks. Taught with E E 546. Crosslisted with: C S 494.
Prerequisite(s): C- or better in E E 280.

E E 431. Power Systems II
3 Credits
Analysis of a power system in the steady-state. Includes the development of models and analysis procedures for major power system components and for power networks.
Prerequisites: C or better in E E 391.

E E 432. Power Electronics
3 Credits (2+3P)
Basic principles of power electronics and its applications to power supplies, electric machine control, and power systems.
Prerequisites: C or better in E E 380 and E E 391.
Corequisites: E E 312 and E E 314.

E E 438. Mobile Application Development
3 Credits
Introduction to mobile application development. Students will develop applications for iOS devices including iPhone and iPad. Topics include object-oriented programming using the Objective-C language, model-view-controller (MVC) pattern, memory management, view controllers, graphical user interface design, callbacks, and web services.
Corequisite(s): E E 161 or C S 172 or C S 271 or C S 450 or C S 451 or C S 452.

E E 443. Mobile Application Development
3 Credits
Introduction to mobile application development. Students will develop applications for iOS devices including iPhone and iPad. Topics include object-oriented programming using Swift, model-view-controller (MVC) pattern, view controllers including tables and navigation, graphical user interface (GUI) design, data persistence, GPS and mapping, camera, and cloud and web services. May be repeated up to 3 credits.
Prerequisite(s): C- or better in C S 172 or C S 177 or C S 187 or C S 271 or C S 451 or C S 452.

E E 446. Digital Image Processing
3 Credits
Two-dimensional transform theory, color images, image enhancement, restoration, segmentation, compression and understanding. Taught with E E 596. Prerequisite(s): E E 395

E E 447. Neural Signal Processing
3 Credits
Cross-disciplinary course focused on the acquisition and processing of neural signals. Students in this class will be learn about basic brain structure, different brain signal acquisition techniques (fMRI, EEG, MEG, etc.), neural modeling, and EEG signal processing. To perform EEG signal processing, students will learn and use Matlab along with an EEG analysis package that sits on top of Matlab. Taught with E E 597.
Prerequisite(s): C- or better in E E 314.

E E 449. Smart Antennas
3 Credits
Smart antenna and adaptive array concepts and fundamentals, uniform and planar arrays, optimum array processing. Adaptive beamforming algorithms and architectures: gradient-based algorithms, sample matrix inversion, least mean square, recursive mean square, sidelobes cancellers, direction of arrival estimations, effects of mutual coupling and its mitigation. Taught with E E 549.
Prerequisite(s): C or better in E E 314 and E E 351.

E E 452. Introduction to Radar
3 Credits
Basic concepts of radar. Radar equation; detection theory. AM, FM, and CW radars. Analysis of tracking, search, MTI, and imaging radar. Taught with E E 548. Restricted to undergraduate students. Pre/Co-requisite(s): C or better in E E 210 and E E 351.
Corequisite(s): E E 496.

E E 453. Microwave Engineering
3 Credits
Techniques for microwave measurements and communication system design, including transmissions lines, waveguides, and components. Microwave network analysis and active device design. Taught with E E 521. Restricted to undergraduate students. Restricted to: Main campus only.
Prerequisite(s): C or better in E E 351.

E E 454. Antennas and Radiation
3 Credits
Basic antenna analysis and design. Fundamental antenna concepts and radiation integrals. Study of wire antennas, aperture antennas, arrays, reflectors, and broadband antennas. Taught with E E 541. Restricted to undergraduate students. Restricted to: Main campus only.
Prerequisite(s): C or better in E E 351.

E E 460. Space System Mission Design and Analysis
3 Credits
Satellite system design, including development, fabrication, launch, and operations. A systems engineering approach to concepts, methodologies, models, and tools for space systems.
Prerequisite: junior standing.

E E 461. Systems Engineering and Program Management
3 Credits
Modern technical management of complex systems using satellites as models. Team projects demonstrate systems engineering disciplines required to configure satellite components.
Prerequisite(s): Junior standing.
E E 469. Communications Networks
3 Credits (2+3P)
Introduction to the design and performance analysis of communications networks with major emphasis on the Internet and different types of wireless networks. Covers network architectures, protocols, standards and technologies; design and implementation of networks; networks applications for data, audio and video; performance analysis. Taught with E E 569.
Prerequisite(s): C or better in E E 162 and (E E 210 or STAT 371).

E E 473. Introduction to Optics
3 Credits
The nature of light, geometrical optics, basic optical instruments, wave optics, aberrations, polarization, and diffraction. Elements of optical radiometry, lasers and fiber optics. Crosslisted with: PHYS 473
Prerequisite(s): PHYS 216G or PHYS 217.

E E 475. Automatic Control Systems
3 Credits
Design and synthesis of control systems using state variable and frequency domain techniques. Compensation, optimization, multi-variable system design techniques.
Prerequisite(s): C or better in E E 314.

E E 476. Computer Control Systems
3 Credits
Representation, analysis and design of discrete-time systems using time-domain and z-domain techniques. Microprocessor control systems.
Prerequisite: C or better in E E 314.

E E 478. Fundamentals of Photonics
4 Credits (3+3P)
Prerequisite(s): PHYS 216G or PHYS 217.

E E 479. Lasers and Applications
4 Credits (3+3P)
Laser operating principles, characteristics, construction and applications. Beam propagation in free space and fibers. Laser diode construction and characteristics. Hands-on laboratory. Taught with E E 529. Crosslisted with: PHYS 479
Prerequisite(s): C or better in E E 351 or PHYS 461.

E E 480. Introduction to Analog and Digital VLSI
4 Credits (3+3P)
Introduction to analog and digital VLSI circuits implemented in CMOS technology. Design of differential amplifiers, opamps, CMOS logic, flip-flops, and adders. Introduction to VLSI fabrication and CAD tools. Crosslisted with: E E 510.
Prerequisite(s): C or better in E E 260 and E E 380.

E E 481. Electronics II
3 Credits
Feedback analysis, application of operational amplifiers, introduction to data converters, analog filters, oscillator circuits.
Prerequisite: C or better in E E 380.

E E 485. Analog VLSI Design
3 Credits (2+3P)
Analysis, design, simulation, layout and verification of CMOS analog building blocks, including references, opamps, switches and comparators. Teams implement a complex analog IC. Taught with E E 523. Restricted to undergraduate students. Restricted to: Main campus only.
Prerequisite(s): C or better in E E 312 and E E 480.

E E 486. Digital VLSI Design
3 Credits
An introduction to VLSI layers. Static and dynamic logic design, memory circuits, arithmetic operators, and digital phase-locked loops. Taught with E E 524. Restricted to undergraduate students.
Prerequisite(s): C or better in E E 260 and E E 380.

E E 486 L. Digital VLSI Design Laboratory
1 Credit
Simulation, schematic capture, layout, and verification using software tools of material presented in E E 486. An introduction to measurement of digital VLSI circuits. Taught with E E 524L. Pre/
Prerequisite(s): C or better in E E 260 and E E 380.
Corequisite(s): E E 486.

E E 490. Selected Topics
1-3 Credits
May be repeated for a maximum of 9 credits. Graduate students may not use credits of E E 490 toward an M.S. or Ph.D. in electrical engineering.
Prerequisite: consent of instructor.

E E 493. Power Systems III
3 Credits
Analysis of a power system under abnormal operating conditions. Topics include symmetrical three-phase faults, theory of symmetrical components, unsymmetrical faults, system protection, and power system stability. Taught with E E 543. Restricted to undergraduate students. Pre/
Prerequisite(s): C or better in E E 391.
Corequisite(s): E E 431.

E E 496. Introduction to Communication Systems
4 Credits (3+3P)
Introduction to the analysis of signals in the frequency and time domains. A study of baseband digital transmission systems and digital/analog RF transmission systems. Introduction to telecom systems as well as satellite systems.
Prerequisite(s): C or better in E E 314.

E E 497. Digital Communication Systems I
3 Credits
Techniques for transmitting digital data over commercial networks. Topics include baseband and bandpass data transmission and synchronization techniques. Taught with E E 581. Recommended foundation: E E 496.
Prerequisite(s): E E 210 and E E 314.

E E 501. Research Topics in Electrical and Computer Engineering
1 Credit
Ethics and methods of engineering research; contemporary research topics in electrical and computer engineering.
E E 510. Introduction to Analog and Digital VLSI
4 Credits (3+3P)
Introduction to analog and digital VLSI circuits implemented in CMOS technology. Design of differential amplifiers, opamps, CMOS logic, flip-flops, and adders. Introduction to VLSI fabrication and CAD tools. Recommended preparation is E E 260 and E E 380 or equivalent. Taught with E E 480 with differentiated assignments for graduate students. Crosslisted with: E E 480.

E E 512. ASIC Design
3 Credits (2+3P)
This course provides students with experiential knowledge of modern application specific integrated circuits. Topics include ASIC packaging and testing, I/O pads and ESD, Verilog programming and simulation, FPGA verification, Register-transfer level synthesis, timing and area optimization, floorplanning and routing, digital interfaces, full custom and standard cell design, post-layout simulation, and PCB schematics and layout. Prerequisite(s): E E 486 or E E 524.

E E 514. Biosensor Electronics
3 Credits
Course provides students with knowledge of basic integrated analog and RF blocks and how to combine these circuits into sensory systems for biomedical applications. Target areas are in physiology, brain-machine interfaces, neural recording and stimulation. Lecture includes details on amplifiers, current-mode circuits, A/D converters, low-power radio transmitters and receivers, and simulation and layout of VLSI circuits. Lectures are in the form of recent paper reviews and discussion. Includes teamwork, written and oral communication, and realistic technical requirements. Pre/
Prerequisite(s): E E 486 OR E E 524.
Corequisite(s): E E 485 OR E E 523.

E E 515. Electromagnetic Theory I
3 Credits
Electromagnetic theory of time-harmonic fields in rectangular, cylindrical and spherical coordinates with applications to guided waves and radiated waves. Induction and equivalence theorems, perturbational and variational principles applied to engineering problems in electromagnetics. Recommended preparation is E E 351 or equivalent. Restricted to: Main campus only.

E E 516. Electromagnetic Theory II
3 Credits
Continuation of E E 515.

E E 518. Integrated Power Management Circuits
3 Credits
Design and analysis of power management integrated circuits, including linear voltage regulators, voltage references, buck, boost, and buck-boost DC-DC converters, and charge pumps. Extensive use of CAD tools are used to simulate these circuits. Pre/
Prerequisite(s): E E 486 or E E 524.
Corequisite(s): E E 485 or E E 523.

E E 519. RF Microelectronics
3 Credits

E E 520. A/D and D/A Converter Design
3 Credits
Practical design of integrated data converters in CMOS/BJT technologies, OP-AMPS, comparators, sample and holds, MOS switches, element mismatches. Nyquist rate converter architectures: flash, successive approximation, charge redistribution, algorithmic, two step, folding, interpolating, pipelined, delta-sigma converters. Restricted to: Main campus only.
Prerequisite(s): E E 523.

E E 521. Microwave Engineering
3 Credits
Techniques for microwave measurements and communication system design, including transmission lines, waveguides, and components. Microwave network analysis and active device design. Recommended preparation is E E 351 or equivalent. Taught with E E 453 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 522. Advanced Analog VLSI Design
3 Credits
Design of high-performance operational amplifiers; class-AB, rail-to-rail, low-voltage, high-bandwidth, fully-differential. Design of linear operational transconductance amplifiers, high-frequency integrated filters, four-quadrant multipliers, and switched-capacitor circuits. Prerequisite(s): E E 523.

E E 523. Analog VLSI Design
3 Credits (2+3P)
Analysis, design, simulation, layout and verification of CMOS analog building blocks, including references, opamps, switches and comparators. Teams implement a complex analog IC. Recommended preparation is E E 312 and E E 480 or equivalent. Taught with E E 485 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 524. Digital VLSI Design
3 Credits
An introduction to VLSI layers. Static and dynamic logic design, memory circuits, arithmetic operators, and digital phase-locked loops. Taught with E E 486 with differentiated assignments for graduate students. Recommended foundation: E E 260 and E E 380.

E E 524 L. Digital VLSI Design Laboratory
1 Credit
Simulation, schematic capture, layout, and verification using software tools of material presented in E E 524. An introduction to measurement of digital VLSI circuits. Taught with E E 486L with differentiated assignments for graduate students.

E E 525. Introduction to Semiconductor Devices
3 Credits
Energy bands, carriers in semiconductors, junctions, transistors, and optoelectronic devices, including light-emitting diodes, laser diodes, photodetectors, and solar cells. Recommended preparation is E E 380 and E E 351. Taught with: E E 425 with differentiated assignments for graduate students.

E E 528. Fundamentals of Photonics
4 Credits (3+3P)
Ray, wave and guided optics, lasers and thermal sources, radiometry, photon detection and signal-to-noise ratio. Elements of photonic crystals, polarization, acousto-optics, electro-optics, and optical nanostructures. Taught with E E 478 with differentiated assignments for graduate students. Recommended foundation: (PHYS 216 or PHYS 217) and E E/PHYS 473. Crosslisted with: PHYS 528.
E E 529. Lasers and Applications
4 Credits (3+3P)
Laser operating principles, characteristics, construction and applications. Beam propagation in free space and fibers. Laser diode construction and characteristics. Hands-on laboratory. Recommended foundation: E E 351 or PHYS 461. Taught with: E E 479 with differentiated assignments for graduate students. Crosslisted with: PHYS 529

E E 530. Environmental Management Seminar I
1 Credit
Same as CH E 530, C E 530, I E 530.

E E 531. Power System Modeling and Computational Methods
3 Credits
Development and analysis of fast computational methods for efficient solution of large scale power-system problems. Algorithms for constructing the bus impedance matrix; sparse matrix techniques; partial-inverse methods; compensation of mutual coupling. Pre/Restrict to: Main campus only.

Corequisite(s): E E 543.

E E 532. Dynamics of Power Systems
3 Credits
Transient and dynamic stability of power systems; synchronous machine modeling and dynamics; prediction and stabilization of system oscillations. Recommended preparation is E E 493 or equivalent. Restricted to: Main campus only.

E E 533. Power System Operation
3 Credits
AGC, economic dispatch, unit commitment, operations planning, power flow analysis and network control, system control centers. Recommended preparation is E E 493 or equivalent. Restricted to: Main campus only.

E E 534. Power System Relaying
3 Credits
Fundamental relay operating principles and characteristics. Current, voltage, directional, differential relays; distance relays; pilot relaying schemes. Standard protective schemes for system protection. Operating principles and overview of digital relays. Recommended preparation is E E 493 or equivalent.

E E 537. Power Electronics
3 Credits (2+3P)
Basic principles of power electronics and its applications to power supplies, electric machine control, and power systems. Recommended preparation is E E 314, E E 380, and E E 391. Taught with E E 432 with differentiated assignments for graduate students.

E E 541. Antennas and Radiation
3 Credits
Basic antenna analysis and design. Fundamental antenna concepts and radiation integrals. Study of wire antennas, aperture antennas, arrays, reflectors, and broadband antennas. Recommended preparation is E E 351 or equivalent. Taught with E E 454 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 542. Power Systems II
3 Credits
Analysis of a power system in the steady-state. Includes the development of models and analysis procedures for major power system components and for power networks. Recommended preparation is E E 391 or equivalent. Taught with E E 431 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 543. Power Systems III
3 Credits
Analysis of a power system under abnormal operating conditions. Topics include symmetrical three-phase faults, theory of symmetrical components, unsymmetrical faults, system protection, and power system stability. Recommended preparation is E E 431 or equivalent. Taught with E E 493 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 544. Distribution Systems
3 Credits
Concepts and techniques associated with the design and operation of electrical distribution systems. Recommended preparation is E E 542 and E E 543. Taught with E E 494 with differentiated assignments for graduate students.

E E 545. Digital Signal Processing II
3 Credits
Non-ideal sampling and reconstruction, oversampling and noise shaping in A/D and D/A, finite word length effects, random signals, spectral analysis, multirate filter banks and wavelets, and applications. Recommended preparation is E E 395 or equivalent. Restricted to: Main campus only.

E E 546. Introduction to Smart Grid
3 Credits
The course will serve as an introduction to the technologies and design strategies associated with the Smart Grid. The emphasis will be on the development of communications, energy delivery, coordination mechanisms, and management tools to monitor transmission and distribution networks. Taught with E E 426. Crosslisted with: C S 514.

E E 548. Introduction to Radar
3 Credits
Basic concepts of radar. Radar equation; detection theory, AM, FM, and CW radars. Analysis of tracking, search, MTI, and image radar. Recommended preparation is E E 310, E E 351, and E E 496 or equivalent. Taught with E E 452 with differentiated assignments for graduate students. Restricted to: Main campus only.

E E 549. Smart Antennas
3 Credits
Smart antenna and adaptive array concepts and fundamentals, uniform and planar arrays, optimum array processing. Adaptive beamforming algorithms and architectures: gradient-based algorithms, sample matrix inversion, least mean square, recursive least mean square, sidelobe cancellers, direction of arrival estimations, effects of mutual coupling and its mitigation. Taught with E E 449. Recommended foundation is E E 314 and E E 351.

E E 551. Control System Synthesis I
3 Credits
An advanced perspective of linear modern control system analysis and design, including the essential algebraic, structural, and numerical properties of linear dynamical systems.

E E 552. Control System Synthesis II
3 Credits
An overview of optimal controls for linear dynamical systems, analysis and design of control systems using Lyapunov techniques, control system design using semidefinite programming. An introduction to stochastic filtering and control.
E E 555. Advanced Linear Systems
3 Credits
Advanced level study of linear systems and associated mathematical tools including linear equations, spectral theory, normal matrices, projections, quadratic forms, discrete and continuous time dynamical systems. Recommended preparation is MATH 480 or equivalent. Restricted to: Main campus only.

E E 563. Computer Performance Analysis I
3 Credits
Issues involved and techniques used to analyze performance of a computer system. Topics covered include computer system workloads; statistical analysis techniques such as principal component analysis, confidence interval, and linear regression; design and analysis of experiments; queueing system analysis; computer system simulation; and random number generation. Recommended preparation is E E 210 and E E 363.

E E 564. Advanced Computer Architecture I
3 Credits
Multiprocessor and distributed computer architectures; models of parallel computation; processing element and interconnection network structures, and nontraditional architectures. Recommended preparation is E E 363 or equivalent. Crosslisted with: C S 557.

E E 565. Pattern Recognition and Machine Learning
3 Credits
Statistical pattern classification, supervised and unsupervised learning, feature selection and extraction, clustering, image classification and syntactical pattern recognition. Recommended preparation is E E 210 or equivalent probability and statistics and linear algebra courses.

E E 567. ARM SOC Design
3 Credits
The course aims to produce students who are capable of developing ARM-based SoCs from high level functional specifications to design, implementation and testing on real FPGA hardware using standard hardware description and software programming languages.
Prerequisite(s): C+ or higher in E E 512.

E E 569. Communications Network
3 Credits (2+3P)
Introduction to the design and performance analysis of communications networks with major emphasis on the Internet and different types of wireless networks. Covers network architectures, protocols, standards and technologies; design and implementation of networks; networks applications for data, audio and video; performance analysis. Taught with E E 469. Recommended foundation is E E 162 and (E E 210 or STAT 371).

E E 571. Random Signal Analysis
3 Credits
Application of probability and random variables to problems in communication systems, analysis of random signal and noise in linear and nonlinear systems.

E E 572. Modern Coding Theory
3 Credits
Error control techniques for digital transmission and storage systems. Introduction to basic coding bounds, linear and cyclic block codes, Reed-Solomon codes, convolutional codes, maximum likelihood decoding, maximum a posteriori probability decoding, factor graphs, low density parity check codes, turbo codes, iterative decoding. Applications to data networks, space and satellite transmission, and data modems. Recommended foundation is E E 210 and E E 496.

E E 573. Signal Compression
3 Credits
Fundamentals of information source encoding and decoding. Includes information theory bounds on source coding, lossless coding algorithms, scalar quantizing and vector quantizing.
Prerequisite: E E 571.

E E 577. Fourier Methods in Electro-Optics
3 Credits
Linear systems theory, convolution and Fourier transformation are applied to one-dimensional and two dimensional signals encountered in electro-optical systems. Applications in diffraction, coherent and incoherent imaging, and optical signal processing. Recommended foundation: E E 312 and E E 528. Crosslisted with: PHYS 577

E E 578. Optical System Design
3 Credits
Optical design software is used to study optical systems involving lenses, mirrors, windows and relay optics. Systems considered include camera lenses, microscopes and telescopes. Recommended foundation: E E/PHYS 473, E E/PHYS 528 and E E/PHYS 577. Crosslisted with: PHYS 578.

E E 581. Digital Communication Systems I
3 Credits
Techniques for transmitting digital data over commercial networks. Topics include baseband and bandpass data transmission and synchronization techniques. Recommended foundation is E E 210, E E 314, and E E 496. Taught with E E 497.

E E 583. Wireless Communication
3 Credits
Cellular networks, wireless channels and channel models, modulation and demodulation, MIMO, diversity and multiplexing, OFDM, wireless standards including LTE and WiMAX. Recommended foundation: E E 571 or equivalent.
Prerequisite(s): E E 314 or E E 571.

E E 584. Mathematical Methods for Communications and Signal Processing
3 Credits
Applications of mathematical techniques from estimation theory, optimization principles and numerical analysis to the problems in communications and signal processing. 
Prerequisites: E E 571 and E E 555 or knowledge of linear algebra.

E E 585. Telemetering Systems
3 Credits
Covers the integration of components into a command and telemetry system. Topics include analog and digital modulation formats, synchronization, link effects, and applicable standards. Recommended preparation is E E 395, E E 496, and E E 497, or equivalent. Restricted to: Main campus only.

E E 586. Information Theory
3 Credits
This class is a study of Shannon’s measure of information and discusses mutual information, entropy, and channel capacity, the noiseless source coding theorem, the noisy channel coding theorem, channel coding and random coding bounds, rate-distortion theory, and data compression. Restricted to: Main campus only. Crosslisted with: MATH 509
Prerequisite(s): E E 571 or STAT 515.

E E 590. Selected Topics
1-9 Credits
May be repeated for a maximum of 18 credits.
E E 593. Mobile Application Development
3 Credits
Introduction to mobile application development. Students will develop applications for iOS devices including iPhone and iPad. Topics include object-oriented programming using Swift, model-view-controller (MVC) pattern, view controllers including tables and navigation, graphical user interface (GUI) design, data persistence, GPS and mapping, camera, and cloud and web services. Taught with E E 443 with differentiated assignments for graduate students. Recommended foundation is C++ or Java programming course. May be repeated up to 3 credits.

E E 596. Digital Image Processing
3 Credits
Two-dimensional transform theory, color images, image enhancement, restoration, registration, segmentation, compression and understanding. Recommended foundation is E E 571. Taught with E E 446.

E E 597. Neural Signal Processing
3 Credits
Cross-disciplinary course focused on the acquisition and processing of neural signals. Students in this class will learn about basic brain structure, different brain signal acquisition techniques (fMRI, EEG, MEG, etc.), neural modeling, and EEG signal processing. To perform EEG signal processing, students will learn and use Matlab along with an EEG analysis package that sits on top of Matlab. Taught with E E 447.

E E 598. Master's Technical Report
9 Credits
Individual investigation, either analytical or experimental, culminating in a technical report. May be repeated for a maximum of 18 credits. Graded PR/S/U.

E E 599. Master's Thesis
15 Credits
Thesis.

E E 600. Doctoral Research
1-15 Credits
Research.

E E 615. Computational Electromagnetics
3 Credits
The numerical solution of electromagnetics problems. Topics include differential equation techniques, integral equation methods, hybrid techniques, algorithm development and implementation, and error analysis. Particular algorithms, including FEM, finite differences, direct solvers, and iterative solvers, are studied.

E E 690. Selected Topics
1-9 Credits
May be repeated for a maximum of 9 credits.

E E 700. Doctoral Dissertation
15 Credits
Dissertation.

E S-ENVIRONMENTAL SCIENCE (E S)

E S 110G. Introductory Environmental Science
4 Credits (3+2P)
Introduction to environmental science as related to the protection, remediation, and sustainability of land, air, water, and food resources. Emphasis on the use of the scientific method and critical thinking skills in understanding environmental issues.

E S 256. Environmental Engineering and Science
3 Credits
Principles in environmental engineering and science: physical chemical systems and biological processes as applied to pollution control. Restricted to: Main campus, Alamogordo campus, Grants campus, Carlsbad campus. Crosslisted with: C E 256
Prerequisite(s): CHEM 111G and MATH 191G.

E S 256 L. Environmental Science Laboratory
1 Credit
Laboratory experiments associated with the material presented in E S 256. Same as C E 256L.
Corequisite: E S 256.

E S 300. Special Topics
1-4 Credits
Special subjects and credits to be announced in the Schedule of Classes. Consent of instructor required. Maximum of 4 credits per semester. Restricted to majors.

E S 301. Principles of Ecology
3 Credits
A survey of ecology including general theory, the adaptations of organisms, population dynamics, species interactions, and the structure and function of natural communities and ecosystems. Crosslisted with: BIOL 301
Prerequisite(s): BIOL 111G, A ST 311, and grade of C or better in MATH 191G or Math Placement Exam score adequate to enroll in mathematics courses beyond MATH 191G.

E S 312. Emergency Response to Hazardous Material Incidents
2 Credits
EPA approved Environmental Response Training Program Course 165.15. In compliance with OSHA 29 CFR 1910.120. Normally taken during last year of study. Same as E T 312 and WERC 312.
Prerequisite: consent of instructor.

E S 330. Environmental Management Seminar I
1 Credit

E S 361. Basic Toxicology
3 Credits
BIOL 110G or BIOL 190 recommended. Same as TOX 361.
Prerequisite: CHEM 110G, CHEM 112G, or CHEM 114.

E S 370. Environmental Soil Science
3 Credits
Continuation of SOIL 252 that emphasizes soil properties and processes that directly relate to environmental pollution problems. Same as SOIL 370.
Prerequisite: SOIL 252.

E S 391. Internship
3 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. Maximum of 3 credits toward a degree. Consent of Instructor required. S/U Grading (S/U, Audit).

E S 422. Environmental Chemistry
3 Credits
Chemistry of organic and metal ion pollutants in the environment and principles important to their remediation including bioremediation. Restricted to: Main campus only. Crosslisted with: CHEM 422
Prerequisite(s): CHEM 112G and either CHEM 211 or CHEM 313.
E S 423. Environmental Toxicology
3 Credits
Toxicological tests required by the EPA to determine human and environmental safety of pesticides and industrial pollutants; discussion of environmental fate of major pesticide classes and industrial pollutants. Crosslisted with: TOX 423
Prerequisite(s): TOX 361 or TOX 461.

E S 430. Environmental Management Seminar II
1 Credit
Survey of practical and new developments in environmental management field, hazardous and radioactive, waste management, and related health issues, provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: C E 430, CH E 430, E E 430, I E 430 and WERC 430

E S 434. Aquatic Contaminants and Toxicology
4 Credits
Basic principles and methodologies of aquatic toxicity testing. Routes of exposure and modes of action. Environmental legislation and ecological risk assessment. Crosslisted with: WLSC 434
Prerequisite(s): Senior standing or consent of instructor.

E S 449. Special Problems
1-3 Credits
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and 6 credits toward a degree. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: E S majors.

E S 451. Special Topics
1-4 Credits (1-4)
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

E S 452. Geohydrology
4 Credits (3+2P)
Origin, occurrence, and movement of fluids in porous media and assessment of aquifer characteristics. Development and conservation of ground water resources, design of well fields. Crosslisted with: C E 452 and GEOL 452.
Prerequisite(s): Junior or Senior.

E S 459. Aquatic Ecology
4 Credits
Ecological functions of plant and animal communities in aquatic ecosystems with emphasis on chemical and physical properties, productivity, species interactions, population dynamics, and concepts for diagnosing problems and restoring aquatic ecosystems. Crosslisted with: WLSC 459
Prerequisite(s): (E S, WLSC or BIOL 301), CHEM 112G, (MATH 142G or MATH 191G).

E S 460. Introduction to Air Pollution
3 Credits
An introduction to the physics and chemistry of tropospheric air pollution including sources of air pollution, local and long-range transport, instrumentation, regulatory requirements, control technology.
Prerequisite(s): PHYS 215G, CHEM 112G, MATH 191G.

E S 462. Sampling and Analysis of Environmental Contaminants
3 Credits (1+6P)
Theory, application, methodology, and instrumentation used in the sampling and analysis of environmental contaminants. Same as ENVE 462.
Prerequisite(s): E S 256.

E S 470. Environmental Impacts of Land Use and Contaminant Remediation
3 Credits
The course will cover the integrated assessment of soil erosion, contaminant transport in soil and water, and contaminant remediation from site scale to watershed scales. Understanding of the controlling factors for each type land use impact will be gained through the use of risk assessment, case studies, and computer modeling. Case studies will illustrate the processes under various environmental applications. This course will also cover the application of solute transport principles and methods for the remediation of contaminated soil and groundwater. It will also discuss the contaminated site characterization, monitoring, and remediation design. Discussions of innovative methodologies will be supported with case studies. Crosslisted with: WSAM 470.
Prerequisite(s): E S 256, E S 462, E S 370.

E S 485. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: AGRO 485, HORT 486, SOIL 485 and CHME 485.
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

E S 486. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: AGRO 485, HORT 486, SOIL 485 and CHME 485.
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

E S 489. Special Problems
1-3 Credits
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and 6 credits toward a degree. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: E S majors.

E S 495. Special Topics
1-4 Credits (1-4)
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

E S 549. Aquatic Ecology
4 Credits
Ecological functions of plant and animal communities in aquatic ecosystems with emphasis on chemical and physical properties, productivity, species interactions, population dynamics, and concepts for diagnosing problems and restoring aquatic ecosystems. Crosslisted with: WLSC 459
Prerequisite(s): (E S, WLSC or BIOL 301), CHEM 112G, (MATH 142G or MATH 191G).

E S 599. Master's Thesis
1-15 Credits

E S 605. Arid Land Water Resources
3 Credits (2+2P)
The course will cover various issues of relevance to water resources and water supply management within the Southwest US and other semiarid and arid regions. Discussions may include development and sustainability, climate change and drought, socioeconomic and cultural, and transboundary issues. Crosslisted with: WSAM605.

E S 696. Doctors Proposal
1 Credit
Current research proposal written by masters level graduate students. Consent of Instructor required. Crosslisted with: AGRO 596, GENE 596, HORT 596 and SOIL 596. Restricted to: Masters HORT; Masters PLEN majors.
Prerequisite(s): Master level graduate students.

E S 699. Doctoral Dissertation
1-15 Credits
E T-ENGINEERING TECHNOLOGY (E T)

E T 101. Introduction to Engineering Technology
1 Credit
The development of engineering technology, with an introduction to engineering technology, education, and practice. Graded S/U.

E T 104. Soldering Techniques
1 Credit
Fundamentals of soldering, desoldering, and quality inspection of printed circuit boards.

E T 106. Drafting Concepts/Computer Drafting Fundamentals I
4 Credits (2+4P)
Basic drafting skills, terminology, and visualization. Introduction to principles and fundamentals of computer-aided drafting. Community Colleges only. Same as DRFT 112.
Prerequisite: OECS 125, OECS 207, or consent of instructor.

E T 109. Computer Drafting Fundamentals
3 Credits (3+2P)
Crosslisted with: DRFT 109, CE 109 and SUR 109

E T 110. Introduction to 3-D Modeling (Solid Works)
3 Credits
Introduction to SolidWorks, a 3-D modeling software. The foundation for designing mechanical parts and assemblies. May be repeated up to 3 credits.

E T 120. Computation Software
2-3 Credits (2-3)
The use of spreadsheet software in the field of engineering technology.

E T 125. Introduction to Renewable Energy
3 Credits
Renewable energy systems, including topics in thermal-solar photovoltaic, wind, geothermal systems, and other current topics. Theory, practical applications, safety considerations and the economics of alternative renewable energy systems compared to conventional systems.

E T 153. Introduction to Computer Networks
3 Credits
Introduction to basic computer network fundamentals including International Open Systems Interconnect (OSI), the seven-layer model, and various networking hardware devices. Community Colleges only.

E T 154. Construction Methods and Communications
3 Credits
Blueprint reading, specifications, and introduction to materials used in construction.

E T 155. Network Operating Systems I
3 Credits (3+1P)
Introduction to a computer network operating system. May not be used as part of an E T degree program on main campus. Restricted to: Community Colleges only.
Prerequisite(s): E T 120 or E T 122.

E T 160. Basic Computer Operating Systems
3 Credits
Basics of the most commonly used computer operating systems, command line interface, file systems, file virtualization.

E T 182. Digital Logic
3 Credits
The use of truth tables, Boolean equations, and diagrams to define, simplify, and implement logic-valued functions.

E T 183. Applied DC Circuits
3 Credits (2+2P)
Application of Ohm's law, Kirchhoff's laws, Thevenin's, and Norton's theorems to the analysis of DC passive circuits. Embedded Lab. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 121G.

E T 183 L. Applied DC Circuits Lab
1 Credit
DC applied circuits lab. May be repeated up to 1 credits.
Corequisite(s): E T 183.

E T 184. Applied AC Circuits
3 Credits (2+2P)
Application of circuit laws and theorems to analysis of AC passive circuits. Resonant circuit, polyphase circuit and magnetic circuit topics are introduced. Embedded Lab. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 190G. Prerequisite(s): E T 183.

E T 184 L. Applied AC Circuits Lab
1 Credit
AC applied circuits lab May be repeated up to 1 credits.
Corequisite(s): E T 184.

E T 190. Applied Circuits
4 Credits (3+2P)
Application of Ohm's law, Kirchhoff's laws, and Thevenin's theorems to the analysis of AC and DC passive circuits. Electronic circuit topics are introduced. Embedded lab.
Prerequisite(s)/Corequisite(s): MATH 190G.

E T 191. Applied Circuits Laboratory
1 Credit
Applied Circuits Lab May be repeated up to 1 credits.

E T 200. Special Topics
1-3 Credits
Directed study or project. May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

E T 203. Computational Foundations
3 Credits
Fundamental concepts of various proof techniques. These concepts will be applied to the use of computer algorithms, programming languages and other engineering and technology applications. May be repeated up to 3 credits.
Prerequisite(s): MATH 190G and E T 262.

E T 210. Intermediate 3-D Modeling (Solid Works)
3 Credits (2+2P)
Intermediate 3-D modeling. Applied modeling of techniques to prepare for SolidWorks certification (CSWA). May be repeated up to 3 credits.
Prerequisite(s): E T 110.

E T 217. Manufacturing Processes
3 Credits
Introduction to manufacturing and processing, including: casting, forming, and machining. Emphasis on creating products with the appropriate techniques. May be repeated up to 3 credits. Crosslisted with: IE 217.
Prerequisite(s)/Corequisite(s): E T 217L. Prerequisite(s): E T 110 and MATH 121G.
E T 217 L. Manufacturing Processes Lab
1 Credit
Hands-on laboratory in machine shop to apply topics from E T 217, including: casting, forming, and machining. May be repeated up to 1 credit.
Prerequisite(s)/Corequisite(s): E T 217.

E T 220. Internship
1-6 Credits
Internship requiring an approved number of hours of varied and progressive experience in the field of study. The scope and other requirements of the internship are stated in an individualized syllabus and through a memorandum of understanding between the faculty mentor and the industry partner. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): E T 283.

E T 230. Introduction to Servo Systems
1 Credit
Introduction to Servo Systems. Topics include uses of servos in the industry, servo types, lop gains and frequency response, software control systems, damping, feedback, encoders, synchros and resolvers. Restricted to Community Colleges campuses only.
Prerequisite(s): E T 246.

E T 240. Applied Statics
3 Credits
Fundamental topics of applied statics, including force system analysis, equilibrium, free body diagrams, methods of joints and sections, distributed loads, friction, centroids, area moments, and shear and moment diagrams. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 235G or MATH 191G.
Prerequisite(s): PHYS 211G or PHYS 215G.

E T 241. Applied Dynamics
3 Credits
The foundation for understanding particles and bodies in motion and the forces involved, including: projectile motion, Newton’s Laws of Motion, conservation of energy, and impulse and momentum. May be repeated up to 3 credits.
Prerequisite(s): E T 240. (MATH 235 or MATH 191G).

E T 245. Computer Hardware Fundamentals
3 Credits (2+2P)
Computer hardware fundamentals including architecture, interfacing, peripherals, troubleshooting, system upgrades, and maintenance. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

E T 246. Electronic Devices I
4 Credits (3+3P)
Solid-state devices including diodes, bipolar-transistors, and field effect transistors. Use of these devices in rectifier circuits, small signal and power amplifiers. May be repeated up to 4 credits.
Prerequisite(s): E T 190 or E T 184.

E T 253. Networking Operating Systems II
3 Credits (3+1P)
Introduction to a computer network operating system. May not be used as part of an E T degree program on main campus. Restricted to Community Colleges campuses only.
Prerequisite(s): E T 155.

E T 254. Concrete Technology
3 Credits (2+2P)
Fundamentals of aggregates, Portland cement, and asphalt used in design and construction.

E T 255. Linux System Administration
3 Credits
Introduction to Linux system administration.
Prerequisite(s)/Corequisite(s): E T 160.

E T 256. Networking Operating Systems III
3 Credits (3+1P)
Introduction to a computer network operating system. May not be used as part of an E T degree program on main campus. Restricted to Community Colleges campuses only.
Prerequisite(s): E T 253.

E T 262. Software Technology I
3 Credits (2+2P)
An introduction to computer programming concepts as applied to engineering technology. Includes basic logic design, algorithm development, debugging and documentation. History and use of computers and their impact on society. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): E T 182 or MATH 190G.

E T 272. Electronic Devices II
4 Credits (3+3P)
Operational amplifiers, positive and negative feedback, computer aided circuit analysis. In addition circuits include integrator, differentiators and phase shift networks. May be repeated up to 4 credits.
Prerequisite(s)/Corequisite(s): MATH 235G or MATH 191G.
Prerequisite(s): E T 246.

E T 273. Fundamentals of Networking Communications I
4 Credits (2+4P)
Introduction to networking basics, including computer hardware and software, electricity, networking terminology, protocols, LANs, WANs, OSI model, IP addressing, and design and documentation of basic network and structure cabling. Community Colleges only. May be repeated up to 4 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): E T 153.

E T 276. Electronic Communications
3 Credits (2+2P)
Antennas, transmission devices, A-M and F-M transmission and detection, pulse systems, microwave systems.
Prerequisite(s): E T 246.

E T 277. Computer Networking I for IET
3 Credits (2+2P)
Computer network design and applications for LAN to WAN, protocols, switches, bridges, routers, NT server, TCP/IP networks, network diagnostics, voice over IP, wireless networks, and the OSI layers from physical to transport. May be repeated up to 3 credits.
Prerequisite(s): E T 182.

E T 280. Introduction to Multimedia
3 Credits
Introduction to video, audio and other digital presentation methods.
Prerequisite(s): E T 255.

E T 282. Digital Electronics
4 Credits (3+3P)
Applications of digital integrated circuits, multiplexers, counters, arithmetic circuits, and microprocessors. May be repeated up to 4 credits.
Prerequisite(s)/Corequisite(s): (E T 190 or E T 184). Prerequisite(s): E T 182.
E T 283. Hardware PC Maintenance
3 Credits (3+1P)
Installing, configuring, troubleshooting, and maintaining personal computer hardware components.
Prerequisite(s): E T 120 or E T 122.

E T 284. Software PC Maintenance
3 Credits (3+1P)
Installing, configuring, troubleshooting, and maintaining personal computer operating systems.
Prerequisite(s): E T 120 or E T 122.

E T 285. Principles of Security
3 Credits
Examines the field of information security within a real-world context of issues faced by today's IT professionals.
Prerequisite(s): E T 283 or consent of instructor.

E T 286. Fundamentals of Security
3 Credits
An overview of general security concepts for information technology systems.
Prerequisite(s): E T 283 or consent of instructor.

E T 287. PC Disaster and Data Recovery
3 Credits
This course provides an overview of the various causes of personal computer data failure and methods to mitigate the loss of your personal computer data. The focus is on restoring your personal computer to full PC functionality and recovering lost and damaged files after one of these unforeseen problems. In addition, the course provides a means to lessen the impact of these inevitable events with the preparation of a disaster recovery plan.
Prerequisite(s): E T 120 or E T 122.

E T 290. Networking Wireless Communication
3 Credits (3+1P)
This course provides an introduction to wireless networking and communications. Some of the topics covered are protocols, transmission methods, and IEEE 802.11 standards. Wireless LAN (WLAN) fundamentals, devices, and security, cellular telephony, broadband, and satellite communications.
Prerequisite: E T 273.

E T 291. PC Forensics and Investigation
3 Credits
Introduction to computer forensics and investigative fundamentals. Topics include understanding computer forensic and investigation law and requirements, processing crime and incident scenes, and the extraction, preservation, analysis and presentation of computer-related evidence.
Prerequisite(s): E T 120 or E T 122.

E T 300. Special Topics
1-3 Credits
Directed study or project. May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

E T 302. Manufacturing Data Analysis
3 Credits
Methods for analyzing data collected during manufacturing processes. Emphasis placed on production control utilizing results of statistical methods and design of experiments.
Prerequisite(s): MATH 235.

E T 305. Introduction to Product Design
3 Credits (2+3P)
The process of designing an innovative product for a real customer. Working through ideas, prototypes, 3-D models, concept validation, and entrepreneurship. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): E T 210, E T 217, and (COMM 265G or COMM 253G or AXED 201G or HON 265G). Restricted to: ET U, ET M, ET C, ET E majors.

E T 306. Fundamental and Applied Thermodynamics
3 Credits
First and second laws, properties of substances, thermodynamic cycles including power generation and refrigeration. May be repeated up to 3 credits.
Prerequisite(s): CHEM 110G and E T 240 and (MATH 235G or MATH 191G) and (( PHYS 212G or PHYS 216G) and (PHYS 212GL or PHYS 216GL)).

E T 306 L. Thermodynamics Lab
1 Credit
Applications of thermodynamic theory to lab devices. Practice in testing, instrumentation, and data collection. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): E T 306 and ((E T 184 201440) or (E T 190 201640)).

E T 308. Fluid Technology
3 Credits
Application of basic principles of fluid mechanics to practical applied problems. May be repeated up to 3 credits.
Prerequisite(s): (MATH 235G or MATH 191G) and E T 240.

E T 308 L. Fluid Technology Lab
1 Credit
Measurements in fluid statics, dynamics, and hydraulic systems. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): E T 308. Prerequisite(s): (MATH 235 or MATH 191G), E T 240.

E T 309V. Manufacturing: History and Technology
3 Credits
The history of manufacturing, the technology on which it is based, and its impact on society.

E T 310. Applied Strength of Materials
3 Credits
Application of principles of strength of materials to practical design and analysis problems. May be repeated up to 3 credits.
Prerequisite(s): (MATH 235G or MATH 191G) and E T 240.

E T 310 L. Applied Strength of Materials Lab
1 Credit
Testing and analyzing the physical properties of materials. Cursory review of Excel, PowerPoint, FEA, Instron machine, and testing standards. May be repeated up to 1 credits.
Prerequisite(s)/Corequisite(s): E T 310.

E T 312. Emergency Response to Hazardous Material Incidents
2 Credits
Same as E S 312, WERC 312.

E T 314. Communications Systems I
3 Credits (3+2P)
Circuits and devices used for transmission, reception, and processing of RF signals.
Prerequisite(s): E T 246 & MATH 190G.
E T 317. Advanced 3-D Modeling and Design
3 Credits
Advanced 3-D modeling with current engineering design practices. Students will use SolidWorks add-ins such as CAMWorks, Product Data Management (PDM), and Model-Based Definition in conjunction with Geometric Dimensioning and Tolerancing (GD&T) practices. Students will have the opportunity to take the Certification SolidWorks Professional Exam (CSWP). May be repeated up to 3 credits.

Prerequisite(s): E T 210.

E T 324. Signal Processing and Filtering
4 Credits (3+3P)
Application of digital and analog signal conversion models. Discrete time signals and systems. Time and frequency domain concepts. Presentation of Fourier and Z transforms. Application of analog and digital signal filtering with and without feedback. May be repeated up to 4 credits.

Prerequisite(s)/Corequisite(s): MATH 236G or MATH 191G and (PHYS 212G or PHYS 216G) and (PHYS 212GL or PHYS 216GL). Prerequisite(s): E T 272.

E T 328. Kinematics of Machines
3 Credits (2+3P)
Kinematic analysis of machine elements using linkages, cams, and gears. Applied design of mechanical systems using SolidWorks simulation and Excel modeling. May be repeated up to 3 credits.

Prerequisite(s): E T 210 and E T 241.

E T 332. Applied Design of Structures I
4 Credits (3+3P)
An introduction to structural analysis and design. Use of various building codes for development of allowable and factored loads on structures. Allowable stress and strength design concepts for structural components using concrete and steel. Required use of computer software such as spreadsheets, databases, and self-developed programs and design aids.

Prerequisite(s): E T 310.

E T 339. Introduction to Digital Forensics and Incident Response
3 Credits (2+3P)
Introduction to the skills required to perform digital forensics and incident response on Windows operating systems. Topics include: live response, evidence acquisition, Windows operating system artifacts, documentation and reporting. May be repeated up to 3 credits.

Prerequisite(s): E T 255.

E T 344. Microcomputer Systems
3 Credits (2+3P)
Microcomputer and/or microcontroller systems applications and architectures with a software emphasis using programming languages.

Prerequisite(s)/Corequisite(s): E T 362. Prerequisite(s): E T 182 and MATH 190.

E T 354. Soil and Foundation Technology
4 Credits (3+3P)
Fundamentals of investigation of soil properties and their importance in design, construction, and testing as related to buildings, roads, dams, and other structures. Design of foundations considering slope stability, bearing capacity and settlement. May be repeated up to 4 credits.

Prerequisite(s)/Corequisite(s): E T 310. Prerequisite(s): E T 254.

Restricted to: ET U, ET M, ET C, ET E majors.

E T 355. Site/Land Development and Layout
3 Credits
Techniques, methods, and takeoffs for infrastructure layout, site plan design, grading, earthwork, utilities, road construction. May be repeated up to 3 credits.

Prerequisite(s)/Corequisite(s): DRFT 143 or DRFT 153.

E T 360V. Technology in Business and Society
3 Credits (2+2P)
Examination of how technology affects business and society with specific attention to understanding the role of technical personnel and their interaction with nontechnical personnel.

E T 362. Software Technology II
3 Credits
A continuation of topics from E T 262 that are directed toward more advanced software development. Topics include problem analysis, object oriented, structured logic, and development concepts. May be repeated up to 3 credits.

Prerequisite(s): E T 262 and MATH 190G.

E T 365. Building Utilities
3 Credits (2+3P)
Basic design and code applications in plumbing and electrical systems for buildings.

Prerequisites: junior standing in E T.

E T 377. Computer Networking I
3 Credits (2+2P)
Computer network design and applications for LAN to WAN, protocols, switches, bridges, routers, TCP/IP networks, network diagnostics, voice over IP, wireless networks, and the OSI layers from physical to transport. May be repeated up to 3 credits.

Prerequisite(s): E T 182 and MATH 190G.

E T 381. Renewable Energy Technologies
3 Credits
Renewable energy systems, including topics in thermal-solar, photovoltaic, wind, geothermal systems, and other current topics. Theory, practical applications, safety considerations and the economics of alternative renewable energy systems compared to conventional systems. Crosslisted with: WERC 381

Prerequisite(s): MATH 121G.

E T 382. Solar Energy Technologies
3 Credits (2+3P)
Solar energy technologies, including topics in passive, solar thermal, and photovoltaic systems. Theory, practical applications, safety considerations and the economics of solar renewable energy systems compared to conventional systems. Crosslisted with: WERC 382

Prerequisite(s): MATH 121G.

E T 384. Wind and Water Energy Technologies
3 Credits
Wind and Water energy technologies, including topics in small and large scale systems. Theory, practical applications, safety considerations and the economics of wind and water renewable energy systems compared to conventional systems. Crosslisted with: WERC 384

Prerequisite(s): MATH 121G.

E T 386. Sustainable Construction and Green Building Design
3 Credits
Sustainable Building materials, methods, and techniques including green architecture and design, codes, standards and specifications.

Prerequisite: MATH 121G.
E T 396. Heat Transfer and Applications
3 Credits (2+3P)
Fundamentals of conduction, convection, and radiation heat transfer. Application of heat transfer, thermodynamics, and fluid mechanics principles to thermal system analysis and design. May be repeated up to 3 credits.
Prerequisite(s): E T 306 and E T 308 and PHYS 212G.

E T 398. Digital Systems
3 Credits (2+3P)
Advanced analysis and design of digital systems using state machine logic, programming of logic devices, implementation and testing. Pre/Prerequisite(s): E T 282 and MATH 190G.
Corequisite(s): E T 362.

E T 400. Special Topics
1-3 Credits
Directed study or project. May be repeated for a maximum of 6 credits.
Prerequisite: consent of department head.

E T 401. Heating and Air-Conditioning Systems
3 Credits
HVAC system design including heating and cooling load calculations, psychometrics, piping, duct layout, and system control. Same as M E 401.
Prerequisite: E T 306.
Corequisite: E T 396.

E T 402. Instrumentation
3 Credits (2+3P)
Sensors/transducers, signal conditioning and transmission for measurement and control systems. Student project in an area of instrumentation and/or control is required. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): E T 396 or E T 398.

E T 410. Senior Seminar
1 Credit
Transition from academics to business and industry. Graded S/U.
Prerequisite: senior standing in E T.

E T 412. Highway Technology
3 Credits
Road-vehicle performance, geometric alignment, traffic analysis, highway materials, pavement design, and plan and profile development. May be repeated up to 3 credits.
Prerequisite(s): E T 354.

E T 415. Manufacturing Management and Productivity
3 Credits
Projects incorporating concurrent engineering, total quality management, design for manufacturability/assembly, and other contemporary topics in manufacturing.
Prerequisites: senior standing in E T.

E T 418. Applied Hydraulics
3 Credits
Introduction to hydrology, hydraulic equations, hydraulic cross-sections, control structures, and collection and distribution of water, wastewater, and storm runoff using closed conduit and open channel flow.
Prerequisite(s): E T 308.

E T 420. Senior Internship
1-6 Credits
Internship requiring an approved number of hours of varied and progressive experience in the field of study. The scope and other requirements of the internship are stated in an individualized syllabus and through a memorandum of understanding between the faculty mentor and the industry partner. Taken in the senior year of program.
Prerequisites: Senior standing in E T.

E T 421. Senior Project
3 Credits
Project in an area of civil engineering technology conducted under the direction of civil engineering technology faculty member. Project must be one that can be completed within a semester and of sufficient complexity for 3 credits. Taken last semester of program.

E T 426. Analysis and Design of Machine Elements
3 Credits (2+3P)
Analysis and design of power transmission components, including: gears, sprockets, belts, chains, bearings, and shafts. Experiential design project using SolidWorks and Excel modeling. May be repeated up to 3 credits.
Prerequisite(s): E T 210, E T 241, and E T 310.

E T 432. Applied Design of Structures II
4 Credits (3+3P)
Continuation of E T 332. Design of structural systems and study of their responses. Wood and masonry systems included. May be repeated up to 4 credits.
Prerequisite(s): E T 332.

E T 435. Senior Project
3 Credits (2+3P)
Capstone course. Practical application of student’s cumulative knowledge to an assigned design projects. Design principles, teamwork, and project management skills are stressed. Demonstration of written and oral communication skills via project documentation and presentation of results. Must be graduating senior. May be repeated up to 3 credits. Consent of Instructor required.

E T 439. Advanced Digital Forensics and Incident Response
3 Credits
Advanced topics in digital forensics and incident response on Windows, Linux and Mac OS X and mobile devices. Topics include: Memory analysis, registry analysis, timeline analysis, malware analysis, Linux and Mac artifacts, mobile device forensics. May be repeated up to 3 credits.
Prerequisite(s): E T 339 and E T 377.

E T 440. Senior Design
2 Credits (1+2P)
Team design of a system, mechanism, or model that will be fabricated or simulated during the following semester in E T 441. Pre/Prerequisite(s)/Corequisite(s): E T 444 and E T 402. Restricted to: ET C, ET E, ET M, ET U majors.

E T 441. Senior Project
2 Credits (1+2P)
Team fabrication or simulation, testing, and debugging of a system, mechanism or model designed in E T 440.
Prerequisite(s): E T 440.
E T 444. Hardware and Software Senior Design
3 Credits (2+3P)
The design, development, implementation, documentation and formal
demonstration of a microprocessor-based application to solve an
engineering problem. Emphasis on microprocessor architectural
concepts and software interfacing. A student project is required.
Prerequisite(s): E T 344 and E T 398.

E T 454. Advanced Construction Technology
3 Credits
Contractor design and construction methods concerning formwork,
special foundations, shoring, excavations, pilings, steel erection, and
various material handling components.
Prerequisite: E T 354 and E T 355.

E T 455. Cost Estimating and Scheduling
3 Credits
Methods and techniques in construction estimating including final bid
preparation, construction planning and scheduling using various network
methods and other techniques.
Prerequisite: junior or senior standing in E T.

E T 456. Applied Power Technologies
4 Credits (3+3P)
Basic elements of modern power systems, energy sources, substation
configuration, load cycles, and three-phase circuits. Students will gain
experience in power factor correction, transmission line configurations
and impedance, voltage regulation of transformers, and the per-unit
system. Study of load flow, fault analysis, and economic operations is
included. May be repeated up to 4 credits.
Prerequisite(s): (MATH 235 or MATH 191G) and E T 272 and ((PHYS 212G
or PHYS 216G) and (PHYS 212GL or PHYS 216GL)).

E T 457. Information Security
3 Credits
Introduction to information security concepts including penetration
testing and ethical hacking.
Prerequisite(s): E T 362 and E T 339.

E T 458. Database Technology for Engineering
3 Credits
MySQL and PHP. Data conversion using PHP, mysql and Python.
Methods of transferring data from electronic boards and data feeds, into
databases. Use of SQL in java programming. Remote programming of
computers for running database systems in a mixed OS environment.
Generation of web pages directly from Database queries.
Prerequisite(s): E T 362 and E T 160.

E T 462. Web Technologies and Multimedia
3 Credits
Introduction to web technologies and multimedia. May be repeated up to
3 credits.
Prerequisite(s): E T 160.

E T 463. Advanced Linux and Python Scripting
3 Credits
Advanced Linux includes installation and maintenance of Unix/
Linux/Windows versions of Python. Use of Python to solve numerous
engineering problems including video and audio. Image manipulation.
Using PostScript for image and typesetting development. Integration of C
programming with Python.
Prerequisite(s): E T 255 and E T 362.

E T 464. Advanced Windows Server Administration
3 Credits
Learn about configuration and maintenance of Microsoft Windows
Server and related services such as DHCP, DNS, Failover Clusters, Active
Directory, Group Policy, File Sharing, Microsoft SQL server, Microsoft
Exchange Server, IIS, Network Load Balancing, Backups, Remote
Administration, PowerShell scripting and more. May be repeated up to 3
credits.
Prerequisite(s)/Corequisite(s): E T 339. Prerequisite(s): E T 362.

E T 472. Intelligent Transportation Systems (ITS)
3 Credits
Traffic flow theory, telecommunication and information technology
application in transportation, system architecture and standards,
transportation management, incident and emergency management,
corridor management, dynamic route guidance, in-vehicle systems, and
traffic signal timing. Consent of instructor required.

E T 477. Computer Networking II
3 Credits
Advanced concepts in computer network design and applications
including managing the campus network, virtual LANs (VLAN), network
security, wireless networks, high-speed optical networks, and voice over
IP. May be repeated up to 3 credits.
Prerequisite(s): E T 277 or E T 377.

E T 480. Innovation and Product Development
3 Credits
Experiential product design and development. Students will learn
about different types of innovation, business models, and methods
for developing products. Students will apply the scientific method to
develop a product idea of their own. Students will propose ideas, develop
hypotheses, test hypotheses, and iterate until they have validated their
product idea or identified a need to pivot. May be repeated up to 6 credits.
Consent of Instructor required.
Prerequisite(s)/Corequisite(s): (COMM 265G or COMM 253G or
AXED 201G or HON 265G).

E T 482. Advanced Manufacturing
3 Credits (2+2P)
Fundamentals of computer aided manufacturing (CAM) and computer
numerical control (CNC) machining. Students will learn how to program
several variants of CNC machines, using both G/M code programming
and computer aided manufacturing software. Emphasis will be on the
effective design of parts to be made on CNC machines along with a
hands on lab to give students experience on CNC machines. Students
will individually design, manufacture, and keep items such as keychains,
bottle openers, LED clocks, ergonomic handles, and license plates. May
be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): E T 210 and E T 217.

E T 490. Selected Topics
1-3 Credits
Selected topics in engineering technology and related areas.
Prerequisite: consent of instructor.

ECDV-ECONOMIC DEVELOPMENT
(ECDV)

ECDV 550. Introduction to Local and Regional Development
3 Credits
Serves as the introductory course in the Doctor of Economic
Development program. Overview of the economic development field.
ECDV 590. Special Topics
1-3 Credits (1-3)
Selected topics in the area of Economic Development. Subtitle reflects content. May be repeated up to 9 credits. Consent of instructor required.

ECDV 596. Individual Study
1-3 Credits (1-3)
Individual studies directed by consenting faculty with the prior approval of the Department Head. May be repeated up to 6 credits.

ECDV 624. Seminar in Economic Development and the Public Sector
3 Credits
Explores specific examples of the interaction of public finance and economic development. Students examine actual cases and examples of the use of public finance policy to influence economic development.
Prerequisites: AEEC 522 and AEEC 523.

ECDV 651. Economic Development Theory
3 Credits
Builds upon a general understanding of microeconomic and macroeconomic theory to focus specifically on theories of economic development at all levels. Prerequisites: AEEC 501 and 502

ECDV 661. Regional Economic Modeling I
3 Credits
Provides an introduction to the basic tools and methods of regional economic development analysis.
Prerequisite(s): AEEC 501, AEEC 502, and AEEC 540.

ECDV 662. Regional Economic Modeling II
3 Credits
Continuation of ECDV 661 with focus on more advanced tools and methods of regional economic development analysis.

ECDV 664. Population Economics
3 Credits
Examines the causes and consequences of demographic change. Examines theories of basic demographic processes, population projection and estimation. Consent of instructor required.

ECDV 668. Economic Development Finance
3 Credits
Focuses on the tools and methods of economic development finance.

ECDV 670. Research in Economic Development
3 Credits
Intense examination of the academic literature on economic development at all levels.
Prerequisites: ECDV 651, ECDV 661 and ECDV 662.

ECDV 671. Sustainable Economic Development
3 Credits
Focuses on the interconnections between economic development and the environment. Provides a broad set of tools and ideas related to the impacts of human activities on the environment.
Prerequisites: AEEC 501, AEEC 502 and AEEC 540.

ECDV 673. Research Methods
3 Credits
An overview of alternative research methods and tools. Students explore quantitative and qualitative research methods as alternatives and complements to statistical methods. Research design, ethics, and presentation are emphasized.
Prerequisites: AEEC 501, AEEC 502 and AEEC 540.

ECDV 681. Urban Economic Development
3 Credits
Examines causes and consequences of economic change in urban and metropolitan areas. Covers both theory and tools for analysis.
Prerequisites: ECDV 651, ECDV 661 and ECDV 662.

ECDV 682. Rural Development
3 Credits
Examines causes and consequences of economic change in rural areas, communities and small, open economies. Covers both theory and tools for analysis.
Prerequisites: ECDV 651, ECDV 661 and ECDV 662.

ECDV 683. Seminar in National Economic Development
3 Credits
Explores specific examples and cases of rural and urban economic development. Involves applied analysis of specific rural and/or urban economic issues/projects.
Prerequisites: ECDV 681 and ECDV 682.

ECDV 685. Seminar in International Economic Development
3 Credits
Explores specific examples and cases of economic development in an international context. Focuses on the application of theories and methods in prerequisite courses to the problems of nations lagging in economic development.
Prerequisites: AEEC 528, AEEC 520 or ECON 581.

ECDV 692. Seminar in Economic Development
3 Credits
Seminars in selected topics in economic development. Subtitle reflects content. May be repeated up to 9 credits.
Prerequisite: Completion of at least nine semester hours of ECDV courses.

ECDV 694. Internship
1-9 Credits (1-9)
Internship in Economic Development. May be repeated up to 9 credits. Restricted to: ECDV majors. S/U Grading (S/U, Audit).
Prerequisite(s): Completion of core requirements of Doctor of Economic Development.

ECDV 699. Doctoral Project
1-9 Credits (1-9)
Doctoral Project. May be repeated up to 9 credits. Completion of all DED coursework and successful completion of comprehensive exams.

ECED-EARLY CHILDHOOD EDUCATION (ECED)

ECED 115. Child Growth, Development, and Learning
3 Credits
This basic course in the growth, development, and learning of young children, prenatal through age eight, provides students with the theoretical foundation for becoming competent early childhood professionals.

ECED 125. Health, Safety, and Nutrition
2 Credits
This course provides information related to standards and practices that promote children's physical and mental well being sound nutritional practices, and maintenance of safe learning environments.
ECED 135. Family and Community Collaboration  
3 Credits  
This beginning course examines the involvement of families and communities from diverse cultural and linguistic backgrounds in early childhood programs. Ways to establish collaborative relationships with families in early childhood settings is discussed.  
Prerequisite(s): ECED 115 and ENGL 111G.

ECED 215. Curriculum Development Through Play  
3 Credits  
The beginning curriculum course places play at the center of curriculum content that is relevant for children birth through age four and developmentally and culturally sensitive ways of integrating content into teaching and learning experiences. Information on adapting content areas to meet the needs of children with diverse abilities and the development of IFSP's and IEP's is included. Consent of instructor required.  
Prerequisite(s): ECED 115 and ENGL 111G.  
Corequisite(s): ECED 220.

ECED 220. Early Childhood Education Practicum I  
2 Credits  
The beginning practicum course will provide experiences that address curriculum content that is relevant for children birth through age four in developmentally and culturally sensitive ways. Consent of instructor required.  
Prerequisite(s): ECED 115 and ENGL 111G.  
Corequisite(s): ECED 215.

ECED 225. Curriculum Development and Implementation II  
3 Credits  
The second curriculum course focuses on developmentally appropriate curriculum content in early childhood programs, age 3 through third grade. Development and implementation of curriculum in all content areas, including literacy, numeracy, the arts, health and emotional wellness, science, motor and social skills, is emphasized. Information on adapting content areas to meet the needs of children with diverse abilities and the development of IEP's is included. Consent of instructor required.  
Prerequisite(s): ECED 115, ENGL 111G.  
Corequisite(s): ECED 230.

ECED 230. Early Childhood Education Practicum II  
2 Credits  
The second field-based curriculum course focuses on practicing developmentally appropriate curriculum content in early childhood programs, age 3 through third grade. Consent of instructor required.  
Prerequisite(s): ECED 115, ENGL 111G.  
Corequisite(s): ECED 225.

ECED 235. Introduction to Language, Literacy and Reading  
3 Credits  
This course is designed to prepare early childhood professionals for promoting children’s emergent literacy and reading development. Through a developmental approach, the course addresses ways in which early childhood professionals can foster young children’s oral language development, phonemic awareness, and literacy problem solving skills, fluency, vocabulary, and comprehension.  
Prerequisite(s): ECED 115 and ENGL 111G.

ECED 245. Professionalism  
2 Credits  
This course provides a broad-based orientation to the field of early care and education. Early childhood history, philosophy, ethics and advocacy are introduced. Basic principles of early childhood systems are explored. Multiple perspectives on early care and education are introduced. Professional responsibilities such as cultural responsiveness and reflective practice are examined.  
Prerequisite(s): ECED 115 and ENGL 111G.

ECED 255. Assessment of Children and Evaluation of Programs  
3 Credits  
This basic course familiarizes students with a variety of culturally appropriate assessment methods and instruments, including systematic observation of typically and non-typically developing children. Crosslisted with: SPED 255  
Prerequisite(s): ECED 115 and ENGL 111G.

ECED 265. Guiding Young Children  
3 Credits  
This course explores various theories of child guidance and the practical applications of each. It provides developmentally appropriate methods for guiding children and effective strategies and suggestions for facilitating positive social interactions. Strategies for preventing challenging behaviors through the use of environment, routines and schedule will be presented.  

ECED 270. Program Management  
3 Credits  
Technical knowledge necessary to develop and maintain a quality early care and education program. The course will focus on sound financial management and vision, laws and legal issues that affect programs and state and national standards including accreditation requirements.  
Prerequisite: consent of instructor.

ECED 275. Curriculum for Diverse Learners and Their Families  
3 Credits  
Implementation of family-centered programming that includes developmentally appropriate and culturally responsive curriculum. The course will also cover the establishment and maintenance of healthy and safe learning environments. Consent of instructor required.  

ECED 276. Effective Program Development for Diverse Learners and Their Families  
2 Credits  
Practical experience in observing and carrying out the role of the director/administrator in the implementation of family-centered programming that includes individually appropriate and culturally responsive curriculum in a healthy and safe learning environment. Consent of instructor required. Restricted to ECED majors.  
Corequisite(s): ECED 275.

ECED 280. Professional Relationships  
3 Credits  
Development of staff relationships that will foster strong professional relationships with and among families, communities and advisory boards. Issues of staff recruitment, retention, support and supervision will lay a foundation for positive personnel management. Working effectively with board, advisory groups and community members and agencies will be addressed. Consent of instructor required.  
Corequisite(s): ECED 281.
ECED 281. Professional Relationships Practicum  
2 Credits  
Practical experience in the development of staff relationship that will foster professional relationships with families, communities and boards. Issues of staff recruitment, retention, support and supervision will lay a foundation for positive personnel management. Consent of instructor required. Restricted to ECED majors.  
Corequisite(s): ECED 280.

ECED 315. Research in Child, Growth, Development and Learning  
3 Credits  
This advanced course in child growth, development, and learning builds upon the foundational material covered in the basic course in child growth, development, and learning. An integration of major theories of child development is provided by focusing on contemporary research in all aspects of development, including bio-ecological, social-affective, cognitive, language, and the methodological aspects of research in early childhood development and education.  
Prerequisite(s): ECED 115.

ECED 329. Early Primary Field Placement  
2 Credits  
The field practicum is a co-requisite course with Teaching and Learning Reading and Writing; Teaching and Learning Math and Science; Teaching and Learning Social Studies, Fine Arts and Movement. The field based component will provide experiences that address curriculum content and practice teaching that is relevant for early primary children in developmentally and culturally sensitive ways. Graded: S/U.  
Corequisite(s): ECED 440, ECED 445, RDG 350.

ECED 335. Family, Language and Cultural  
3 Credits  
This course analyzes the interrelationships between family, language, and culture as connected to children's development and learning. In this course, language is understood as a human activity and higher mental process which build on the children's families, community and cultural background.  
Prerequisite(s): ECED 135.

ECED 351. Emergent Literacy  
3 Credits (2+2P)  
This advanced course is designed to prepare early childhood professionals to study literacy development, specifically oral language, writing and reading. This course focuses on children from birth through age 4, including children with special needs. Through a developmental approach, the course addresses: 1) recent theory and research that translates into practical strategies, assessment materials and preparation of rich literacy environments, 2) the socio-cultural contexts in which children develop literacy, 3) culturally, linguistically and developmentally appropriate literacy curricula, 4) processes used to determine the appropriateness of various literacy strategies, 5) assessment, evaluation, and accountability and 5) literacy leadership. Crosslisted with: RDG 351.  
Prerequisite(s): ECED 235.

ECED 395. Special Topics  
1-3 Credits  
Each course will be identified by a qualifying subtitle. A maximum of 3 credits in any one semester and a grand total of 6 credits.

ECED 420. Integrated Early Childhood Curriculum  
4 Credits  
This advanced course focuses on developmentally appropriate content, learning environments, and curriculum implementation for children birth through age 4. It emphasizes integration of content areas (the arts, literacy, math, health/emotional wellness, science, social studies, motor, and adaptive living skills) and the development of rich learning environments for infants, toddlers, and preschool children.  
Prerequisite(s): ECED 125, ECED 215, ECED 220, ECED 225, ECED 230, ECED 245, and ECED 265.  
Corequisite(s): ECED 425.

ECED 425. Integrated Curriculum Practicum  
2 Credits  
The advanced practicum course is a field based course that will provide opportunities for the integration of content areas (the arts, literacy, math, health/emotional wellness, science, social studies, motor, and adaptive living skills) and the development of rich learning environments for infants, toddlers, and preschool children.  
Prerequisite(s): ECED 125, ECED 215, ECED 220, ECED 225, ECED 230, ECED 245, ECED 265.  
Corequisite(s): ECED 420.

ECED 440. Teaching and Learning Math and Science  
4 Credits (2+4P)  
Standards, principles, and practices in teaching mathematics and science to young children in preschool through grade 3. An emphasis is placed on developing a content-rich integrated math and science curriculum that focuses on children's development and interests, includes appropriate content, processes, environment, and materials with an emphasis on problem-solving as the major means of constructing basic concepts. Field experience required.

ECED 443. Assessment of Children and Evaluation of Programs  
3 Credits  
Advanced course builds on understanding the connections among learning, teaching, and assessment and strategies for evaluating programs. Assessment, identification, and monitoring of typical and atypical development in the cognitive, motor, affective and social domains. Multiple and diverse assessment approaches, including responsiveness to cultural and linguistic differences will be emphasized. Builds upon indicators of competence established at the lower division (AA) level. For each course objective (core competency) students will demonstrate the indicators established for the bachelor s level.

ECED 452. Teaching Language Minority Children in Early Childhood  
Settings  
3 Credits  
Framework and strategies for the educational development of young language-minority children.

ECED 455. Teaching and Learning Social Studies, Fine Arts and  
Movement  
3 Credits (2+2P)  
The course focuses on the aims, scope, and integration of methods of teaching social studies, the fine arts and movement across the curriculum. This course emphasizes an integrated approach to teaching the what and why of social studies; assessing student learning; planning units, lessons, and activities; effective instructional strategies; and knowledge of social studies content. Concepts of expressive art include the visual arts, music, movement and drama.  
Corequisite(s): ECED 440, ECED 329, RDG 350.
ECED 458. Field Experience (Infants Pre-K)  
1 Credit  
Supervised field experiences in early childhood settings: infants, toddlers, and pre-K programs. Graded S/U.

ECED 459. Field Experience (K-3)  
1 Credit  

ECED 465. Advanced Caregiving for Infants and Toddlers  
3 Credits  
The advanced field-based course is intended to assist students to define and implement advanced elements of quality programming for all infants, toddlers in safe, healthy, responsive caring environments. The experiences in the approved setting will support strong nurturing relationships, cultural competence, diverse learning needs and styles of every child, appropriate guidance techniques and partnership with the families, cultures, and community represented. Students are assisted through the course in advancing their ability to observe, discuss, and implement elements of quality programming for infants and toddlers in home, small-group or whole-group care situations. Crosslisted with: SPED 465

ECED 470. Student Teaching/Seminar  
6 Credits  
Provides student teaching experience in a variety of settings with young children ages birth 8.

ECED 479. Curriculum in Early Childhood Education  
3 Credits  
Development and implementation of curriculum and materials for teaching young children.

ECED 489. Topics  
3 Credits  
Offered under various subtitles which indicate the subject matter to be covered. May be repeated three times for a maximum of 9 credits.

ECED 510. Issues in Early Childhood Education  
3 Credits  
Examines current trends and problems through readings of theoretical, empirical, and applied literature.

ECED 515. Working with Parents of Young Children  
3 Credits  
Techniques for setting up home and classroom visitations, communicating with parents, and establishing special programs.

ECED 520. Seminar on Cognitive and Social Development  
3 Credits  
In-depth study of developmental theories: Piaget, Kohlberg, Bruner, and Erikson. Implications for development of preschool programs and teaching techniques.

ECED 530. Leadership and Advocacy in Early Childhood  
3 Credits  
The course explores a multidisciplinary approach to early childhood educational leadership, advocacy and change. The course focuses on leadership in its many forms: in teaching, administration, policy, research, and ethics. In addition, we will examine the theory and practice of change to gain an understanding of what contributes to advocating for policy and community change. Students will gain a deeper understanding of themselves as leaders, and ways to improve early education to promote social justice in programs and systems serving families and young children.

ECED 570. Play in the Early Childhood Curriculum  
3 Credits  
Advanced exploration of the development of curriculum based on children's play. A means of exploring and learning the patterns of human living, communications, and experiences congruous with developing interests and capacities. Restricted to majors. Same as ECED 451 with differentiated assignments for graduate students.

ECED 612. History and Philosophy of Early Childhood Education  
3 Credits  
Critical analysis of the historical development and philosophical underpinnings of the field of early childhood education as it relates to current practice. Restricted to doctoral-level students of any major.

ECED 614. Early Childhood, Communities, and Social Policy  
3 Credits  
Early childhood politics and policy taken from a global, national, state, and community context. Restricted to doctoral-level students of any major.

ECED 633. Praxis and Reflexivity  
3 Credits  
Same as BIL 633, EDUC 633, RDG 633, EDLT 633.

ECED 698. Selected Topics in Early Childhood Education  
1-6 Credits  
Offered under various subtitles. May be repeated for a maximum of 6 credits. Restricted to doctoral-level students of any major.

ECON-ECONOMICS (ECON)

ECON 201G. Introduction to Economics  
3 Credits  
Economic institutions and current issues with special emphasis on the American economy.

ECON 251G. Principles of Macroeconomics  
3 Credits  
Macroeconomic theory and public policy: national income concepts, unemployment, inflation, economic growth, and international payment problems.

ECON 252G. Principles of Microeconomics  
3 Credits  
Microeconomic theory and public policy: supply and demand, theory of the firm, market allocation of resources, income distribution, competition and monopoly, governmental regulation of businesses and unions.

ECON 304. Money and Banking  
3 Credits  
Income measurement and determination, monetary and fiscal policies. Prerequisite: ECON 251G or equivalent, or consent of instructor.

ECON 311. Intermediate Macroeconomic Theory  
3 Credits  
Analysis of gross domestic product, the Classical, Keynesian, and Neo-Keynesian theories of income, employment, inflation and growth. Prerequisite(s): ECON 251G or equivalent.

ECON 312. Intermediate Microeconomic Theory  
3 Credits  
Contemporary economic theory with emphasis upon value and distribution. Prerequisite(s): ECON 252G or equivalent.
ECON 340. American Economic History
3 Credits
The rise of big business and organized labor, increasing price rigidities, and growing government intervention. Same as HIST 340.

ECON 384V. Water Resource Economics
3 Credits
Use of economic principles to evaluate current and emerging issues in water resources. Applications focus on use of economic methods of analysis to current policy decisions surrounding agricultural, municipal, industrial, and environmental uses of water. Same as AG E 384V.

Prerequisite: AG E 100 or ECON 252G.

ECON 401. Managerial Economics
3 Credits
Application of economic theory to problems of business management.

Prerequisite(s): ECON 252G and MATH 142 or equivalent, or consent of instructor.

ECON 404. Collegiate Advisory Board, Federal Reserve
3 Credits
Students serve on the Collegiate Advisory Board of the El Paso branch of the Federal Reserve Bank of Dallas. Guest speakers provide an overview of the Federal Reserve System, role of monetary policy, and issues facing specific industries in the local, national, and global economies. Students prepare reports, including a final paper, on an assigned industry in the regional or state economy and the current economic performance of their industry. Students must be of junior rank or higher with a GPA of at least 3.5. Consent of Instructor required.

ECON 405. Introductory Econometrics
3 Credits
Multiple regression and correlation applied to economics and business; inference techniques; significance tests; simultaneous equations, estimation, and problems. May be repeated up to 3 credits.

Prerequisite(s): A ST 251G or STAT 251G or A ST 311 (or equivalent).

ECON 406. The Economics of Sports
3 Credits
Applying the tools of economic analysis to a particular industry and gaining an in-depth knowledge of the interaction of professional sports teams and leagues with the economy and society. Same as AG E 406.

Prerequisites: one previous course in economics or consent of instructor.

ECON 432V. Economics of Health Care
3 Credits
Analysis of the allocation of resources in the field of health and medical care.

ECON 449. Open Economy Macroeconomics
3 Credits
This course studies theoretical and empirical macroeconomics in international dimension. It covers from the fundamental concepts of national income and growth, monetary/fiscal and exchange rate policies, foreign exchange markets, international trade and finance, and regionalization/economic integration to the impact analysis of these macroeconomic fundamentals in the open economy. Crosslisted with: I B 449.

Prerequisite(s): FIN 341 OR ECON 372.

ECON 450. International Economics
3 Credits
Trade and capital flows between countries, international payments, government policy in balance-of-payments and tariff matters, international organizations. Crosslisted with: I B 450

Prerequisite(s): ECON 251G and ECON 252G.

ECON 457. Mathematical Economics
3 Credits
Application of mathematical tools, especially the calculus, to economic theory.

Prerequisite: one upper-division economics course.

ECON 489. Senior Economics Seminar
3 Credits
Seminar primarily for economics majors in their final semester. Provides an opportunity to apply economic theory to a broad variety of topics.

Prerequisite: ECON 371 or ECON 372.

ECON 490. Selected Topics
1-3 Credits
Current topics in economics. Subject matter to be designated for each semester.
ECON 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. May be repeated for a maximum of 3 credits.
Prerequisite: junior or above standing and consent of instructor.

ECON 503. Managerial Economics
3 Credits
Theory and application of microeconomics to the management of organizations.
Prerequisite(s): A ST 251G or 311 or equivalent with B or better.

ECON 545. Econometrics II
3 Credits
Application of statistical techniques to estimation of economic relationships: demand functions, production and cost functions, and macroeconomic equations. May be repeated up to 3 credits.
Prerequisite(s): ECON 251G, ECON 252G, STAT 251G or A ST 311, and AEEC 540.

ECON 550. Special Topics
1-3 Credits
Seminars in selected current topics in the various areas of economics. Prerequisites vary according to the topic being offered.

ECON 571. Regulatory Policy and Industry Analysis: Electricity I
3 Credits
Regulatory policy and economic analysis related to the Electric Industry. Topics include: characteristics of a utility and legal justification for regulation; characteristics and functions of a regulatory commission; history and structure of the industry; technology and network design; revenue requirements; cost allocation; and basic retail rate design. May be repeated up to 3 credits.
Prerequisite(s): ECON 252G, FIN 341, or consent of instructor.

ECON 572. Regulatory Policy and Industrial Analysis: Water and Natural Gas
3 Credits
Regulatory policy and economic analysis related to the Natural Gas and Water industries. Topics include: history and structure of the industry; technology and network design; revenue requirements; cost allocation; and retail rate design.

ECON 573. Regulatory Policy and Industry Analysis: Electricity II
3 Credits
Regulatory policy and economic analysis related to the Electric industry. Topics include: optimal generation mix; ancillary services; environmental policies; rate case procedures and strategies for effective testimony; advanced retail rate design; wholesale exchanges; unbundled transmission tariffs; market institutions and how different markets function; state and federal deregulation policies; Federal Energy Regulatory Commission orders and policies; demand-side management; and regulatory treatment of non-traditional retail services. Consent of instructor required.
Prerequisite(s): ECON 571 or consent of instructor.

ECON 574. Advanced Seminar Regulatory Policy and Industry Analysis
3 Credits
Advanced seminar and writing course specializing in regulatory policy and regulatory casework. Topics include: special policy & regulatory issues in telecommunications, electricity, natural gas, and water; preparation of written testimony; expert witness effectiveness including cross-examination; and contested case management. This course involves extensive reading and writing assignments. Consent of instructor required.
Prerequisite(s): ECON 571 or consent of instructor.

ECON 581. International Economics
3 Credits
Trade and capital flows between countries, international payments, government policy in balance-of-payments and tariff matters, international organizations. Recommended preparation, ECON 371 and 372. May be repeated up to 3 credits.
Prerequisite(s): ECON 251G and ECON 252G.

ECON 582. Economics of Health Care
3 Credits
Analysis of the allocation of resources in the field of health and medical care. Taught with ECON 432V with differentiated assignments for graduate students.

ECON 596. Independent Study
3 Credits
Individual study program. Each offering will cover a subtitle. Maximum of 3 credits in a semester and 6 credits in a program. Consent of instructor required.

EDLT-EDUCATION (EDLT)

EDLT 368. Integrating Technology with Teaching
3 Credits
Considers impact of technology on communication and knowledge development; engages students in the design of technology-integrated lessons with a constructivist approach.
Prerequisite: EDUC 168 or previous computer experience.

EDLT 520. Critical Digital Literacy
3 Credits
Explore, evaluate and use a variety of multimedia authoring tools including website, video, audio, image editing and apps (iOS/Android) for educational applications. Pre/
Prerequisite(s)/Corequisite(s): EDUC 518 or consent of instructor.

EDLT 522. Technology and Language Learning
3 Credits
Use of technology to enhance second language and dual language programs. Organized around technology enhanced communicative and interactive language learning environments.
Corequisite: EDUC 587 or consent of instructor.

EDLT 528. Foundations of Learning Design & Technology
3 Credits
This course covers how to access, use, design, and evaluate instructional resources on the Internet, for blended and online learning environments. Pre/
Prerequisite(s)/Corequisite(s): EDUC 518 or consent of instructor.

EDLT 529. Developing and Managing Educational Networks
3 Credits
For educators who plan to manage technology resources in schools. Focus on operating systems, network capabilities and management, connections and transfer of files between different computer platforms and managing peripheral devices. Prerequisite(s)/
Corequisite(s): EDUC 518 or consent of instructor.

EDLT 560. Fostering Online Learning Communities
3 Credits
Examines theoretical and practical aspects of communication and collaboration and their impact on the formation of online learning communities for those teaching adults in higher education, business, or government settings.
EDLT 561. Social Media in Blended and Online Learning Environments
3 Credits
This course will explore the role of social media in online and blended learning environments through practical hands-on activities, critical dialogue, and collaborative projects which will prepare you to utilize social media personally and pedagogically.

EDLT 572. Emerging Models for Learning Design and Technology
3 Credits
Applies instructional strategy development supported by technology for classroom curriculum.

EDLT 573. Culturally Responsive Teaching with Technology
3 Credits
Use of inquiry and problem-based learning supported by computer-based applications. Critical analysis of multiple forms of electronic media.
Prerequisite(s)/Corequisite(s): EDUC 518 or consent of instructor.

EDLT 574. Technology Planning and Grant Writing
3 Credits
Application of principles of curriculum development to the integration of technology to improve educational programs. How to develop technology plans, assess current uses of technology, write grants to acquire technology, improve the management of existing and future learning resources, and develop staff development strategies in technology.

EDLT 575. Designing and Organizing Online Learning Environments
3 Credits
Explores the theories, models, approaches, technologies, and methods of online teaching and adult learning. Provides a foundation for examining the roles and characteristics of the online teacher and learner for those teaching adults in higher education, business, or government settings.

EDLT 577. Online Teaching and Learning
3 Credits
This course provides a survey of theories, models and methods used to design and delivery online education through the use of technologies in K-12, higher education, business/industry, and continuing education.

EDLT 578. Design and Delivery of Webconferences and Webinars
3 Credits
This course provides hands-on experiences with web conferencing and examines the theory and research of webconferencing’s impact on teaching and learning.

EDLT 579. Universal Design in Online Course Design
3 Credits
Examines theory, practical application of strategies, and global and policy implications of universal design (UD) in online learning environments.

EDLT 580. Tools and Techniques for Online Teaching
3 Credits
Examines the theoretical and practical implications of various asynchronous and synchronous tools and their impact on teaching and learning through research and hands-on experience.

EDLT 581. Emerging Technology Tools and Techniques
3 Credits
This course examines the theory, research, and practice of emerging technologies for educational practice and their impact on online teaching and learning.

EDLT 590. Assessing and Evaluating Online Learning
3 Credits
Explores a variety of online assessment and evaluation options with an emphasis on continual assessment and evaluation to improve teaching and learning.

EDLT 592. Directed Studies
3 Credits
Supervised academic work. Consent of Instructor required.

EDLT 607. Current Research in Learning and Technology
3 Credits
Explores models and methods for examining and researching the impact of technology on learning and education.

EDLT 610. Technology, Society, and Education
3 Credits
Same as EDUC 610.

EDLT 612. Advanced Fieldwork
3 Credits
Fieldwork in learning technologies provides opportunities to integrate theory and practice through research, teaching and/or development.

EDLT 620. Multimedia, Authoring and Curriculum Design
3 Credits
Explore, evaluate and use a variety of multimedia authoring tools including website, video, audio, image editing and apps (iOS/Android) for educational applications. Includes additional theoretical research component for doctoral students.

EDLT 628. Designing Educational Resources for the Internet
3 Credits
This course covers how to access, use, design, and evaluate instructional resources on the Internet, for blended and online learning environments. Includes a theoretical and research component for doctoral students.

EDLT 633. Praxis and Reflexivity
3 Credits
Same as BIL 633, ECED 633, EDUC 633, RDG 633. Consent of Instructor required.

EDLT 670. Emerging Models for Learning Design & Technology
3 Credits
Integration of technology into content areas.
Prerequisite(s): EDUC 518.

EDLT 673. Literacy and Technology
3 Credits
Same as RDG 673, BIL 673.

EDUC-EDUCATION (EDUC)

EDUC 101. FRESHMAN ORIENTATION
1 Credit
Introduction to the university and to the College of Education. Discussion of planning for individualized education program and field experience. Restricted to Las Cruces campus only.

EDUC 102. Internship I
3 Credits
Supervised experience in elementary education settings.

EDUC 103. Internship in Bilingual Education/ESL
1-4 Credits
Supervised experience in bilingual education/ESL elementary or secondary classroom settings for prospective bilingual education/ESL teachers.

EDUC 150. Math for Paraprofessionals
3 Credits
Applied math skills for paraprofessionals working with children.
Prerequisite: CCDM 103.
EDUC 151. Math for Paraprofessionals II  
3 Credits  
Applied math skills for paraprofessionals working under the direction of a teacher.  
Prerequisite: EDUC 150.

EDUC 181. Field Experience I  
1 Credit  
Introduction to public school teaching, school visits, classroom observations and discussion seminar.

EDUC 195. Individual Topics in Education  
1-3 Credits  
Supervised study in a specific area of interest. Each course shall be designated by a qualifying subtitle. May be repeated for a maximum of 9 credits.

EDUC 202. Internship II  
3 Credits  
Supervised experience in junior high settings.  
Prerequisite: must be a co-op student.

EDUC 204. Foundations of Bilingual/ESL Education  
3 Credits  
Explore and review the historical, legal, philosophical, theoretical and pedagogical paradigms of bilingual/ESL education.

EDUC 219. Pre-Teacher Preparation  
3 Credits  
Assists students in developing the necessary competencies needed for acceptance to the Teacher Education Program. Course content includes basic skill development, test taking skills, and completion of teacher preparation packet. Maybe repeated for a maximum of 6 credits. Graded S/U. Community Colleges only.

EDUC 250. Introduction to Education  
2 Credits  
An overview of the American education system with emphasis on organization, governance, law, demographics, and professional practice. Restricted to Las Cruces campus only.

EDUC 281. Introduction to Secondary Education and Youth  
3 Credits  
Introductory course for students considering a career in secondary education. Includes historical, philosophical, and sociological foundations, program organization, critical dispositions, and understanding the context of schools and youth. Practicum required. Restricted to: Secondary Ed majors. Traditional Grading with RR.

EDUC 302. Internship III  
3 Credits  
Student teaching in public school classroom according to major area of interest.

EDUC 303. Secondary Bilingual/ESL Field Experience  
3 Credits (2+2P)  
Develop professional skills, dispositions, and understanding of secondary bilingual youth, content, and pedagogy through discussion seminar and interactions with public education mentor teachers. Focused observations, study of classroom language and culture, introduction to lesson planning and student assessment. Requires 32 hours of practicum field experience. Same as EDUC 381. Crosslisted with: EDUC 381.

EDUC 315. Multicultural Education  
3 Credits (2+2P)  
The conceptual manifestations of culture, race and ethnicity, class, gender, sexual orientation, exceptionalities, language, bilingualism, and global citizenship within the schooling process. May be repeated up to 3 credits. Crosslisted with: EDUC 317V.

EDUC 317V. Multicultural Issues in Society  
3 Credits  
Conceptual manifestations of culture, race, ethnicity, class, gender, exceptionalities, language, and bilingualism within and across society. Crosslisted with: EDUC 315.

EDUC 342. Sheltered English Instruction for the ESL Classroom  
3 Credits  
Addresses the acquisition of English proficiency by speakers of other languages.

EDUC 343. Language, Literacy, and Culture in the ESL Classrooms  
3 Credits  
Framework and strategies for developing the written abilities of second language learners.

EDUC 344. Issues in Schooling for Bilingual Learners  
3 Credits  
Current thought and direction regarding bilingual education in the United States and New Mexico.

EDUC 381. Secondary Field Experience  
3 Credits (2+2P)  
Develop professional skills, dispositions, and understanding of secondary bilingual youth, content, and pedagogy through discussion seminar and interactions with public education mentor teachers. Focused observations, study of classroom language and culture, introduction to lesson planning and student assessment. Requires 32 hours of practicum field experience. Same as EDUC 303. Crosslisted with: EDUC 303.

EDUC 395. Special Topics in Education  
1-3 Credits  
Offered under various subtitles in the Schedule of Classes. May be taken for a maximum of 3 cr. per semester and a total of 6 credits overall.

EDUC 402. Internship IV  
6 Credits  
Supervised co-teaching in educational setting according to major area of interest.  
Prerequisite: must be a co-op student.

EDUC 450. Methods of Teaching Early Childhood Education  
3 Credits  
Characteristics of the young child, play, guidance, communication, methods, materials, models, issues.

EDUC 451. Methods of Teaching Elementary School Science  
3 Credits (2+2P)  
Methods and materials for teaching elementary school science. Includes components of lessons and the use of multimedia. Same as EDUC 551 with differentiated assignments for graduate students.  
Prerequisites: 9 hours of science from biology, chemistry, physics, and earth sciences, with no more than 3 hours from any one department.  
Corequisites: ECED 450, EDUC 452, and RDG 360 (Block A courses).
EDUC 452. Methods of Teaching Elementary School Mathematics
3 Credits (2+2P)
Content, theories of cognition, and instructional approaches for the teaching of mathematics in the elementary grades. Same as EDUC 552 with differentiated assignments for graduate students.
Prerequisite: MATH 111.
Corequisites: ECED 450, EDUC 451, and RDG 360 (Block A courses).

EDUC 453. Methods of Teaching Elementary School Language Arts
3 Credits (2+2P)
Implications of language acquisition and development for instructional practices. Focus on student-centered response to literature, writing process, whole language learning, based on socio-psycholinguistic theory and research. Same as EDUC 553 with differentiated assignments for graduate students.
Corequisites: RDG 361, EDUC 454, and EDUC 455 (Block B courses).

EDUC 454. Methods of Teaching Elementary School Social Studies
3 Credits (2+2P)
Focus on social studies curriculum and instruction including student-centered approaches, active learning, educational technology, nontextual curriculum, integration, multicultural education, authentic assessment, and practical applications. Same as EDUC 554 with differentiated assignments for graduate students.
Corequisites: RDG 361, EDUC 453, and EDUC 455 (Block B courses).

EDUC 460. Teaching Language Arts at the Middle and High School Level
3 Credits (2+2P)
Implications of cognition and language development for appropriate secondary instructional practices. Focus on construction of meaning, student-centered response to literature, writing process, print and oral language development, based on socio-psycholinguistic research and theory. Practicum required. Same as EDUC 560.

EDUC 461. Teaching Social Studies at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in social studies. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of social studies. Practicum required. Same as EDUC 561.

EDUC 462. Teaching Mathematics at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in mathematics. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of mathematics. Practicum required. Same as EDUC 562.

EDUC 463. Teaching Science at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in science. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of science for students in grades 6-12. Practicum required. Same as EDUC 563.

EDUC 464. Teaching Foreign Language at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in foreign language. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of foreign language for students in grades 6-12. Practicum required. Same as EDUC 564.

EDUC 467. Teaching Business Education at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high school teacher in business education. The focus will be on a variety of instructional strategies and pedagogical skills that will enhance the learning of business education for students in grades 6-12. Practicum required. Same as EDUC 567.

EDUC 470. Elementary Student Teaching Seminar
9 Credits (9)
Synthesis of knowledge and skills appropriate to teaching in elementary schools. Graded S/U.

EDUC 471. Secondary Student Teaching Seminar
9 Credits (9)
Synthesis of knowledge and skills appropriate to teaching in secondary schools. Graded S/U.

EDUC 475. Contemporary Issues in Education
3 Credits (2+2P)
Discussion of contemporary issues including: classroom management, motivation, conferences, professional organizations, professional ethics, community influences, cultural pluralism, reform movements, instructional influences, and educational technology. Requires field experience component in a school or community setting. Same as EDUC 575.

EDUC 480. International Student Teaching Seminar
1 Credit
Preparation for students planning to teach in an international setting.
Prerequisite: Must be scheduled one semester before graduation.

EDUC 481. Elementary Student Teaching Seminar
3 Credits (3)
Discussion of elementary school issues related to student teaching. Taken concurrently with EDUC 470. Graded S/U.

EDUC 482. Middle and High School Student Teaching Seminar
3 Credits (3)
Discussion of secondary school issues related to student teaching. Taken concurrently with EDUC 471.

EDUC 483. Second Language Acquisition
3 Credits
Exploring affective, cultural, linguistic, cognitive factors that influence the second-language-acquisition process with application to classroom practice. Same as EDUC 583.

EDUC 487. Methods of TESOL
3 Credits
Effective second language teaching approaches that provide for interactive learning situations, meaningful input language models, varied language use materials, adaptive teacher response strategies, and assessments of student processing needs.

EDUC 489. Topics
1-3 Credits
Offered under various subtitles which indicate the subject matter to be covered. A maximum of 3 credits in any one semester and a grand total of 3 credits.

EDUC 495. Directed Study Courses in Education
1-3 Credits
Each course shall be identified by a qualifying subtitle. Maximum of 3 credits in any one semester and a grand total of 6 credits.
EDUC 501. Special Topics
1-3 Credits
Course subtitled in the Schedule of Classes. A maximum of 3 credits per semester and a total of 6 credits overall.

EDUC 504. Adult and Family Literacy in TESOL
3 Credits
An exploration of the theoretical, programmatic, and curricular frameworks for English language learners and their families. Focus on the development of culturally responsive and pedagogically sound literacy programs. Same as RDG 504.

EDUC 505. Classroom Management
3 Credits
Strategies for managing classroom settings and determining appropriate modification of instructional approaches to meet changing classroom situations.

EDUC 509. Teaching Methods Laboratory
3 Credits
Prerequisite(s): Bachelors degree and admission to the Graduate School and departmental special program.

EDUC 510. Internship/Student Teaching
6 Credits
Integrated with EDUC 509. Student is assigned to an elementary or secondary classroom for 14-16 weeks. Elementary or secondary. Graded S/U.
Prerequisite: EDUC 509.

EDUC 512. Equity Education for Mathematics Teachers
3 Credits
Prerequisite: Have access to teach in a mathematics classroom with a diverse student population.

EDUC 515. Multicultural Education
3 Credits (2+2P)
Conceptual manifestations of culture, race, and ethnicity, class, gender, exceptionalities, language and bilingualism within the schooling process. Same as EDUC 315 with differentiated assignments for graduate students.

EDUC 516. Curriculum and Pedagogy I
3 Credits
Introduction, reconstruction, and other connections among historical, philosophical, sociocultural, psychological, and theoretical foundations of curriculum and pedagogy and their application to culturally and linguistically diverse teaching and learning settings.

EDUC 518. Technology and Pedagogy
3 Credits
Critical analysis, design, and evaluation of computer-based technologies in teaching and learning for diverse communities.

EDUC 519. Research in Curriculum and Pedagogy
3 Credits
An introduction to qualitative and quantitative designs for research in curriculum and instruction, with emphasis on action research.

EDUC 520. Action Research Projects
3 Credits
Deeper explorations and connections among foundations of curriculum and pedagogy and their application to culturally and linguistically diverse teaching and learning settings through action research projects, approaches to assessment, and agency.
Prerequisite(s): EDUC 515, 516, 518 & 519.

EDUC 530. Exploration in Education
3 Credits (2+2P)
Overview of elementary and secondary schooling. Includes opportunities to gain teaching experience in diverse settings.

EDUC 537. Independent Readings
1-3 Credits
Each project will be designated by a qualifying subtitle.

EDUC 550. Methods of Teaching Early Childhood Education
3 Credits
Characteristics of the young child, play, guidance, communication, methods, materials, models, issues. Same as EDUC 450 with differentiated assignments for graduate students.

EDUC 551. Methods of Teaching Elementary School Science
3 Credits (2+2P)
Methods and materials for teaching elementary school science. Includes components of lessons, planning and teaching lessons in schools, and multimedia. Same as EDUC 451 with differentiated assignments for graduate students.
Prerequisite: 9 hours of science from biology, chemistry, physics, and earth science with no more than 3 hours from any one department.
Corequisites: ECED 550, EDUC 552, and RDG 560 (block A course).

EDUC 552. Methods of Teaching Elementary School Mathematics
3 Credits (2+2P)
Content, theories of cognition, and instructional approaches for the teaching of mathematics in the elementary grades. Same as EDUC 452 with differentiated assignments for graduate students.
Prerequisite: MATH 111.
Corequisites: ECED 550, EDUC 551, and RDG 560 (block A course).

EDUC 553. Methods of Teaching Elementary School Language Arts
3 Credits (2+2P)
Implications of language acquisition and development for instructional practices. Focus on student-centered response to literature, writing process, whole language learning, based on socio-psycholinguistic theory and research. Same as EDUC 453 with differentiated assignments for graduate students.
Corequisites: EDUC 554, EDUC 555, and RDG 561 (block B course).

EDUC 554. Methods of Teaching Elementary School Social Studies
3 Credits (2+2P)
Focus on social studies curriculum and instruction including student-centered approaches, active learning, educational technology, nontextual curriculum, integration, multicultural education, authentic assessment, and practical applications. Same as EDUC 454 with differentiated assignments for graduate students.
Corequisites: EDUC 553, EDUC 555, and RDG 561 (block B course).

EDUC 557. Science and Math Methods: Internship
3 Credits
Elementary alternative licensure process course designed to introduce intern licensed teachers to methods of instruction for mathematics and science. University supervision provided simultaneously with EDUC 557. Restricted to CI and HSS non-degree students.

EDUC 570. Methods of Teaching Secondary School English
3 Credits (2+2P)
Focus on secondary level language arts and secondary level English. Same as EDUC 470 with differentiated assignments for graduate students.
Corequisite: EDL 380.

EDUC 571. Methods of Teaching Secondary School Social Studies
3 Credits (2+2P)
Focus on social studies curriculum and instruction including student-centered approaches, active learning, educational technology, nontextual curriculum, integration, multicultural education, authentic assessment, and practical applications. Same as EDUC 471 with differentiated assignments for graduate students.
Corequisites: EDUC 553, EDUC 555, and RDG 561 (block B course).

EDUC 580. Methods of Teaching Adult Literacy
3 Credits (2+2P)
Focus on curriculum and instruction for literacy development for the adult learner. Same as RDG 580 with differentiated assignments for graduate students.
Corequisites: MATH 101 and EDUC 500 (block A course).
EDUC 558. Social Studies/Language Arts Methods Internship
3 Credits
Elementary alternative licensure process course designed to introduce
intern licensed teachers to methods of instruction of social studies
and language arts. University supervision provided simultaneously with
EDUC 558. Restricted to CI and HSS non-degree students.

EDUC 560. Teaching Language Arts at the Middle and High School Level
3 Credits (2+2P)
Implications of cognition and language development for appropriate
secondary instructional practices. Focus on construction of meaning,
student-centered response to literature, writing process, print and oral
language development, based on socio-psycholinguistic research and
theory. Practicum required. Same as EDUC 460 with differentiated
assignments for graduate students. Prerequisite(s): TEP required
EDUC 515 & EDUC 530.

EDUC 561. Teaching Social Studies at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high
school teacher in social studies. The focus will be on a variety of
instructional strategies and pedagogical skills that will enhance the
learning of social studies for student in grades 6-12. Practicum required.
Same as EDUC 461 with differentiated assignments for graduate
students. Prerequisite(s): TEP required EDUC 515 & EDUC 530.

EDUC 562. Teaching Mathematics at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high
school teacher in mathematics. The focus will be on a variety of
instructional strategies and pedagogical skills that will enhance the
learning of students in 6-12 setting settings for mathematics. Same as
462 with differentiated assignments for graduate students.
Prerequisite(s): TEP required EDUC 515 & EDUC 530.

EDUC 563. Teaching Science at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high
school teacher in science. The focus will be on a variety of
instructional strategies and pedagogical skills that will enhance the
learning of science for student in grades 6-12. Practicum required. Same as
EDUC 463 with differentiated assignments for graduate students.
Prerequisite(s): TEP required EDUC 515 & EDUC 530.

EDUC 567. Teaching Business Education at the Middle and High School Level
3 Credits (2+2P)
Integrating content knowledge and pedagogy for the middle and high
school teacher in business education. The focus will be on a variety of
instructional strategies and pedagogical skills that will enhance the
learning of business education for student in grades 6-12. Practicum
required. Same as EDUC 467 with differentiated assignments for graduate
students.
Prerequisite(s): TEP required EDUC 515 & EDUC 530.

EDUC 575. Contemporary Issues in Education
3 Credits (2+2P)
Discussion of contemporary issues including: classroom management,
motivation, conferences, professional organizations, professional
ethics, community influences, cultural pluralism, reform movements,
instructional influences, and educational technology. The class will
require a field experience component in a school or community setting.
Taught with EDUC 475 with differentiated assignments for graduate
students.

EDUC 576. Qualitative Research
3 Credits
Introduction to qualitative research methodologies from problem
formulation to interpretation of results.

EDUC 583. Second Language Acquisition
3 Credits
Exploring affective, cultural, linguistic, cognitive factors that influence
the second-language-acquisition process with application to classroom
practice. Appropriate for public school and adult educators. Same as
EDUC 483.

EDUC 587. Pedagogy of TESOL
3 Credits
Overview of approaches that provide for interactive, culturally responsive
pedagogy for students acquiring English. Emphasis on development of
ESL literacy. Appropriate for public school and adult educators. Same as
RDG 587.

EDUC 590. TESOL Practicum
3 Credits
Classroom applications of ESL literacy development through supervised
teaching experiences accompanied by a seminar. Same as RDG 590.

EDUC 595. Directed Study Courses in Education
1-3 Credits
Each course will be identified by a qualifying subtitle. Maximum of 3
credits in any one semester and a total of 6 credits overall.

EDUC 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. Maximum of 3
credits per semester and a total of 6 credits overall.

EDUC 599. Master's Thesis
15 Credits
Thesis.

EDUC 600. Doctoral Research
1-15 Credits
Research.

EDUC 601. Contemporary Curriculum/Instruction Practices
1-3 Credits
Course subtitled in the Schedule of Classes. A maximum of 3 credits per
semester and a total of 6 credits overall.

EDUC 602. Internship in Curriculum and Instruction
3-6 Credits
For those pursuing an advanced graduate degree to meet the
requirement for field work. Each course to bear an appropriate subtitle.

EDUC 603. Curriculum for a Diverse Society
3 Credits
Builds upon knowledge of the foundations of curriculum and professional
experience in an educational setting. Focus on the role of the curriculum
leader in understanding curriculum theory, designing curriculum, and
implementing curriculum in various settings.

EDUC 604. Pedagogy of Learning in a Diverse Society
3 Credits
Builds upon knowledge of the foundations of instruction and professional
experience in teaching and learning. Focus on diverse theories of
instruction with relevant practices in pluralistic settings and multicultural
interactions of teaching and learning.
EDUC 605. Independent Study Topics
1-3 Credits
A problem and seminar course for those pursuing an advanced graduate degree. Course subtitled in the Schedule of Classes.
Prerequisite: EDUC 555.

EDUC 606. In-depth Interviewing: A Qualitative Research Method
3 Credits
Use of pilot research project to introduce students to in-depth interviewing techniques.

EDUC 607. Current Research in Educational Practice
3 Credits
A seminar for doctoral and education specialist students emphasizing current research and educational practices. Same as BIL 607, ECED 607, RDG 607, and SPED 607.

EDUC 608. Issues in Multicultural Curriculum and Instruction and Teacher Education
3 Credits
Builds upon multicultural theories and practices of teacher education. Restricted to doctoral-level students of any major.

EDUC 613. Evaluation of Quantitative Research in Education
3 Credits
A doctoral-level exploration of a broad range of quantitative research designs and methodologies for collection and analysis of data as applied to critical review of the literature.
Prerequisite(s): EDUC 519 or the equivalent.

EDUC 623. Curricular Mediation for Democratic Communities
3 Credits
Problematization of the various relationships, roles, and leadership considerations which emerge within educational institutions, their structures, and their culturally democratic practices in the classroom, community, and society. Restricted to doctoral-level students of any major. Same as BIL 623, ECED 623.

EDUC 630. Critical Race Theory & Storytelling in Educational Spaces
3 Credits
An upper-level doctoral course focusing on the philosophical, theoretical, and methodological origins and practices of CRT and the sister frameworks that emerged from CRT, i.e., AsianCrit, BlackCrit, FemCrit, LatCrit, QueerCrit, TribalCrit, and WhiteCrit within educational spaces.

EDUC 633. Praxis and Reflexivity
3 Credits
Same as BIL 633, ECED 633, EDLT 633, RDG 633.

EDUC 634. Research as Praxis
3 Credits
Alternative community-or-school-based research aimed at investigating and transforming educational realities, with the participants for their own benefit. Students will experience the dynamic between research theory and practice in education. Crosslisted with: BIL 634, EDLT 634 and RDG 634. Restricted to: EDUC,C I,C ID majors.
Prerequisite(s): EDUC 576 and 613.

EDUC 635. Critical Theory and Pedagogy
3 Credits
Covers the various schools of thought on pedagogy, the historical and philosophical frameworks embedded in these schools, and their impact on educational settings. Restricted to doctoral-level students of any major. Same as BIL 635.

EDUC 637. Social Justice Issues in Education
3 Credits
Covers the systems of oppression located within the constructs of power and hegemony and their impact on schooling. Restricted to doctoral-level students of any major. Same as BIL 637.

EDUC 685. Practicum
2-6 Credits
Provision for field inquiries and experiences designed to prepare the doctoral student for assuming responsibilities in the areas of curriculum and instruction.
Prerequisite: post-master's standing.

EDUC 694. Dissertation Seminar: Qualitative Research Designs
1-6 Credits
Dissertation seminar course for doctoral students utilizing a qualitative research design. Restricted to College of Education students.
Prerequisite: consent of instructor.

EDUC 698. Selected Topics
1-6 Credits
Offered under various subtitles which indicate the subject matter to be covered. A maximum of 6 credits per semester and a total of 6 credits overall.

EDUC 699. Ed.S. Thesis
1-15 Credits
Offered primarily for those pursuing the research requirements for the Ed.S. degree. Course may be repeated up to a maximum allowed for this degree. Each research project will be designated by a qualifying subtitle.

EDUC 700. Doctoral Dissertation
15 Credits
Dissertation.

ELA 215. Multicultural Leadership in Education
3 Credits
Introduction to the social and cultural constructions of gender, class, and race. Students will critically apply theoretical constructs to everyday life and discuss the intersection of gender and race with class inequality in national and global contexts. Using a social justice framework, readings, and assignments integrate a variety of racial/ethnic groups while considering the effects of historically uneven resource distribution, unearned privilege, forms of domination and subordination, immigration status, and cultural representation and ideologies. Participants will learn how to apply the change theories and concepts introduced in the course to practice through course readings, online discussions with the instructor and colleagues, group work, active examination of daily practice in schools, and personal reflection.
ELA 255. Leadership and Change in Education
3 Credits
This course will introduce students to the challenges and key strategies in initiating, implementing, and sustaining educational change and reform. In the first part of the course, participants will learn about the challenges of educational change in the United States and the role that they as school leaders play in facilitating change and reform. The course continues with an examination of how culture, micro-politics, and power structures support or impede national and global change initiatives. The last part of the course offers suggestions for change agents including community organizing, culture building, and embracing sustainable leadership practices. Participants will learn how to apply the change theories and concepts introduced in the course to practice through course readings, online discussions with the instructor and colleagues, group work, active examination of daily practice in schools, and personal reflection.

ELA 298. Special Topics in Education
1-3 Credits (1-3)
Special topics course in education for undergraduate students. Course will be identified by a subtitle. May be repeated up to 12 credits. Restricted to Las Cruces campus only.

ELA 342. Current Issues In Educational Leadership
3 Credits
This course addresses issues such as the rise in international education, education's costs, social media's role and influence, changes in state and national funding trends, student and faculty/staff diversity, among others. The focus of this course is centered on the actions and responses of administrators to the current issues they are facing.

ELA 350V. Introduction to Educational Leadership in a Global Society
3 Credits
Multinational educational systems covered through knowledge of the U.S. system of education promoting critical leadership roles every citizen plays in the success of educational systems.

ELA 398. Special Topics in Education
1-3 Credits (1-3)
Special topics course in education for undergraduate students. Course will be identified by a subtitle. May be repeated for a maximum of 12 credits.

ELA 411. Foundation for School Library Specialists
3 Credits
Elements of librarianship. Introduction to the history, purpose, and role of the school library. Overview of current issues and legislation affecting school libraries. Same as ELA 511. May be repeated up to 3 credits.

ELA 412. Administration of the School Library
3 Credits
Principles and practices related to the function, structure, and management of school libraries. Same as ELA 512. May be repeated up to 3 credits.

ELA 413. Curriculum Role of the School Library Specialist
3 Credits
Introduction to the integration of curriculum in school library programs. Current trends in collaborative planning and teaching between the school librarians and teachers. Taught with ELA 513. May be repeated up to 3 credits.

3 Credits
Principles of identifying, selecting, acquiring, managing, and evaluating information for school libraries. Same as ELA 514. May be repeated up to 3 credits.

ELA 440. Management of Student Services
3 Credits
History and overview of student services (e.g., admissions, counseling, registration, financial aid, housing, food services, student organizations) for early entry level positions. This course will provide students with an examination of foundations and principals of student services. Important theories and essential competencies needed in order to be successful will be explored through a social justice perspective of leadership.

ELA 450. Principles of Education Law and Policy
3 Credits
Overview of the use of law and policy in schools and higher education. May be repeated up to 3 credits. Restricted to: E AD, majors.

ELA 455. Principles of Education Budgeting and Finance
3 Credits
Analysis of budget and finance practices in education. Restricted to: EMD majors.

ELA 485. Elements of Research
3 Credits
This course provides students with a foundation for understanding educational research. The course will also provide grounding in proper writing format for use in the education profession. Students will be introduced to various research paradigms and the symbiosis of theory and practice. Besides introducing students to the symbiosis of theory and practice, students will complete assignments and activities that demonstrate the use of that symbiosis. Ultimately, students will be able to use the knowledge they gain through the course to be able to critique educational research.

ELA 499. Internship
3 Credits
The undergraduate Educational Leadership major requires that students complete two internships. Internships provide students with either experience working in an area of administration that is different from the student’s regular job or experience conducting research for a program or project. Each internship placement site and scope of work is determined through consultation with the course instructor. Students must complete 120 hours of work with the selected internship site. May be repeated up to 6 credits. Restricted to: EL majors.
Prerequisite(s): Student must be an EL major and be within (at least) one year of graduation.

ELA 502. Special Problems.
1-3 Credits
Offered under various subtitles which indicate the subject matter covered. May be taken for a maximum of 3 credits per semester and a total of 6 credits overall. May be repeated up to 6 credits. Consent of Instructor required.

ELA 511. Foundation for School Library Specialists
3 Credits
Elements of librarianship. Introduction to the history, purpose, and role of the school library. Overview of current issues and legislation affecting school libraries. Same as ELA 411. May be repeated up to 3 credits.
ELA 512. Administration of the School Library
3 Credits
Principles and practices related to the function, structure, and management of school libraries. Same as ELA 412. May be repeated up to 3 credits.

ELA 513. Curriculum Role of the School Library Specialist
3 Credits
Introduction to the integration of curriculum in school library programs. Current trends in collaborative planning and teaching between school librarians and teachers. Same as ELA 413. May be repeated up to 3 credits.

ELA 514. Collection Management and Development in School Libraries
3 Credits
Principles of identifying, selecting, acquiring, managing, and evaluating information for school libraries. Same as ELA 414. May be repeated up to 3 credits.

ELA 530. Management of Educational Change
3 Credits
Leadership in implementing innovations in education. Consent of Instructor required.

ELA 531. Special Education Administration
3 Credits
Competencies for the administration of special education programs with an emphasis upon New Mexico public school standards. Consent of Instructor required.

ELA 540. Management of Student Services in Higher Education
3 Credits
History and overview of student services (e.g., admissions, counseling, registration, financial aid, housing, food services, student organizations) and a review of management components used in student services. Consent of Instructor required.

ELA 550. Higher Education Law
3 Credits
This course is designed to review the impact of the legal process and the judiciary on higher education. Consent of Instructor required.

ELA 555. Higher Education Finance and Funding
3 Credits
This course examines the impact and process of financing and funding higher education. Consent of Instructor required.

ELA 563. Higher Education Administration
3 Credits
This course provides an overview of higher education in the United States including history, mission, and governance, in the context of organizational theory. Consent of Instructor required.

ELA 564. Internship Public Schools Part I
3 Credits
First half of a practical internship in Pk-12 schools under supervision of school administrator. Consent of Instructor required. Restricted to: E AD majors.
Prerequisite(s): 18 cr. of ELA coursework, 3 years of Pk-12 teaching experience and consent of instructor.

ELA 565. Internship: Public Schools Part II
3 Credits
Second half of a practical internship in Pk-12 administrative setting under supervision of experienced higher education administrator. Consent of Instructor required. Restricted to: E AD majors.
Prerequisite(s): ELA 564.

ELA 566. Internship: Higher Education Part I
3 Credits
First half of practical internship in administrative setting under supervision of experienced higher education administrator. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: E AD majors.
Prerequisite(s): 15 credits of ELA coursework and consent of instructor.

ELA 567. Internship: Higher Education Part II
3 Credits
Second half of a practical internship in an administrative setting under supervision of an experienced higher education administrator. Consent of Instructor required. Restricted to: E AD majors.
Prerequisite(s): ELA 566.

ELA 568. Topics in School Administration
1-3 Credits
Designated by subtitle.

ELA 569. Basing Decision on Data: Higher Education
3 Credits
Analysis of accountability data and other evidence to support educational decision making. Disaggregating and interpreting assessment data to guide improvement of instruction. Moving from evidence to plans for action. Consent of Instructor required.

ELA 570. Educational Leadership, Supervision, and Evaluation
3 Credits
Leadership, supervision, and evaluation in Pk-12 and post secondary education. Consent of Instructor required.

ELA 572. History and Philosophy of Education
3 Credits
An overview of the historical development of the American school system and the relation of various philosophies to American education.

ELA 575. The Principalship
3 Credits
Key issues surrounding the role of school-site leaders. Consent of Instructor required.

ELA 576. Educational Financial Management
3 Credits
Educational finance and business applications. Consent of Instructor required.

ELA 578. Leadership and Administration of Bilingual Education
3 Credits
Concepts and practical approaches to improving the education of English language learners through higher education. Consent of Instructor required.

ELA 579. Public School Law
3 Credits
Legal processes of education, major court decisions, and the legislative process will be studied. Consent of Instructor required.

ELA 580. Administration of Adult and Continuing Education
3 Credits
Administration of programs in public schools, higher education, community and nontraditional educational settings. Consent of Instructor required.

ELA 582. Community College Administration
3 Credits
An overview of the history, role, objectives and patterns governing the effectiveness of the community college. Consent of Instructor required.
ELA 585. Elements of Research
3 Credits
Survey and analysis of research methods and designs focusing on sound educational research and its presentation. Consent of Instructor required.

ELA 586. Multicultural Leadership in Education
3 Credits
Examine cultural diversity and how appropriate understanding, leadership and instructional strategies can be used to reach all learners. Enhances understanding of what it means to be an educator in culturally diverse contexts. Consent of Instructor required.

ELA 589. Evaluation Design in Education
3 Credits
This course focuses on evaluation and accountability models; application to educational programs. Consent of Instructor required.

ELA 590. Basing Decision on Data: Pk-12
3 Credits
Analysis of accountability data and other evidence to support educational decision making. Disaggregating and interpreting assessment data to guide improvement of instruction. Moving from evidence to plans for action. May be repeated up to 3 credits. Consent of Instructor required.

ELA 595. Current Topics
1-6 Credits
Offered under various subtitles which indicate the subject matter covered. May be taken for a maximum of 6 credits.

ELA 598. Independent Studies
1-3 Credits
Individual investigation in special topic areas. Requires prior approval of project advisor.

ELA 600. Doctoral Research
1-15 Credits

ELA 620. Doctoral Seminar
1-3 Credits
A study of current issues in educational administration at the national, state, and local levels. May be repeated up to 6 credits. Consent of Instructor required.

ELA 622. Quantitative Research I
3 Credits
Explores quantitative research methods, the rationale and assumptions that guide statistical decisions, beginning level statistical analyses, and how all of these are applied in the field of educational leadership. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

ELA 623. Qualitative Research I
3 Credits
Explores qualitative research methods and models and their application in the field of educational leadership. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

ELA 630. Concepts of Leadership in Education
3 Credits
Survey of concepts of leadership in general and educational leadership in particular. Consideration of implications for practice. May be repeated up to 3 credits. Consent of Instructor required.

ELA 645. The Professoriate
3 Credits
The purpose of this course is to explore the body of scholarly knowledge and research appropriate for the study of American higher education, the context in which teaching and learning occurs, and faculty’s roles in the process. We will discuss the number, variety, and purpose of the various types of institutions; the different roles that faculty members play within these institutions; how faculty work is assessed and valued within the outside of the university; administrative regulations related to faculty work; current issues related to the general state of the professorate; as well as how does one prepare to enter the professorate.

ELA 650. Higher Education Law
3 Credits
This advanced course is designed to review the impact of the judiciary on higher education. The legal standing of institutions of higher education on issues of staff rights, student rights, and tort liability will be addressed. In addition, the impact of local ordinances, state and federal laws and regulations will be examined. Consent of Instructor required.

ELA 655. Higher Education Finance and Funding
3 Credits
This advanced course examines the impact and process of financing and funding higher education. The course is an examination of higher education finance as it relates to operational budgets, capital budgets, and policy issues which impact the financing of higher education. Consent of Instructor required.

ELA 670. Advanced Internship
1-6 Credits
For those pursuing an advanced degree to meet the field work requirement. To bear an appropriate subtitle. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: EAD majors. S/U Grading (S/U, Audit).

ELA 671. Foundations of Educational Administration
3 Credits
Advanced course about the political, economic, and social forces on policy making and governance of Pk-12 and postsecondary education. May be repeated up to 3 credits. Consent of Instructor required.

ELA 675. Advanced Internship
1-6 Credits
For those pursuing an advanced degree to meet the field work requirement. To bear an appropriate subtitle. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: EAD majors. S/U Grading (S/U, Audit).

ELA 676. Educational Financial Management
3 Credits
This advanced course offers an overview of economic and financial concerns relating to the public school system of the United States. Consent of Instructor required.

ELA 679. Public School Law
3 Credits
Advanced course in which the legal processes of education, major court decisions, and the legislative process will be studied. Consent of Instructor required.

ELA 682. Quantitative Research II
3 Credits
Intermediate quantitative methods of research, statistical analyses, and their application in the field of educational leadership. May be repeated up to 3 credits. Consent of Instructor required. Restricted to Doctoral students only.
Prerequisite(s): ELA 622.
ELA 683. Qualitative Research II
3 Credits
Advanced qualitative methods of research and implementation in the field of educational leadership. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): ELA 623.

ELA 685. Elements of Research
3 Credits
Advanced survey and analysis of research methods and designs focusing on sound educational research and its presentation. Consent of Instructor required.

ELA 689. Evaluation Design in Education
3 Credits
Advanced course that focuses on evaluation and accountability models; application to educational programs. Consent of Instructor required.

ELA 693. Dissertation Seminar
3 Credits
Same as BIL, C EP, ECED, EDUC, RDG, SPED 693. Consent of Instructor required.

ELA 698. Selected Topics
1-6 Credits
Offered under various subtitles which indicate the subject matter covered. May be taken for a maximum of 6 credits per semester and overall total: May be repeated up to 9 credits.

ELA 700. Doctoral Dissertation
9 Credits
Dissertation. Minimum of 3 credits per regular semester. May be taken for a maximum of 36 credits. Consent of instructor required.

ELT - ELECTRONICS TECHNOLOGY (ELT)

ELT 103. Math Study Skills for Electronics
1 Credit
Covers specific math study skills and critical thinking processes to reinforce practical applications of math and its use with electronics. The student will be introduced to electronic mathematical formulas during the problem-solving steps required for circuit analysis. May be repeated up to 4 credits.
Prerequisite(s)/Corequisite(s): E T 183 OR E T 184. Restricted to Community Colleges only.

ELT 105. Basic Electricity and Electronics
3 Credits (2+2P)
Fundamentals of electricity and electronics, basic circuit devices, meters, transistors, integrated circuits and other solid state devices, computers, fiber optics, and industrial application topics. Minimum math proficiency of CCDM 103 or CCDM 104 required or math placement into MATH 120 or higher. Restricted to: Community Colleges only. Crosslisted with: AERT 124

ELT 120. Mathematics for Electronics
4 Credits
Includes fundamental mathematics, algebra, sine, cosine, and other elementary functions as they specifically apply to the operation, manipulation, and evaluation of direct current (DC) and alternating current (AC) circuits. Minimum math proficiency of CCDM 114 required or math placement into MATH 120 or higher. Restricted to: Community Colleges only. Crosslisted with: AERT 124

ELT 135. Electronics II
4 Credits (3+3P)
Analysis of AC circuits, filters, and resonance. Introduction to solid state fundamentals including diodes and rectifier circuits, voltage regulators, various transistors and transistor characteristics, amplification and amplifiers, photoelectric effects, gates and timing circuits. Restricted to Community Colleges campuses only.
Prerequisite(s): ELT 110 and ELT 120.

ELT 155. Electronics CAD and PCB Design
3 Credits (2+2P)
Introduction to and the use of commercially available CAD software covering schematic representation of electronic components and circuits. Printed circuit board layout techniques including proper schematic capture, netlist generation, design rule checking and manual routing covered.

ELT 160. Digital Electronics I
4 Credits (3+3P)
Number systems, codes, Boolean algebra, logic gates, Karnaugh maps, combination circuits, flip-flops, and digital troubleshooting techniques. Restricted to: Community Colleges only.
Prerequisite(s): ELT 110 and ELT 120.

ELT 175. Soldering Practices
3 Credits (2+2P)
Methods and techniques of hand soldering in the production of high quality and reliable soldering connections. Restricted to: Community Colleges only.

ELT 205. Semiconductor Devices
4 Credits (3+3P)
Analysis and trouble shooting of linear electronic circuits including amplifiers, op-amps, power supplies, and oscillators. Restricted to: Community Colleges only.
Prerequisite(s): ELT 110 and ELT 135.

ELT 215. Microprocessor Applications I
4 Credits (3+2P)
Fundamentals of microprocessor architecture and assembly language with an emphasis on hardware interfacing applications.
Prerequisite(s)/Corequisite(s): ELT 235. Prerequisite(s): ELT 160. Restricted to: Community Colleges only.

ELT 220. Electronic Communication Systems
4 Credits (3+2P)
Principles and applications of circuits and devices used in the transmission, reception, and processing of RF, microwave, digital and telecommunications systems.
Prerequisite(s)/Corequisite(s): ELT 205. Prerequisite(s): ELT 135. Restricted to: Community Colleges only.
ELT 221. Cooperative Experience I
1-6 Credits
Supervised cooperative work program. Student is employed in an approved occupation and supervised and rated by the employer and instructor. Student will meet in a weekly class. Graded S/U.
Prerequisite: consent of instructor.

ELT 222. Cooperative Experience II
1-6 Credits
Continuation of ELT 221. Maximum of 6 credits. Graded S/U.
Prerequisite: consent of instructor.

ELT 225. Computer Applications for Technicians
3 Credits (2+2P)
An overview of computer hardware, software applications, operating systems, high level programming languages and networking systems.

ELT 230. Microprocessor Applications II
4 Credits (3+2P)
Advanced microprocessor interfacing techniques. Topics in A/D and D/A conversion, I/O port address decoding, direct memory accessing, and peripheral device interfacing applications.
Prerequisite: ELT 215.

ELT 235. Digital Electronics II
3 Credits (2+2P)
Sequential logic circuits, latches, counters, shift-registers, fault analysis and troubleshooting of digital IC's, multiplexers, timers, encoders/decoders, arithmetic circuits, pulse shaping, and memory devices.
Restricted to: Community Colleges only.
Prerequisite(s): ELT 135 or consent of instructor.

ELT 240. Introduction to Photonics
4 Credits (3+2P)
Nature of light, light emitters, lasers, detectors, fiber optics communications systems, and other applications of light to electronics.
Prerequisite: ELT 135 or consent of instructor.

ELT 250. Electronics Systems Analysis
2 Credits (1+3P)
Capstone course emphasizing a systems approach to troubleshooting and maintaining complex electronics systems. Includes program review in preparation for technician certification.
Prerequisite: consent of instructor.

ELT 260. Instrumentation Control and Signal Conditioning
4 Credits (3+2P)
Introduction to sensors and transducers, signal conditioning and transmission for measuring and process control systems. Includes AD, DA converter, small servos and actuators. Prerequisite: ELT 205.

ELT 265. Special Topics
1-6 Credits
Topic to be announced in the Schedule of Classes.

ELT 270. Biomedical Equipment Instrumentation
4 Credits (3+2P)
Principles and applications of electronic circuits and devices used in biomedical equipment. Skills taught to include evaluating, troubleshooting and repairing various types of medical equipment.
Prerequisite(s)/Corequisite(s): ELT 260. Prerequisite(s): ELT 205.
Restricted to: Community Colleges only.

ELT 295. Professional Development/Leadership
1 Credit
As members and/or officers of student professional organizations, electronics technology students gain experience in leadership, team building, and community services. May be repeated for a maximum of 6 credit. Restricted to ELT and ET E majors.

ENGL-ENGLISH (ENGL)

ENGL 111 M. Rhetoric and Composition for International and Multilingual Students
4 Credits
For international and multilingual students. Students will build on your prior knowledge of writing in English as a second or additional language by engaging in several genres of writing and reading, including reading responses, discussion posts, formal academic papers (Rhetorical Analysis and Documented Argument), and peer review. Your instructor and classmates will serve as your readers and will give you helpful and constructive criticism, which will in turn assist you in becoming a more fluent and engaging communicator in English. Fulfills English 111 Gen-ed requirement. Restricted to Las Cruces campus only.
Prerequisite(s): CBT/PB score of 500, or IBT score of 61, or SPCD 110, or consent of instructor.

ENGL 111G. Rhetoric and Composition
4 Credits
Skills and methods used in writing university-level essays.
Prerequisite(s): ACT standard score in English of 16 or higher or a Compass score 76 or higher; for those scoring 12 or below on the ACT standard score in English on the ACT or 35-75 on the Compass, successful completion of a developmental writing course; for those scoring 12 or below on the ACT standard score in English or 34 or below on the Compass, successful completion of two developmental writing courses.

ENGL 111GH. Rhetoric and Composition Honors
4 Credits
Individualized assignments and independent study. Satisfies 4 credits of General Education English Composition requirement.
Prerequisite: ACT standard English score of 25 or higher and departmental approval.

ENGL 112. Rhetoric and Composition II
2 Credits
A continuation of English 111G for those desiring more work in composition. Weekly themes based on outside reading.
Prerequisite: successful completion of ENGL 111G or the equivalent.

ENGL 115G. Perspectives on Literature
3 Credits
Examines literature by writers from culturally diverse backgrounds and from different cultural and historical contexts. Explores various strategies of critical reading.

ENGL 116G. Perspectives on Film
3 Credits (3+3P)
Explores narrative and documentary film and examines significant developments in the history of cinema. Criticism of film as an art form, technical enterprise, business venture, and cultural phenomenon.
ENGL 203G. Business and Professional Communication
3 Credits
Effective writing for courses and careers in business, law, government, and other professions. Strategies for researching and writing correspondence and reports, with an emphasis on understanding and responding to a variety of communication tasks with a strong purpose, clear organization, and vigorous professional style. May be repeated up to 3 credits.
Prerequisite(s): ENGL 111G or SPCD 111G or ENGL 111 M.

ENGL 211G. Writing in the Humanities and Social Sciences
3 Credits
Theory and practice in interpreting texts from various disciplines in the humanities and social sciences. Strategies for researching, evaluating, constructing, and writing researched arguments. Course subtitled in the Schedule of Classes. May be repeated up to 3 credits.
Prerequisite(s): ENGL 111G or SPCD 111G or ENGL 111 M.

ENGL 218G. Technical and Scientific Communication
3 Credits
Effective writing for courses and careers in sciences, engineering, and agriculture. Strategies for understanding and presenting technical information for various purposes to various audiences. May be repeated up to 3 credits.
Prerequisite(s): ENGL 111G or SPCD 111G or ENGL 111 M.

ENGL 220G. Introduction to Creative Writing
3 Credits
Examines classic and contemporary literature in three genres. Various forms, terminologies, methods and technical aspects of each genre, and the art and processes of creative writing. May be repeated up to 3 credits.
Prerequisite(s): ENGL 111G or SPCD 111G or ENGL 111 M.

ENGL 232. Script Development and Storyboarding
3 Credits
Examines effective writing principles for creating storyboards that communicate the overall picture of a project, timing, scene complexity, emotion and resource requirements. Crosslisted with: CMI 232.

ENGL 235. Narrative: Principles of Story Across the Media
3 Credits
Examines the various strategies of written and visual storytelling, narrative structure and its principal components (plot, theme, character, imagery, symbolism, point of view) with an attempt to connect them to elements of contemporary forms of media expression, including screenwriting, playwriting, writing for documentaries and animation, etc. Crosslisted with: CMI 235

ENGL 243. The Bible as Literature
3 Credits
Develops informed readings of Hebrew and Christian scriptures. Emphasizes understanding Biblical literary forms, techniques, themes; historical, cultural contexts for interpretation; authorship, composition, audience for individual books; development of Biblical canon.

ENGL 244G. Literature and Culture
3 Credits
Intensive reading of and discussion and writing about selected masterpieces of world literature. Emphasizes cultural and historical contexts of readings to help students appreciate literary traditions. Core texts include works by Homer, Dante, and Shakespeare, a classic novel, an important non-Western work, and modern literature.

ENGL 251. Survey of American Literature I
3 Credits
From the colonial period to the transcendentalists.

ENGL 252. Survey of American Literature II
3 Credits
From Whitman to the present.

ENGL 252. Masterpieces of Western European Literature, Post-Renaissance to Modern Times
3 Credits
Modern Western European literary classics, from the seventeenth through the twentieth centuries, with attention to the rise of the novel and other modern forms.

ENGL 263. History of Argument
3 Credits
Investigates the major figures and movements in rhetoric from the classical period to modern rhetorical theory, examining relations between rhetorical teaching and practice, culture, epistemology, and ideology. Main campus only.

ENGL 271. Survey of English Literature I
3 Credits
From Beowulf through the eighteenth century.

ENGL 272. Survey of English Literature II
3 Credits
From the pre-Romantics to the present.

ENGL 299. Special Topics
1-3 Credits
Emphasis on a literary and/or writing subject chosen for the semester. Repeatable for an unlimited credit under different subtitles.

ENGL 301. Theory and Criticism: Rhetoric and Culture
3 Credits
Introduction to rhetorical criticism with an emphasis on understanding the theoretical and cultural underpinnings for the rhetorical analyses of texts.

ENGL 302. Theory and Criticism: Literature and Culture
3 Credits
Introduction to literary criticism, from its classical beginnings through contemporary critical approaches.

ENGL 303. Theory and Criticism: Film, Media and Culture
3 Credits
Surveys classical and contemporary film theory. Explores the relationship of theory to textual analysis and filmmaking practices. Includes auteurism, semiotics, psychoanalysis, and other theories, as well as theories of other media.

ENGL 304. Creative Writing: Prose
3 Credits
Imaginative writing, chiefly prose narrative. Repeatable for a maximum of 9 credits.

ENGL 305. Creative Writing: Reading Series
1 Credit
A one credit class based on the English Department's literary reading series. The class meets online and at the literary readings.

ENGL 306. Creative Writing: Poetry
3 Credits
Introduction to the writing of poetry. Repeatable for a total of 9 credits.

ENGL 307. Creative Writing: Creative Nonfiction
3 Credits
Introduction to creative nonfiction. Skills emphasized will include the personal voice, powers of observation and reflection, advocacy, argument, and a creative, powerful use of language. Repeatable for a maximum of 9 credits.
ENGL 308. Creative Writing: Playwriting
3 Credits
Technique of one-act playwriting, and analysis of dramatic structure.
Crosslisted with: THTR 308

ENGL 309. Screenwriting I
3 Credits
Writing intensive. Students learn the craft of screenwriting, honing skills in writing dialogue and visual narrative, crafting dynamic characters and dramatic action. Original student scripts will be performed and discussed in class. Consent of instructor required. Crosslisted with: CMI 309 and THTR 306
Prerequisite(s): ENGL 235 or CMI 235.

ENGL 310. Critical Writing
3 Credits
A course in critical reading, writing, and research designed to prepare English majors for upper-division courses.

ENGL 311G. Advanced Composition
3 Credits
Writing of nonfiction prose. Reviews principles of expository and descriptive writing. Emphasizes the argument/persuasion essay with detailed discussion of semantic and rhetorical techniques.
Prerequisite: junior or senior standing, or consent of instructor.

ENGL 315. Writing for the Web
3 Credits
Introduction to writing for the World Wide Web through practical application and analysis on both theory and research. Allows hands-on learning in a computer classroom.

ENGL 318G. Advanced Technical and Professional Communication
3 Credits
Theory and practice of writing in technical and professional fields, individualized to each student's field. Emphasizes efficient writing processes and effective written products.
Prerequisite: junior or above standing, or consent of instructor.

ENGL 321V. Modern European Drama
3 Credits
Masterworks of European drama from the late 18th century to present. Crosslisted with: THTR 321V

ENGL 322. Dramatic Character
3 Credits
How characters have been created for the stage from the beginning of theatrical performances in ancient Greece to the present day. Exploring characterization related to dramatic structure, style, and genre, and how dramatic characters differ from those in literary fiction. Crosslisted with: THTR 322.

ENGL 323. American Drama
3 Credits
Masterworks of American drama by noted American playwrights. Crosslisted with: THTR 323

ENGL 326. Cultural Identity and Representation Across the Media
3 Credits
Considers complex relationships between representation and culture including how images and language shape racial, ethnic, gender, sexual, and class identities. Examines theories from several disciplines. Includes lecture, discussion and production exercises.

ENGL 327V. Shakespeare around the Globe
3 Credits
Introduction to multicultural issues in Shakespeare's plays and to adaptations of Shakespeare's plays in other cultures.

ENGL 328V. Literature of Science Fiction and Fantasy
3 Credits
Survey and critical examination of the development of science fiction and fantasy as literature genres through selected authors and texts.

ENGL 329. Studies in Drama
3 Credits
Emphasis on a group of related works of European or American drama; topics will vary. Crosslisted with: THTR 329 and CMI 329

ENGL 330V. Studies in Poetry
3 Credits
Emphasis on a related group of poems or on the work of one or more poets; topics will vary.

ENGL 335V. Studies in the Novel
3 Credits
Intensive reading of, discussion of, and writing about selected major novels from around the world. Emphasizes the history of the novel and its role in culture.

ENGL 336. Studies in Film
3 Credits (3+3P)
Explores the conventions of cinematic representation; the strategies involved in writing about and reading film; and/or the adaptation of literary texts to film. Repeatable under different subtitles.

ENGL 339V. Chicana/o Literature
3 Credits
Introduction to Chicano novels, short stories and selected creative nonfiction.

ENGL 341V. American Indian Literature
3 Credits
Forms and themes of Native American oral literary traditions; Native American writing in English, especially novels, short fiction, and poetry.

ENGL 349. The Short Story
3 Credits
Development of the short story as a distinct form. Readings and critical analysis of representative nineteenth and twentieth century pieces.

ENGL 354. Form and Technique in Fiction
3 Credits
Literature course designed for fiction writers, especially those English majors in the Creative Writing emphasis. The course combines the study of published fiction with the study of craft. Some of the assignments will require the student to write original fiction based on exercises provided by the instructor. Repeatable for up to 9 credits.

ENGL 356. Form and Technique in Poetry
3 Credits
Literature course designed for poets, especially those English majors in the Creative Writing emphasis. The course combines the study of published poetry with the study of craft. Some of the assignments will require the student to write original poems based on exercises provided by the instructor. Repeatable for up to 9 credits.

ENGL 358. Form and Technique in Playwriting
3 Credits
Literature course designed for playwrights, especially those English majors in the Creative Writing emphasis. The course combines the study of published plays and performances with the study of craft. Some of the assignments will require the student to write original plays based on exercises provided by the instructor. Repeatable up to 9 credits.
ENGL 363. Literature for Children and Young Adults
3 Credits
A comparative, historical survey of literature for young (K to 12th grade) readers. Emphasis on critical evaluation.
Prerequisite: junior or above standing.

ENGL 380V. Women Writers
3 Credits
Introduction to multicultural women's traditions through intensive study of works by women writers. Crosslisted with: W S 380V.

ENGL 392V. Mythology
3 Credits
Greek and Roman mythology and its impact on European and English literature. Readings in myths, classical plays, and other literature with mythological interest, including nonclassical myths.

ENGL 394V. Southwestern Literature
3 Credits
Introduction to multicultural literature of the Southwest: oral folk literature, literary fiction (classic and contemporary), nonfiction and poetry.

ENGL 399. Special Topics
3 Credits
Emphasis on a theme, genre, figure, or technique chosen for study during the semester. Repeatable under different subtitles.

ENGL 400. Independent Study: Upper Division
1-3 Credits
For students with demonstrated aptitude for independent work. Approval of instructor required before registration. Repeatable under different subtitles.

ENGL 405. Chaucer
3 Credits
Principal works, with emphasis on The Canterbury Tales.

ENGL 407. Milton
3 Credits
Studies in Milton's works.

ENGL 408. Shakespeare I
3 Credits
Principal plays of Shakespeare's first two periods. Crosslisted with: THTR 408.

ENGL 409. Shakespeare II
3 Credits
Principal plays of Shakespeare's last two periods. Crosslisted with: THTR 409.

ENGL 412. Writing in the Workplace
3 Credits
Study of workplace writing practices, including a focus on research-based, theoretical, and pedagogical approaches to professional communication.

ENGL 413. Advanced Creative Writing: Prose Workshop
3 Credits
Imaginative writing, chiefly the narrative. May be repeated up to 12 credits.
Prerequisite(s): ENGL 304 or consent of instructor.

ENGL 414. Advanced Creative Writing: Poetry Workshop
3 Credits
For advanced writers of poetry. Repeatable for a total of 12 credits.
Prerequisite(s): ENGL 306 or consent of instructor.

ENGL 415. Advanced Creative Writing: playwriting Workshop
3 Credits
Technique of full-length playwriting, and analysis of dramatic structure. May be repeated up to 12 credits. Consent of Instructor required. Crosslisted with: THTR 309 and CMI 309.
Prerequisite(s): ENGL 308 or consent of instructor.

ENGL 416. Approaches to Literature
3 Credits
Understanding, appreciation, techniques of instruction in the high school.
Prerequisite: at least 6 credits in upper-division English courses.

ENGL 417. Advanced Study in Critical Theory
3 Credits
Advanced study of one or more major trends in theoretical inquiry within English studies. Some prior study of theory, such as English 301-303, strongly recommended. Repeatable under different subtitles.

ENGL 418. History of Rhetoric
3 Credits
Investigation of crucial writings that have shaped Western attitudes towards and practice of rhetoric. Will examine key concepts from the Greeks through the Enlightenment, especially as they have influenced contemporary rhetorical theory.

ENGL 419. Modern Rhetorical Theory
3 Credits
Major figures in rhetorical theory, with particular emphasis on developments in rhetorical theory in the twentieth century.

ENGL 421. Advanced Study in a Literary Period or Movement
3 Credits
Close study of a historical or theoretical topic in a particular literary period or movement. Repeatable under different subtitles.

ENGL 422. Advanced Study in a Literary Form or Genre
3 Credits
Close study of a topic in a particular literary form or genre. May be repeated under different subtitles.

ENGL 423. Advanced Study in a Major Author
3 Credits
Close study of selected works by a major author. May be repeated under different subtitles.

ENGL 424. Advanced Study in a Major Text
3 Credits
Close study of a major text. Course subtitled in the Schedule of Classes. Repeatable under different subtitles.

ENGL 425. Advanced Study in Comparative Literature
3 Credits
Close study of a selection of non-English literary works read in translation. English-language works from a similar literary period or genre may also be read. Repeatable under different subtitles.

ENGL 429. British Romanticism
3 Credits
Intensive study of major writers and critical topics from the Romantic period. Repeatable under different subtitles.

ENGL 430. Online Publishing
3 Credits
This three-credit course provides a theoretical background for online publishing and design as well as hands on experience publishing an online arts magazine.
ENGL 445. Postmodern Fiction
3 Credits
Study of the various forms of formally innovative experimental fiction produced since 1945, with a focus on the relationship between literary history and its sociohistorical contexts. Some texts will be read in translation. Repeatable once under a different subtitle.

ENGL 446. Advanced Creative Writing: Nonfiction Prose
3 Credits
This workshop-format class for advanced writers will examine the many varieties of Creative Nonfiction. Students should be prepared for a rigorous reading load of published nonfiction and student submissions. Because of the workshop format, every student is expected to contribute extensively to every class, both in printed form and oral comments. Taught with ENGL 546. May be repeated up to 12 credits.
Prerequisite(s): ENGL 307 or consent of instructor.

ENGL 449. Advanced Study in Writing
3 Credits
Close study of a topic in composition, rhetoric and/or technical and professional communication. Repeatable for a maximum of 6 credits with permission of department.

ENGL 451. Practicum in the Grammar of American English
3 Credits
Studies of formal grammar of the English language in preparation for the teaching of the English language and/or advanced linguistic analysis.

ENGL 452. History of the English Language
3 Credits
This course examines the history of the English language from its Indo-European origins through its development into an international language. The aim is to describe the English language formally and to trace linguistic change over time. Samples of written English will illustrate various stages in the development of English. Also considered are contemporary social and political issues related to language, including the problem of 'standard English' and the uses of language in advertising, the media, and politics.

ENGL 478. Document Design
3 Credits
Advanced study in writing, with an emphasis on the computer as a tool for designing visually informative text. Includes theory and research in document design and the use of page composition and graphics software.
ENGL 479. Computers and Writing
3 Credits
This course will trace the history of computers and composition as a field by looking at the work of important scholars including Selfe, Hawisher, Johnson-Eilola, and Wysocki. We will then focus on specific ways new media might be integrated into composition classrooms. The course will include discussions, student facilitations, and experimentation with technologies.

ENGL 480. Screenwriting II
3 Credits
Students will write two short scripts, 10-15 pages each. Focus will be on learning how to take notes and rewrite. Script analysis will be in a workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialog, character development, etc. Crosslisted with: CMI 480
Prerequisite(s): ENGL 309 or CMI 309 or THTR 306 or consent of instructor.

ENGL 481. Women's Literature
3 Credits
Intensive study of literature by women, in particular historical, aesthetic, cultural, or intellectual contexts. Repeatable under different subtitles. Crosslisted with: W S 484

ENGL 486. Hollywood Film
3 Credits (3+3P)
Intensive study of Hollywood film in its artistic, cultural, or historical contexts. Repeatable under different subtitles.

ENGL 489. Cultural Studies: Literature and Theory
3 Credits
Examines the theory and practice of cultural studies in relation to the variety of discourse describable as literary, including autobiography, avant-garde writing, nonfiction prose, the essay, online writing, folklore, and popular genre fiction (such as mystery, romance, thriller, or horror). Repeatable once under a different subtitle.

ENGL 493. Middle English Textual Cultures
3 Credits
Intensive study of cultures of reading, writing, and literary production in late-medieval England, situating Middle English literature in its manuscript contexts. No prior experience with Middle English required.

ENGL 497. Internship
3-6 Credits (3-6)
Supervised technical and professional communication internship in business, industry, government, or the university. Repeatable for a total of 6 credits. Consent of instructor required.

ENGL 500. Supervised Study
1-3 Credits
To prepare the student for the master's degree examinations by special studies in fields not covered in routine course work.
Prerequisite: consent of instructor.

ENGL 501. Online Publishing
3 Credits
This three-credit course provides a theoretical background for online publishing and design as well as hands-on experience publishing an online arts magazine. Taught with ENGL 430.

ENGL 505. Graduate Study in Chaucer
3 Credits
Principal works, with emphasis on the Canterbury Tales. Requirements include independent directed research.
Prerequisite: ENGL 261 or consent of instructor.

ENGL 508. Graduate Study in Shakespeare I
3 Credits
Principal plays of Shakespeare's first two periods. Requirements include independent directed research.

ENGL 509. Graduate Study in Shakespeare II
3 Credits
Principal plays of Shakespeare's last two periods. Requirements include independent directed research.

ENGL 510. Proseminar in Rhetoric and Professional Communication
3 Credits
Introduction to research in rhetoric and professional communication. Taught with ENGL 610.

ENGL 511. Discourse and Theories
3 Credits
Investigates theories describing how humans use language and considers production, reception, and cultural context. Topics vary. Repeatable for a maximum of 6 credits.

ENGL 512. Graduate Study in Writing in the Workplace
3 Credits
Study of workplace writing practices, including a focus on research-based, theoretical, and pedagogical approaches to professional communication.

ENGL 513. Creative Writing Workshop: Fiction
3 Credits
Advanced creative writing prose workshop. Imaginative writing, chiefly the narrative. Graduate level workshop for students who are not in the English Department MFA program. May be repeated for a maximum of 12 credits. Taught with ENGL 413 with additional work required at the graduate level.

ENGL 514. Creative Writing Workshop: Poetry
3 Credits
Creative writing poetry workshop for advanced writers of poetry. Graduate level works for students who are not in the English Department MFA program. Repeatable for a maximum of 12 credits. Taught with ENGL 414 with additional work required at the graduate level.

ENGL 516. Graduate Study in Approaches to Literature
3 Credits
Understanding, appreciation, techniques of instruction in the high school. Requirements include independent directed research.
Prerequisite: at least 6 credits in upper-division English courses.

ENGL 517. Graduate Study in Critical Theory
3 Credits
Advanced study of one or more major trends in theoretical inquiry within English studies. Some prior study of theory, such as English 301, 302, or 303, strongly recommended. Repeatable under different subtitles.

ENGL 518. History of Rhetoric
3 Credits
An investigation of the crucial writings that have shaped Western attitudes towards and practice of rhetoric. Course will examine key texts from the Greeks through the Enlightenment, especially as they have influenced contemporary rhetorical theory.

ENGL 519. Graduate Study in Modern Rhetorical Theory
3 Credits
Major figures in rhetorical theory, with particular emphasis on developments in rhetorical theory in the 20th century. Students will be responsible for all requirements of ENGL 419 and will in addition undertake independent directed research.
ENGL 520. Workshop: Advanced Composition
3 Credits
Intensive work in composition in a workshop setting.

ENGL 521. Graduate Study in a Literary Period or Movement
3 Credits
Close study of a topic in a particular literary period or movement. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 522. Graduate Study in a Literary Form or Genre
3 Credits
Close study of a topic in a particular literary form or genre. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 523. Graduate Study of a Major Author
3 Credits
Close study of selected works of a major author. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 524. Graduate Study in a Major Text
3 Credits
Close study of a major text. Requirements include independent directed research. Repeatable under different subtitles.

ENGL 525. Graduate Study in Comparative Literature
3 Credits
Close study of a selection on non-English literary works read in translation. English-language works from a similar literary period or genre may also be read. Requirements include independent directed research. Repeatable under different subtitles.

Prerequisite: graduate standing or consent of instructor.

ENGL 526. Special Topics in Critical Theory
3 Credits
Study of a specific historical or theoretical topic, trend, or movement in Critical Theory. Repeatable under different subtitles.

ENGL 527. Graduate Study in Film and Digital Media
3 Credits
Offers close graduate study of a form or genre, a major figure or style, a historical period or movement, or a major theme or text. Topics vary from semester to semester.

ENGL 529. British Romanticism
3 Credits
Intensive study of major writers and critical topics from the Romantic period. Repeatable under different subtitles.

ENGL 530. Argument Theory and Practice
3 Credits
Examining theories of argument and how language convinces audiences to think and act in certain ways and not in others. Investigates argument across disciplines and in social/political contexts.

ENGL 531. Technical Editing
3 Credits
Uses workshops, readings, hands-on projects, and discussion to improve skills in gathering, writing, designing, and editing technical information. For students interested in technical communication as well as students interested in developing strengths in communicating in scientific and technical fields.

ENGL 532. Gothic Literature
3 Credits
Intensive study of gothic literature in particular historical, aesthetic, cultural, or intellectual contexts, such as American Gothic, Female Gothic, Dark Romanticism, or Vampire Literature. Repeatable under different subtitles.

ENGL 533. Victorian Literature
3 Credits
Intensive study of major writers and critical topics from the Victorian period. Repeatable under different subtitles.

ENGL 534. Graduate Study: Form and Technique in Fiction
3 Credits
Advanced study of issues in form and technique in fiction, including point of view, scene and dialogue, and story structure. Repeatable for a maximum of 6 credits.

ENGL 535. Graduate Study: Form and Technique in Poetry
3 Credits
Advanced study of issues in form and technique in poetry, including voice, tone, syntax, and structure. Repeatable for a maximum of 12 credits.

ENGL 536. The Borderlands Writing Project
3-6 Credits (3-6)
Intensive month-long seminar for practicing teachers and educators designed to improve the teaching of writing and the writing process and literacy and reading in schools and other educational contexts. Reading, discussing, and writing about current professional literature; completing teacher inquiry; and planning action research. Participants complete personal and professional writing, as well as additional professional development activities. By invitation only. Affiliated with the National Writing Project. Consent of instructor required. Crosslisted with: RDG 536

ENGL 537. Practitioner Inquiry and Literacy Action Research
1-3 Credits (1-3)
Inquiry concerning literacy practices within specific contexts and the planning, implementing, and assessing projects designed to increase and improve literacy within that context. Instruction includes reading and web-based discussion, bi-monthly seminars, and onsite consultations. Associated with ongoing community outreach by the English Department and the Borderlands Writing Project. Consent of instructor required.

ENGL 538. Antebellum American Literature
3 Credits
Intensive study of topics critical to the development of nineteenth century American literature before and during the Civil War, and the work of authors such as Emerson, Thoreau, Poe, Hawthorne, Melville, Whitman and Dickinson. Repeatable once under a different subtitle. May be repeated up to 6 credits.

ENGL 542. Modern and Contemporary American Poetry
3 Credits
Studies the development of American poetry from World War I to the present. Repeatable once under a different subtitle.

ENGL 543. Multimedia Theory and Production
3 Credits
Issues, theories, and production practices underlying design of multimedia, including rhetorical choices, aesthetic approaches, usability concerns, and diverse academic and popular discourses contributing to continued development of digital texts. Taught with ENGL 643.
ENGL 544. Modern British Fiction
3 Credits
Study of the fiction produced in the British Isles in the 20th and 21st centuries. Repeatable once under a different subtitle.

ENGL 545. Postmodern Fiction
3 Credits
Study of the various forms of formally innovative experimental fiction produced since 1945, with a focus on the relationship between literary history and its sociohistorical contexts. Some texts will be read in translation. Repeatable once under a different subtitle.

ENGL 548. Graduate Study in Empirical Research
3 Credits
Introduction to empirical research methods in composition, professional communication, and rhetoric.

ENGL 549. Graduate Study in Writing
3 Credits
Close study of a topic in composition, rhetoric, and/or technical and professional communication. Topics vary. Repeatable for a maximum of 6 credits.

ENGL 550. Graduate Study in Literacy
3 Credits
Studies in literacy theory and literacy research. Topics may vary. Taught with ENGL 650.

ENGL 551. Practicum in the Grammar of American English
3 Credits
Studies of formal grammar of the English language in preparation for the teaching of the English language and/or advanced linguistic analysis. Taught with ENGL 451.

ENGL 552. Graduate Study in History of the English Language
3 Credits
This course examines the history of the English language from its Indo-European origins through its development into an international language. The aim is to describe the English language formally and to trace linguistic change over time. Samples of written English will illustrate various stages in the development of English. Also considered are contemporary social and political issues related to language, including the problem of 'standard English' and the uses of language in advertising, the media, and politics.

ENGL 553. World Literatures
3 Credits
Study of one or more literary traditions exclusive of those originating in Europe and the United States. Readings will include texts in translation. Repeatable once under a different subtitle.

ENGL 555. Graduate Study in Rhetoric of Scientific Literature
3 Credits
Intensive study of the rhetoric of selected works of scientific literature.

ENGL 556. Ethnic Studies in US Literature and Culture
3 Credits
Concentrates on comparative study of literary and cultural production by two or more U.S. ethnic populations. Incorporates both literary and sociocultural readings of texts. Repeatable under different subtitles.

ENGL 558. Latino/a Literature and Culture
3 Credits
Focuses on established and emergent Latino/a literary and cultural production. Incorporates both literary and sociocultural readings of texts. Repeatable once under a different subtitle.

ENGL 559. Black Literature and Culture in the United States
3 Credits
Focuses on established and emergent Black U.S. literary and cultural production. Incorporates both literary and sociocultural readings of texts. Repeatable once under a different subtitle.

ENGL 560. Proposal and Grant Writing
3 Credits
Developing proposals and grants in a workshop setting.

ENGL 561. Topics in Writing Program Administration
3 Credits
Explores issues, theories, and research underlying the design of writing programs and the administration of writing centers. Repeatable for a maximum of 6 credits. Taught with ENGL 661.

ENGL 562. Interdisciplinary, Client-Based Project Practicum
3 Credits
Hands-on experience in collaborating within interdisciplinary teams designing projects for organizational clients. Taught with ENGL 462.

ENGL 563. Graduate Study in English Literature
3 Credits
Covers selected works for a particular period of English literary history. Repeatable under different subtitles.

ENGL 564. History and Theory of Composition Studies
3 Credits
Studies in the history and theory of composition as a discipline. Taught with ENGL 664.

ENGL 565. Intercultural Rhetoric and Professional Communication
3 Credits
Examines rhetorical traditions in intercultural professional, technical, academic, and governmental contexts. Taught with ENGL 665.

ENGL 566. Online Pedagogy for Writing and Professional Communication
3 Credits
Course explores key issues related to teaching and learning in online environments, with a focus on the teaching of writing and professional communication. Examines digital classroom practices and the theories that inform them and evaluates applicability and relevance of available technologies.

ENGL 567. Documentary Film Theory and Criticism
3 Credits (3+3P)
Course offers critical survey of documentary film theory and criticism including considerations of the epistemological assumptions, rhetorical choices, aesthetic approaches, political circumstances of historical and contemporary documentary film.

ENGL 568. Rhetoric and Cultural Studies
3 Credits
Explores intersections between rhetoric and cultural studies. Examines theories and practices of texts and discourses in political and cultural contexts. Taught with ENGL 668.

ENGL 569. Graduate in American Literature
3 Credits
A group of works from a particular period of American literary history. Repeatable under different subtitles.

ENGL 570. Graduate Study in Approaches to Composition
3 Credits
Theory and practice of teaching writing, including classroom practices, definition of standards, and evaluation of student writing. Requirements include independent directed research.
ENGL 571. Composition Pedagogy and Practicum  
3 Credits  
Examines the pedagogical implications of contemporary composition theory and research. Focuses on teaching composition at the college level. Consent of instructor required.

ENGL 572. Technical-Professional Communication: Theory and Pedagogy  
3 Credits  
Topics in teaching business, technical and scientific communication in academic and workplace contexts. 
Prerequisite: graduate standing.

ENGL 574. Workshop: Advanced Writing Prose  
3 Credits  
Intensive practice in prose writing, primarily fiction, in a workshop environment with peer criticism. Repeatable for a total of 15 credits. Consent of instructor required.

ENGL 575. Workshop: Advanced Writing Poetry  
3 Credits  
Intensive practice in poetry writing in a workshop environment with peer criticism. Repeatable for a total of 15 credits. Consent of instructor required.

ENGL 576. Workshop: Advanced Writing Playwriting  
3 Credits  
Intensive practice in dramatic writing in a workshop environment with peer criticism. Repeatable for a total of 9 credits. Consent of instructor required.

ENGL 577. Workshop: Advanced Technical and Professional Writing  
3 Credits  
Intensive practice in technical and professional writing and editing in a workshop environment. May be repeated for a total of 6 credits. Consent of instructor required.

ENGL 578. Topics in Rhetoric and Technology  
3 Credits  
Explores intersections between rhetoric and technology, approaches may highlight theory, media production, and/or research. Repeatable for a maximum of 6 credits. Taught with ENGL 678.

ENGL 579. Computers and Writing  
3 Credits  
This course will trace the history of computers and composition as a field by looking at the work of important scholars including Selfe, Hawisher, Johnson-Eilola, and Wysocki. We will then focus on specific ways new media might be integrated into composition classrooms. The course will include discussions, student facilitations, and experimentation with technologies.

ENGL 580. Graduate Problems in Creative Writing  
3 Credits  
Independent study in creative writing. Consent of instructor required. Repeatable for a total of 9 credits.

ENGL 581. Women's Literature  
3 Credits  
Intensive study of literature by women, in particular historical, aesthetic, cultural, or intellectual contexts. Repeatable under different subtitles. Crosslisted with: W S 584

ENGL 582. Gender and Popular Culture  
3 Credits  
Intensive study of the representations of gender in popular culture. Examines the historical, aesthetic, and cultural contexts of these representation and the various critical and theoretical lenses we use to understand them. Repeatable under different subtitles. Crosslisted with: W S 582

ENGL 583. Critical Writing Studies  
3 Credits  
Overview of current and historical approaches to the critical study of gender and language: how gender theoretically manifests in linguistic, social, cultural, academic, and professional contexts.

ENGL 584. Workshop: Advanced Academic Writing for International Students  
3 Credits  
This workshop-based course is for graduate-level multilingual writers from all disciplines who want to improve their English academic writing in an intensive and collaborative environment. Students will propose a major writing project to workshop throughout the semester, such as dissertation, thesis, comprehensive exams, etc. Some of the topics covered will be academic language, cohesion/coherence, organization, and supporting academic arguments. Other topics to be determined by needs of the class. ) 4.Consent of instructor. 
Prerequisite(s): 1.Be classified as a graduate student by the Graduate School 2.Be classified as an international student whose first language is not English 3.Have a major writing project in progress (comprehensive exams, thesis, dissertation, conference paper, etc.

ENGL 585. Advanced Writing Workshop: RPC Capstone  
3 Credits  
Students work to develop and revise their chosen Master's program Capstone Project (a portfolio, thesis or master essay) in consultation with instructor and classmates. Students provide and receive feedback on their work-in-progress. Consent of Instructor required.

ENGL 586. Hollywood Film  
3 Credits (3+3P)  
Intensive study of Hollywood film in its artistic, cultural, or historical contexts. Repeatable under different subtitles.

ENGL 587. Modernist and Experimental Film  
3 Credits  
Explores the variety of film aesthetics that depart to some degree from the conventions of classical cinema. Focuses on how film form relates to modernist, postmodernist, experimental, and avant-garde tendencies in the arts. Special attention will be paid to the implications of radical formal experimentation for cultural politics, in particular in the context of modern and contemporary history. Repeatable once under a different subtitle.

ENGL 588. Cultural Studies: Literature and Theory  
3 Credits  
Examines the theory and practice of cultural studies in relation to the variety of discourse describable as literary, including autobiography, avant-garde writing, nonfiction prose, the essay, online writing, folklore, and popular genre fiction (such as mystery, romance, thriller, or horror). Repeatable once under a different subtitle.

ENGL 590. Master's Seminar in Rhetoric  
3 Credits  
Studies in theories of and issues in rhetoric. Topics may vary from year to year. Repeatable for a total of 9 credits.
ENGL 591. Graduate Screenwriting
3 Credits
Students will prepare a feature-length screenplay. Script analysis will be in an advanced workshop format. Scripts will be read and discussed, scenes performed and reactions analyzed to consider effect of dialogue, character development, etc. Aimed at preparing writers for the professional market. Consent of instructor required.

ENGL 595. Master’s Workshop: Poetry
3-6 Credits (3-6)
Students will submit a draft of thesis project for workshop critique. Revision of the thesis draft submitted to the instructor. Restricted to MFA CW majors.
Prerequisite(s): Enrolled in MFA penultimate semester.

ENGL 596. Master’s Workshop: Fiction
3-6 Credits
Students will submit a draft of thesis project for workshop critique. Revision of the thesis draft submitted to the instructor. Restricted to MFA CW majors.
Prerequisite(s): Enrolled in MFA penultimate semester.

ENGL 597. Internship in Technical and Professional Communication
3-6 Credits (3-6)
Supervised technical and professional communication in business, industry, government, or the university. May be repeated for a total of 6 credits. Consent of instructor required.

ENGL 598. Master’s Essay
3 Credits
Students electing the master essay option complete revision of a scholarly essay of 25-30 pages, the approximate length of a journal article, and reformulation of this essay to the 7-8 pages appropriate for presentation at a conference. This option also requires research of appropriate publication venues and a final oral defense of the project. A supervising faculty member will approve the selected essay, guide revision, and help students form an examining committee, which consists of at least two members of the graduate English faculty and one member of the graduate faculty from outside the department. Students are encouraged to undertake the Master Essay process in the first half of their third semester of full time graduate work, or soon after completing 18 hours of course work. This option is the preferred exam option, particularly for those students who intend to pursue Ph.D. study. Consent of instructor required.

ENGL 599. Master’s Thesis
1-15 Credits
Thesis.

ENGL 600. Doctoral Research
1-15 Credits
Assigns credit for research performed prior to the doctoral comprehensive examination.

ENGL 601. Qualitative Research
3 Credits
Theory and practice of designing research studies and of collecting and analyzing data. Emphasis on qualitative methods of research in composition, professional communication, and rhetoric.

ENGL 602. Quantitative Research
3 Credits
Theory and practice of designing quantitative research studies and of collecting and analyzing data. Emphasis on quantitative methods of research in composition, professional communication, and rhetoric.

ENGL 603. Rhetorical Criticism and Methodology
3 Credits
Theory and practice of designing research studies and of collecting and analyzing data. Emphasis on methods of rhetorical criticism.

ENGL 604. Digital Research Methods
3 Credits
This course will serve as one of the core methods courses in the RPC PhD program, focusing on “digital” methods in rhetorical studies. As such, the aim of this class is to help you begin to gain confidence in conducting research in rhetoric, professional communication, and composition using digital methods. In this course we will assume that digital methods in rhetoric take broadly two forms: first, digital methods of acquisition, processing, and presentation of research data. And second, digital methods of production and circulation of rhetorical objects. The former closely resembles the methods of “digital humanities” while the latter will be closer to media archaeology and “critical making” practices. In all cases, we will relate these tools and methods to key questions and theories in our field, asking how and why we might apply digital methods in rhetorical scholarship.
Prerequisite(s): graduate standing.

ENGL 610. Proseminar in Rhetoric and Professional Communication
3 Credits
Introduction to research in rhetoric and professional communication. Required of and limited to students enrolled in the Ph.D. program in Rhetoric and Professional Communication.

ENGL 643. Multimedia Theory and Production
3 Credits
Issues, theories, and production practices underlying design of multimedia, including rhetorical choices, aesthetic approaches, usability concerns, and diverse academic and popular discourses contributing to continued development of digital texts. Taught with ENGL 543.

ENGL 646. Teaching Rhetoric and Writing with English Language Learners
3 Credits
This course introduces students to the rich interdisciplinary world of writing for English language learners with the goal of helping researchers and instructors understand the unique characteristics and needs of ELL writers. It also examines Generation 1.5, bilingualism, and Spanish-dominant writers along the U.S.-Mexico Border. The course prepares students to work with ELL writing in curriculum design, needs analysis, classroom implementation, assessment, writing program administration, and institutional policies. The course will be a requirement for those GAs seeking to teach experimental sections of first-year multilingual composition at NMSU.
Prerequisite(s): graduate standing.

ENGL 649. Graduate Study in Writing
3 Credits
Close study of a topic in composition, rhetoric, and/or technical and profession communication. Repeatable for a total of 6 credits.

ENGL 650. Graduate Study in Literacy
3 Credits
Studies in literacy theory and literacy research. Topics may vary. Taught with ENGL 550.

ENGL 661. Topics in Writing Program Administration
3 Credits
Explores issues, theories, and research underlying writing programs and the administration of writing centers. Repeatable for a maximum of 6 credits. Taught with ENGL 561.
ENGL 664. History and Theory of Composition Studies  
3 Credits  
Studies in the history and theory of composition as a discipline. Taught with ENGL 564.

ENGL 665. Intercultural Rhetoric and Professional Communication  
3 Credits  
Examines rhetorical traditions in intercultural professional, technical, academic, and governmental contexts. Taught with ENGL 565.

ENGL 667. Documentary Film Theory and Criticism  
3 Credits (3+3P)  
Course offers critical survey of documentary film theory and criticism including considerations of the epistemological assumptions, rhetorical choices, aesthetic approaches, and political circumstances of historical and contemporary documentary film. Taught with ENGL 567

ENGL 668. Rhetoric and Cultural Studies  
3 Credits  
Explores intersections between rhetoric and cultural studies. Examines theories and practices of texts and discourses in political and cultural contexts. Taught with ENGL 568.

ENGL 678. Topics in Rhetoric and Technology  
3 Credits  
Explores intersections between rhetoric and technology, approaches may highlight theory, media production, and/or research. Repeatable for a maximum of 6 credits. Taught with ENGL 578.

ENGL 683. CRITICAL WRITING STUDIES  
3 Credits  
This course investigates the field of Writing Studies as a distinct field of study, related to but not synonymous with Composition Studies. While debates surrounding the relationships among Writing Studies and Composition Studies flourish, this course centers on the former—investigating writing as a practice, process, and object that merits attention in its own right. Such attention will be grounded in contemporary critical and cultural theory that contests writing as a positive or neutral sign (i.e. activity theory, posthumanism, ecocriticism, new materialism, new media studies; feminist, queer, critical race or decolonial theory). Crosslisted with: ENGL 583.  
Prerequisite(s): graduate standing.

ENGL 690. Doctoral Seminar in Rhetoric  
3 Credits  
Studies in theories of and issues in rhetoric. Topics may vary from year to year. Repeatable for a maximum of 9 credits.

ENGL 700. Doctoral Dissertation  
15 Credits  
Dissertation.

ENGR-ENGINEERING (ENGR)

ENGR 100. Introduction to Engineering  
3 Credits (2+3P)  
An introduction to the various engineering disciplines, the engineering approach to problem solving, and the design process. Projects emphasize the importance of teamwork, written & oral communication skills, as well as ethical responsibilities.  
Prerequisite(s)/Corequisite(s): MATH 121G.

ENGR 100H. Introduction to Engineering  
3 Credits (2+3P)  
An introduction to the various engineering disciplines, the engineering approach to problem solving, and the design process. Projects emphasize the importance of teamwork, written & oral communication skills, as well as ethical responsibilities.  
Pre/Corequisite(s): MATH 190G.

ENGR 111. Mathematics for Engineering Applications  
3 Credits  
An introduction to engineering mathematics and basic programming skills needed to perform elementary data manipulation and analysis. Consent of Instructor required.  
Prerequisite(s)/Corequisite(s): MATH 190G. Prerequisite(s): MATH 121G.

ENGR 198. Special Topics in Engineering  
1-3 Credits  
Directed individual study of topics in engineering. Written reports covering work required. May be repeated for a maximum of 6 credits. Restricted to engineering majors. Graded S/U.  
Prerequisite: consent of academic dean.

ENGR 398. Engineering Leadership Seminar  
3 Credits (3)  
This course introduces students to concepts and skills related to leadership positions held at the University in the College of Engineering. The course will provide theory and practice in leadership; provide skills in effective oral communications and presentation, team building skills, and general knowledge of NMSU and the College of Engineering. May be repeated up to 18 credits. Consent of Instructor required.

ENVE-ENVIRONMENTAL ENGINEERING (ENVE)

ENVE 450. Aquatic Chemistry  
3 Credits  
Theoretical aspects of physical chemistry applied to the solution of environmental engineering problems. Emphasis on carbonate equilibrium solubility, buffering and redox conditions. Crosslisted with: ENVE 550.  
Prerequisite(s): C E 256.

ENVE 451. Unit Processes/Operation of Water Treatment  
3 Credits  
Theory and applications with unit processes in environmental engineering. Physical and chemical treatment methods are emphasized. Crosslisted with: ENVE 551.  
Prerequisite(s): C E 356.

ENVE 452. Unit Processes/ Operation of Wastewater Treatment  
3 Credits  
Theory and applications with unit processes in environmental engineering. Biological treatment methods are emphasized. Crosslisted with: ENVE 552.  
Prerequisite(s): C E 356.

ENVE 456. Environmental Engineering Design  
3 Credits (2+3P)  
Design of chemical, physical and biological operations and processes involved in water and wastewater treatment.  
Prerequisite: C E 356.
ENVE 458. Urban Water-Energy-Environment Systems
3 Credits
An introduction to environmentally sustainable solutions to water-energy nexus. This course integrates scientific principles, engineered processes, and systems analyses to address society's growing needs of water and renewable energy and their interconnections with environment.
Prerequisite(s): C E 256.

ENVE 459. Environmental Microbiology
3 Credits
An introduction to the diverse roles of microorganisms in natural and engineered environments. The topics include cellular architecture, energetics, and growth; population and community dynamics; water and soil microbiology; biogeochemical cycling; and microorganisms in biodegradation and bioremediation of contaminants.

ENVE 462. Sampling and Analysis of Environmental Contaminants
3 Credits
Theory, application, methodology, and instrumentation used in the sampling and analysis of environmental contaminants. Same as E S 462.
Prerequisite(s): C E 256 and E S 256.

ENVE 487. Air Pollution Control Systems Design
3 Credits
An introduction to sources and nature of air pollution, regulations, and risk analysis. Detailed study of air pollution control technologies and design of air pollution control equipment.
Prerequisite(s): Senior or graduate standing.

ENVE 550. Aquatic Chemistry
3 Credits
Theoretical aspects of physical chemistry applied to the solution of environmental engineering problems. Emphasis on carbonate equilibria solubility, buffering and redox conditions. May be repeated up to 3 credits. Consent of Instructor required. Crosslisted with: ENVE 450.
Prerequisite(s): C E 256.

ENVE 551. Unit Processes/Operation of Water Treatment
3 Credits
Theory and applications with unit processes in environmental engineering. Physical / chemical treatment methods emphasized. May be repeated up to 3 credits. Crosslisted with: ENVE 451. Restricted to: ENVE majors.
Prerequisite(s): C E 356.

ENVE 552. Unit Processes/Operation of Wastewater Treatment
3 Credits
Theory and applications with unit processes in environmental engineering. Biological treatment methods emphasized. May be repeated up to 3 credits. Consent of Instructor required. Crosslisted with: ENVE 452. Restricted to: ENVE majors.
Prerequisite(s): Consent of instructor.

ENVE 552 L. Unit Processes/Operation of Wastewater Treatment Laboratory
1 Credit
Dry laboratory emphasizing design of common unit operations/processes in biological treatment. Restricted to majors.
Prerequisite: consent of instructor.
Corequisite: ENVE 552.

ENVE 555. Surface Water Quality Modeling
3 Credits
Modeling the impacts of waste disposal practices on surface waters. Emphasis on fate and transport of bacteria, dissolved oxygen, nutrients, and toxicants in rivers, lakes, and tidal waters. Restricted to majors.

ENVE 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. May be repeated for a maximum of 6 credits. Restricted to majors.

ENVE 599. Master's Thesis
15 Credits
Thesis. May be repeated for a maximum of 6 credits.

ENVE 630. Fate and Transport of Environmental Contaminants
3 Credits
Modeling of transport phenomena in natural and engineered systems for predicting the fate of contaminants in the air, soil, sediment, and water compartments of the ecosystem.
Prerequisites: C E 555 and consent of instructor.

EPWS 100. Applied Biology
3 Credits
Introduction to applied biology and ecology focusing on insects, plants and pathogens in natural areas, crops and urban settings. EPWS 100L is strongly recommended to take in the same semester. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

EPWS 100 L. Applied Biology Lab
1 Credit
Study of applied biology and ecology of insects, plants and pathogens in natural areas, crops, and urban settings. EPWS 100 strongly recommended to take in the same semester. May be repeated up to 1 credits. Restricted to Las Cruces campus only.

EPWS 200. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

EPWS 300. Special Topics
1-4 Credits
Specific topics and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

EPWS 301. Agricultural Biotechnology
3 Credits (2+2P)
The principles of molecular biology will be introduced and used to explore the past, present, and future applications of biotechnology in agriculture. Specific topics include methodologies for making transgenic plants with increased pest resistance, the use of biotechnology in pest detection, and improving nutritional value. The laboratory will provide students with hands-on experience with equipment used for biotechnology research.
Prerequisites: CHEM 112G, BIOL 111G, or BIOL 211G.

EPWS 302. General Entomology
4 Credits
Prerequisite(s): BIOL 111G or 211G.
EPWS 303. Economic Entomology
3 Credits (3+2P)
Identification and life cycles of insects of economic significance, their relationship to humans and agriculture including biological interactions and controls. May be repeated up to 3 credits.
Prerequisite(s): Either BIOL 111G or BIOL 211G.

EPWS 310. Plant Pathology
4 Credits (3+2P)
Causes and methods of prevention and treatment of diseases in plants.
Prerequisite(s): Either BIOL 111G or BIOL 211G.

EPWS 311. Introduction to Weed Science
4 Credits (3+2P)
Principles of weed science, with emphasis on characteristics of invasive plants, methods of integrated weed management, and current issues impacting weed management. Identification of local weeds. Crosslisted with: AGRO 311.
Prerequisite(s): CHEM 111G, and BIOL 211G.

EPWS 314. Plant Physiology
3 Credits
Overview of photosynthesis, respiration, water relations of plants, minerals and organic nutrition, growth and development. Same as BIOL 314.
Prerequisites: BIOL 211G, CHEM 112G.

EPWS 325V. Insects, Humans, and the Environment
3 Credits
Overview of the interactions of the world’s largest group of organisms with humans. Emphasizing the role of insects in the development of human cultures, including health, food and fiber production, art, music, and environmental issues; with discussions of historic, present day, and future impacts in underdeveloped, developing, and developed civilizations.

EPWS 373. Fungal Biology
3 Credits (2+2P)
Introduction to the taxonomy, morphology, physiology, and ecology of fungi. Same as BIOL 373.
Prerequisites: EPWS 310 or BIOL 311, or consent of instructor.

EPWS 380V. Science & Society
3 Credits
Analysis and evaluation of how human activities affect the earth’s environment or ecosystems. Several examples, from global issues to local issues will be studied in detail. Current science and the intersection of science and public policy will be discussed in relation to problems like world population, agricultural productivity, deforestation, medical advances, and future prospects for the environment. May be repeated up to 3 credits.

EPWS 390. Internship
1-3 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. Maximum of 3 credits. Graded S/U.
Prerequisite: consent of instructor.

EPWS 420. Environmental Behavior of Pesticides
3 Credits
Behavior of pesticide compounds in the environment, their function toward target and non target pest organisms including humans, effect of environmental conditions on pesticide function, ecology of organisms involved in pesticides degradation,overview of environmental regulation. CHEM 211 recommended prior to course. May be repeated up to 3 credits.

EPWS 447. Seminar
1 Credit
Organization and techniques for the oral presentation of research information. Restricted to: Main campus only.

EPWS 449. Special Problems
1-3 Credits
Individual investigation in specific areas of entomology, plant pathology or plant physiology. Maximum of 3 credits per semester and a grand total of 6 credits.

EPWS 451. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.
Prerequisite: consent of instructor.

EPWS 455. Advanced Integrated Pest Management
3 Credits
Examination of factors affecting the biology and ecology, population evaluations, and control of insect, disease, and weed pests with an emphasis on integrating management practices. Credit cannot be given for both EPWS 455 and EPWS 505. Crosslisted with: EPWS 505.
Prerequisite(s): Either EPWS 303 or EPWS 310 or EPWS 311, or consent of instructor.

EPWS 462. Parasitology
3 Credits
Introduction to classification, biology, ecology and management of the major parasites of human, domestic animals and wildlife.

EPWS 462 L. Parasitology Lab
1 Credit
Methods of collecting and identifying the major parasites of humans, domestic animals and wildlife. Concurrent enrollment in EPWS 462 is desirable.

EPWS 471. Plant Mineral Nutrition
3 Credits
Same as HORT 471 and AGRO 471.

EPWS 481. Plant Nematology
3 Credits (2+2P)
Biology, ecology and basic identification of soil-inhabiting nematodes, with emphasis on host-parasite relationships and management principles for plant-parasitic genera.

EPWS 486. Plant Virology
3 Credits
An overview of viral pathogens associated with infectious plant disease. Includes pathogens, replication, genetics, transmission, and movement of plant viruses.
EPWS 492. Diagnosing Plant Disorders
3 Credits (2+3P)
Systematic diagnosis of the physiological, pathological, and entomological causes of plant disorders. Same as AGRO 492 and HORT 492.
Prerequisites: EPWS 303, EPWS 310.

EPWS 502. General Entomology
4 Credits
Prerequisite(s): BIOL 111G or BIOL 211G.

EPWS 505. Advanced Integrated Pest Management
3 Credits
Examination of the factors affecting the biology and ecology, population evaluations, and control of insect, disease, and weed pests, with an emphasis on integrating management practices. Crosslisted with: EPWS 455.
Prerequisite(s): EPWS 303 or EPWS 310 or EPWS 311 or consent of instructor.

EPWS 511. Introduction to Weed Science (f)
4 Credits (3+2P)
Covers the principles of weed science with emphasis on characteristics of invasive plants, methods of integrated weed management, and current issues impacting weed management. Includes identification of local weeds. Research paper required for graduate credit. Crosslisted with: AGRO 511.
Prerequisite(s): CHEM 111G and BIOL 211G.

EPWS 514. Plant Physiology
3 Credits
Overview of photosynthesis, respiration, water relations of plants, minerals and organic nutrition, growth and development.
Prerequisite(s): BIOL 211G, CHEM 112G.

EPWS 520. Environmental Behavior of Pesticides (so)
3 Credits
Behavior of these compounds in the environment, their function toward target and non target pest organisms including humans, effect of environmental conditions on pesticide function, ecology of organisms involved in pesticides degradation, overview of environmental regulation. CHEM 211 recommended prior to course. May be repeated up to 3 credits.

EPWS 525. Scientific Writing: How to be a Productive and Effective Writing
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Crosslisted with: AGRO 525, HORT 525 and SOIL 525.

EPWS 549. Special Problems
1-4 Credits
Individual investigation in specific areas of entomology, plant pathology, and weed science. Maximum of 4 credits per semester and a total of 6 credits.

EPWS 551. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

EPWS 573. Fungal Biology
3 Credits (2+2P)
Introduction to the taxonomy, morphology, physiology, and ecology of fungi. Same as BIOL 573.
Prerequisite: EPWS 310 or consent of instructor.

EPWS 575. Urban Entomology
3 Credits
Identification and life cycles of insects in urban environments, their relationship to humans, agriculture, biological interactions and controls
Prerequisite(s): Either BIOL 111G or BIOL 211G.

EPWS 590. Graduate Seminar
1 Credit
Review of current scientific literature in entomology, plant pathology, and weed science, and verbal presentation of information. No more than 2 credits toward a degree.

EPWS 598. Graduate Internship
1-6 Credits
Supervised professional on-the-job learning experience. Limited to Master of Agriculture candidates. Not more than 6 credits toward the degree.

EPWS 599. Master's Thesis
15 Credits
Thesis.

FCS-FAMILY AND CHILD SCIENCE (FCS)

FCS 181. Interpersonal Skills in Intimate Relationships
3 Credits
Developing social skills within friendships, dating relationships, marriage, parenting, and families. May be repeated up to 3 credits. Restricted to Las Cruces and Dona Ana campuses.

FCS 210. Infancy and Early Childhood in the Family
3 Credits
Research and theory relevant to prenatal development and the physical, mental, social, and emotional development of the child from birth to age five. Attitudes, knowledge, and skills needed for working with young children and their families. Restricted to Las Cruces campus only.

FCS 211. Middle Childhood Development in the Family
3 Credits
Research and theory relevant to the physical, mental, social, and emotional development of the child from age five to age twelve. Attitudes, knowledge, and skills related to working with school-age children in the family system. Observation in a variety of settings may be required. Restricted to Las Cruces campus only.

FCS 212. Adolescent Development and the Family
3 Credits
Research and theory relevant to the physical, mental, social, and emotional development of the children ages 12 to 18. Attitudes, knowledge, and skills related to working with adolescents in the family system. Observation in a variety of settings may be required. Restricted to Las Cruces campus only.
FCS 213. Adult Development and Aging
3 Credits
Research and theory related to the physical, mental, social, and emotional development of older adults. Attitudes, knowledge, and skills related to working with older adults in the family system, including normative, and nonnormative transitions. Restricted to Las Cruces campus only.

FCS 300. Special Topics
1-4 Credits
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

FCS 301. Personal and Family Finance
3 Credits
Principles, processes and procedures involved in effective utilization and management of financial resources to meet the needs of individuals and/ or families. Open to nonmajors.

3 Credits
Consumer issues related to social, political, and economic components of the larger social system. Focuses on consumer rights and responsibilities within the marketplace.

FCS 380. Family Dynamics
3 Credits
The dynamics of family relationships and changes influencing contemporary families. Interaction between the family and other social systems will be examined. Open to nonmajors.

FCS 383. Parenting and Child Guidance
3 Credits
Theories, principles, and skills essential for parents and professionals in guiding children within the family system. Problem prevention techniques are stressed.

FCS 424. Field Experience: Issues and Ethics
4 Credits
Supervised work experience in community agencies providing services to family systems. Discussion of professional issues and ethical dilemmas. A total of 8 credits must be taken. Consent of instructor required. Restricted to: Main campus only. Restricted to FCS majors.
Prerequisite(s): FCS 380 or equivalent, junior standing, and an overall GPA of at least 2.5 and consent of instructor.

FCS 449V. Family Ethnicities and Subcultures
3 Credits
Comparative study of American family subsystems with respect to selected social, economic and cultural backgrounds. Interaction of these subsystems in American society. Students responsible for all requirements for FCS 449V plus additional work.

FCS 511. MIDDLE CHLDHD DEV IN FMLY
3 Credits
Research and theory relevant to the physical, mental, and socio-emotional development of children from ages five to twelve. Attitudes, knowledge, and skills needed for working with school-age children and their families. May be repeated up to 3 credits.

FCS 512. Adolescent Development and the Family
3 Credits
Advanced study in research and theory relevant to the physical, mental, social, and emotional development of the child, ages 12-18. Attitudes, knowledge, and skills related to working with adolescents in the family system. May be repeated up to 3 credits.

FCS 524. Supervised Practicum
1-9 Credits
Supervised experience in organizations providing services to families and children. Course subtitled in the Schedule of Classes. May be repeated for a maximum of 9 credits. Graded S/U.
Prerequisite: consent of instructor.

FCS 525. Supervised Clinical Practice
1-9 Credits (2-18P)
Supervised clinical experience in Marriage and Family Therapy. Includes reviews of audio, video, and/or live sessions and case presentations. Maximum of 9 credits toward a degree. May be repeated up to 20 credits.

FCS 548. Adult Development and Aging
3 Credits
Advanced study in research and theory related to the physical, mental, social, and emotional development of older adults. Attitudes, knowledge, and skills related to working with older adults in the family system, including normative and non-normative role transitions.

FCS 549. Family Ethnicities and Subcultures
3 Credits
Comparative study of American family subsystems with respect to selected social, economic and cultural backgrounds. Interaction of these subsystems in American society. Students responsible for all requirements for FCS 449V plus additional work.

FCS 562. The Business and Practice of Marriage and Family Therapy
1 Credit
This seminar course will provide students with an overview of the business and practice of Marriage and Family Therapy to the extent that they will understand how to develop and maintain a private practice in the field of MFT. Restricted to: FCS (MFT) majors. S/U Grading (S/U, Audit).

FCS 572. Family Dysfunction and Diagnosis
3 Credits
A study of the development of abnormal behavior patterns and characteristics to include the major mental and personality disorders and how these can influence and impact family systems. Emphasis is on the symptomology and/or life circumstances and events described in the various diagnostic categories.
Prerequisite(s): Students must be enrolled in a clinical program (i.e MFT, CEP, MSW).

FCS 582. Theories of Marriage and Family Therapy
2 Credits
A balanced study of major theories, research, applications and principles of marriage and family therapy. This course will examine major therapy models and the theories they are derived from as well as the effectiveness of specific therapy models for specific mental health disorders through research. May be repeated up to 4 credits.
FCS 583. Parenting and Child Guidance
3 Credits
Theories, principles, and skills essential for parents and professionals in
guiding children within the family system. Problem prevention techniques
are stressed.

FCS 584. Family Law and Ethics
3 Credits
Study of selected aspects of federal and state laws and ethical issues as
they relate to the family system.

FCS 585. The Family System
3 Credits
Contemporary family interaction: concepts, composition, resource and
environment.

FCS 586. Sexuality and Family Dynamics
3 Credits
Psychosocial and physiological aspects of human sexuality from a life
span and family systems perspective.

FCS 587. Contemporary Marriage and Family Issues
3 Credits
Investigation of one of the following topics each semester: dual career
marriages, nontraditional relationships, aged in marriage.

FCS 588. Family Crises and Rehabilitation
3 Credits
Examination of the major crises experienced by families. Emphasis on
family system functioning rather than individual functioning. Preventative
measures, positive coping strategies, and therapeutic intervention
approaches examined.

FCS 589. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum
of 4 credits per semester and a total of 9 credits toward a degree.

FCS 590. Strategies in Family Therapy
2 Credits
Effective intervention strategies in family therapy practice. Live and
taped role plays of interventions for various family problems required.
Constructive approaches for working with family systems and third-party
payers. May be repeated up to 4 credits.

FCS 591. Management Concepts in Family and Consumer Sciences
3 Credits
Incorporation and application of management concepts in family and
consumer sciences subject matter. Practical experience teaching
management and ways to use management skills to plan, implement, and
evaluate the teaching-learning transaction.

FCS 592. Teaching in Informal Family and Consumer Sciences Settings
3 Credits
Learning principles and theories with application in informal family and
consumer sciences education situations. Includes supervised experience
in use of teaching strategies.

FCSC 500. Research Methods
3 Credits
This course covers the critical evaluation of research literature,
development of research proposals and principles of program
evaluation. Students will be introduced to the application of qualitative
or quantitative methods. Students will be expected to develop research
questions and test hypotheses using statistical analysis and a variety of
methodologies.

FCSC 598. Special Research Programs
1-4 Credits
Individual investigations, either analytical or experimental. Maximum of 4
credits per semester and no more than 6 credits toward a degree.

FCSC 599. Master's Thesis
15 Credits
May be repeated for unlimited credit, maximum of 6 credits toward a
degree.

FCSE-FAMILY & CONSUMER SCI EDU (FCSE)

FCSE 235. Housing and Interior Design
3 Credits
Investigation of types of housing and factors impacting housing
decisions for families. Selection, planning, and arrangement of interior
components of homes to meet the needs of the family. Restricted to Las
Cruces campus only.
Prerequisite(s): No prerequisites.

FCSE 245. Overview of Family and Consumer Sciences Teaching
3 Credits
Overview of planning and teaching skills. Supervised experiences in
observing and directing the learning of secondary family and consumer
sciences students. Philosophy and history of the profession.

FCSE 345. Career and Technical Education Programs
3 Credits
History and development of career and technical programs. Ancillary
functions of family and consumer sciences teachers, including student
evaluation and leadership development for students. Experiences in
extension programs and teaching. Ethical issues and concerns
of educators are introduced. Lifelong leadership development and
evaluation tools for educators are explored. May be repeated up to 3
credits.
FCSE 446. Teaching Methods I for Family and Consumer Sciences
3 Credits
Objectives, content, and organization of family and consumer sciences curriculum in high schools; materials and methods of teaching. Restricted to majors.
Prerequisites: FCSE 245 and FCSE 345 and an overall GPA of at least 2.5, or consent of instructor.

FCSE 447. Teaching Methods II for Family and Consumer Sciences
3 Credits
Prerequisites: FCSE 245, FCSE 345, FCSE 445, FCSE 446 and an overall GPA of at least 2.5, or consent of instructor.

FCSE 448. Supervised Teaching in Family and Consumer Sciences
12 Credits
Seventy (70) days of full-time supervised teaching in selected high schools. Consent of Instructor required. Restricted to: FCSE majors.
Prerequisite(s): FCSE 446, an overall GPA of at least 2.5, and consent of instructor.

FCSE 492. Special Problems
1-4 Credits
Individual research study in a selected subject area of family and consumer sciences. Maximum of 4 credits per semester and 6 credits toward degree.

FCSE 545. Graduate Study in Vocational Programs for Youth and Adults
3 Credits
History and development of career and technical programs. Ancillary functions of family and consumer sciences teachers, including student evaluation and leadership development for students. Experiences in extension programs and teaching. Ethical issues and concerns of educators are introduced. Lifelong leadership development and evaluation tools for educators are explored. May be repeated up to 3 credits.

FCSE 546. Graduate Study in Teaching Methods I
3 Credits
Objectives, content, and organization of family and consumer sciences in high schools; materials and methods of teaching. Additional assignments beyond FCSE 446 required for students registering in FCSE 546.

FCSE 547. Graduate Study in Teaching Methods II
3 Credits
Planning, preparation, and strategies for teaching family and consumer sciences in the secondary schools. Additional assignments beyond FCSE 447 required for students registering in FCSE 547.

FCSE 548. Graduate Study in Supervised Teaching in Family and Consumer Sciences
12 Credits
Seventy of full-time, supervised teaching in selected schools. Additional assignments beyond FCSE 448 required for students registering in FCSE 548. Consent of Instructor required.
Prerequisite(s): FCSE 446 or FCSE 546, and consent of instructor.

FCSE 590. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. May be repeated for a maximum of 9 credits toward a degree, 4 credits per semester.

FIN 206. Introduction to Finance
3 Credits
Theory and techniques of financial management for business firms. Includes application of financial analysis tools and techniques needed for business financial administration and decision making. Restricted to Community Colleges campuses only.
Prerequisite(s): BOT 106 or higher; BOT 120 or ACCT 221; ECON 201 or ECON 251.

FIN 210. Financial Planning and Investments
3 Credits
Individual financial planning and related financial markets and institutions. Community Colleges only.

FIN 303V. Personal Financial Planning and Investing in a Global Economy
3 Credits
Provides a framework for successful personal financial planning within an individual’s career and income. Covers personal money management, federal and state taxation, the mathematics of finance and credit, housing, inflation, insurance, savings, and investments. Majors and minors may not use this course to satisfy their finance requirements.

FIN 311. Financial Futures Markets
3 Credits
Same as AG E 311.

FIN 322. Principles of Insurance
3 Credits
Theory and practice of insurance and its economics and social significance; review of the major lines of insurance including life, health, and property liability insurance.

FIN 323. Life/Health/Employee Benefits
3 Credits
Approaches to problems of employee security from the perspective of businesses. Topics including pensions, profit-sharing plans, 401(k) plans, group life and health plans, and flexible benefit programs. The course also addresses individual life, health, and annuity contracts within a financial planning context.
Prerequisite: FIN 322.

FIN 324. Property and Liability Insurance
3 Credits
Analysis of property and liability insurance with emphasis on handling of commercial exposures. Review of property and liability company operations including rate making and insurance accounting. Prerequisite: FIN 322

FIN 325. Real Estate Principles and Law I
3 Credits
Real estate law and the fundamental aspects of the real estate purchase transaction and the real estate lease agreement. Topics include real estate brokerage, marketing of real estate, fundamental legal aspects of real estate, present and future interests, air and water rights, methods of transfer, basics of financing and liens, and real estate leases. Same as BLAW 325.

FIN 326. Business Risk Management
3 Credits
The operational risks faced by firms and the study of various methods of handling these risks, including loss prevention, risk retention, self-insurance, corporate insurance programs, and capital markets.
Prerequisites: FIN 322
FIN 327. Analysis of the Excess and Surplus Lines Insurance
3 Credits
Analysis of excess and surplus lines segment of the insurance industry, including ratemaking, pricing of insurance, regulation, marketing of insurance, reinsurance, and product development. Students groups will research and design a new insurance product as part of the class.

FIN 331. Business Creation and Valuation
3 Credits
The course is designed to provide a first look at the entrepreneurship process by focusing how the firm will/does create value in the marketplace. As such, it is designed to integrate knowledge of business functions and apply business analysis techniques to the valuation of new ventures/entrepreneurial firms.

FIN 332. Entrepreneurial Finance
3 Credits
The course is structured to provide a parallel learning experience of financing methods/theory and project work focused on financing select start-up companies. Students will learn a broad range of early stage financing techniques. In addition to explorations is class of the theory of entrepreneurial finance students will hear actual young companies from different industries present their opportunities and challenges to the class.

FIN 333. Business Analysis and Turnaround
3 Credits
This course provides students an opportunity to draw upon previous experiences and education to apply various business concepts and analytical tools to complex problems and issues in organizational settings. Business Analysis is an integrative course in two respects. First, it takes a broad view of the environment that includes competitive dynamics and macro-environmental trends and developments. Second, it takes the perspective of the firm as a whole and examines how each of the functional areas can be integrated into overall operational strategies to address the firm's key organizational issues and environmental challenges.

FIN 341. Financial Analysis and Markets
3 Credits
Financial analysis for business financing and investing decisions. Prerequisites: ACCT 221, ECON 251, ECON 252, MATH 121G or 230, or STAT 251G.

FIN 355. Investments
3 Credits
Analysis of investment risks and rewards and of the problems of portfolio selection and management. Operation of the securities market. Prerequisite(s): FIN 341 with a grade of C- or better.

FIN 360. Financial Information Technology
3 Credits
Integrated use of electronic financial information resources with spreadsheet and word processing applications in investigating financial issues and solving financial problems. FIN 341 with a grade of C- or better. Prerequisite(s): FIN 341 or consent of instructor.

FIN 385. Analysis of Financial Markets and Institutions
3 Credits
Analysis of the financial system, emphasizing its institutions and instruments. Prerequisite(s): FIN 341 with a grade of C- or better.

FIN 391. Finance Internship and Cooperative Education I
1-3 Credits
Introduction and application of finance principles in a work environment. Open only to students in the finance major or minor who will be working with an approved employer in a finance related position, over a period of 12 weeks or at least 300 work hours. Consent of instructor required.

FIN 392. Insurance Internship and Cooperative Education I
1-3 Credits (1-3)
Introduction and application of insurance principles in a work environment. Open only to students in the finance major or insurance minor who will be working with an approved employer in an insurance related position, over a period of 12 weeks or at least 300 work hours. Consent of instructor required. Restricted to Finance majors.

FIN 393. Banking Internship and Cooperative Education
1-3 Credits (1-3)
Professional banking experience with opportunities to engage in business analysis and to observe application of business principles in the management of a banking entity or a regulatory agency with banking oversight. Open only to students in the finance major or banking minor who will be working with an approved employer in a banking related position, over a period of 12 weeks or at least 300 work hours. May be repeated up to 3 credits. Consent of Instructor required.

FIN 406. Theory of Financial Decisions
3 Credits
Contemporary financial theory. Firm valuation, investments and financing decisions, risk analysis. Prerequisite(s): FIN 341 with a grade of C- or better.

FIN 421. Personal Financial Planning for Professionals
3 Credits
Introduction to personal financial planning, including goal setting and fact finding, cash management, credit, housing, retirement planning, taxation and estate planning. This course is intended for those planning careers in personal financial advising in one of the various financial services environments. Prerequisite(s): FIN 341, or consent of Instructor.

FIN 435. Investment Analysis
3 Credits
Efficiency of capital markets, modern portfolio management, special topics of current interest to investment analysts. Prerequisite: FIN 355.

FIN 436. Applied Security Analysis and Portfolio Management
1-3 Credits (1-3)
Application of analytical tools to security selection and portfolio management Pre/ Corequisite(s): FIN 435.

FIN 445. Fixed Income Markets, Instruments and Derivatives
3 Credits
Course provides a broad introduction to treasury, corporate, municipal, mortgage backed and asset backed bond markets. The analytical techniques for valuing bonds, quantifying their exposure to changes in interest rate and credit risk exposures and investment decision-making are explored. Prerequisite(s): FIN 341.
FIN 455. Derivative Markets and Securities
3 Credits
Institutional aspects of derivative markets and the arbitrage based pricing of derivative instruments such as stock options, interest rate options, future contracts and swaps. The applied component of the course demonstrates use of these instruments as hedge and/or investment vehicles.
Prerequisite(s): FIN 355.

FIN 466. Financial Policy Decisions
3 Credits
Application and integration of financial theory, concepts, and practice using the case method.
Prerequisite: FIN 406 or consent of instructor.

FIN 470. Real Estate Appraisal
3 Credits (2+2P)
This course addresses issues influencing the value of real estate with some emphasis upon rural properties. Topics include courthouse records, property taxes, appraisal methodology, expert courtroom testimony, condemnation, and legal issues. Students will take field trips and write appraisals. Course material is relevant to student in Finance, Accounting, and Pre-Law, as well as Agriculture. Accredited for hours to apply to both pre-licensing and continuing education requirements of the New Mexico Real Estate Commission for both Appraisers and Real Estate Brokers. Crosslisted with: AG E 470.
Prerequisite(s): Junior or above standing.

FIN 475. International Managerial Finance
3 Credits
International aspects of financial transactions, decision-making, banking and financial markets. Same as IB 475.
Prerequisite: FIN 341.

FIN 480. Management of Financial Institutions
3 Credits
Asset and liability management of financial institutions; emphasis on commercial bank management.
Prerequisite: FIN 385 or consent of instructor.

FIN 490. Selected Topics
1-3 Credits
Current topics in finance.
Prerequisites: vary according to the seminar being offered.

FIN 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. A maximum of 3 credits may be earned.
Prerequisites: junior or above standing and consent of instructor.

FIN 500. Concepts in Finance
1 Credit
An overview of fundamental principles of finance necessary for prospective MBA students who do not have an undergraduate background in finance. Includes: Time value of money concepts and calculations; risk and calculation of return given appropriate risk measures; bond risk characteristics and calculation of the value of a bond; calculation of the value of common stock (determination as to whether a stock is over-valued or under-valued); and calculation of the costs of capital and capital budgeting problems using the cost of capital.
Prerequisite(s): admitted to MBA Program or consent of course department.

FIN 503. Financial Management
3 Credits
Theory and application of financial analysis to asset management, project evaluation, capital structure, and dividend policy. Interrelationships among financial and other organizational decisions.
Prerequisite(s): FIN 341 with a grade of B or better.

FIN 511. Financial Futures Markets
3 Credits
Same as AE 511.

FIN 521. Personal Financial Planning for Professionals
3 Credits
Introduction to personal financial planning, including goal setting and fact finding, cash management, credit, housing, retirement planning, taxation and estate planning. This course is intended for those planning careers in personal financial advising in one of the various financial services environments.
Prerequisite(s): FIN 503 or FIN 341 or consent of Instructor.

FIN 535. Investment Concepts
3 Credits
Investments in common stocks and other securities. Risk and return, securities markets, portfolio theory and management.
Prerequisite(s): FIN 355 or FIN 503.

FIN 536. Applied Security Analysis and Portfolio Management
1-3 Credits (1-3)
Application of analytical tools to security selection and portfolio management. Pre/Fin 355 or FIN 555.

FIN 545. Money and Capital Markets
3 Credits
Examination of financial markets and institutions. Emphasis on interest rate determinants, bond markets, and fixed income portfolio management. Same as FIN 445 with differentiated assignments for graduate students.
Prerequisite(s): FIN 503 or instructor permission.

FIN 555. Derivative Markets and Securities
3 Credits
Institutional aspects of derivative markets and the arbitrage based pricing of derivative instruments such as stock options, interest rate options, future contracts and swaps. The applied component of the course demonstrates use of these instruments as hedge and/or investment vehicles. Same as FIN 455 with differentiated assignments for graduated students.
Prerequisite(s): FIN 503 or instructor permission.

FIN 558. Advanced Financial Management
3 Credits
Application and integration of financial theory, concepts, and practice using the case method.
Prerequisite: FIN 503.

FIN 575. International Managerial Finance
3 Credits
International aspects of financial transactions, decision-making, banking and financial markets.
Prerequisite(s): FIN 503 or FIN 341.

FIN 581. Management of Financial Institutions
3 Credits
Asset and liability management of financial institutions; emphasis on commercial bank management.
Prerequisite(s): FIN 385 or FIN 503.
FIRE 101. Firefighter I
8 Credits (6+6P)
This course will train the student to the Firefighter I level as outlined in NFPA 1001, Standard for Firefighter Professional Qualifications. Firefighter I certification issued through the New Mexico Firefighter's Training Academy upon successful completion (IFSAC accredited). May be repeated up to 8 credits. Consent of Instructor required.

Prerequisite(s)/Corequisite(s): OEEM 103 and FIRE 115. Restricted to Community Colleges campuses only.

FIRE 102. Fire Fighter IB
4 Credits (3+3P)
Continuation of basic concepts and methodologies of fire suppression. Meets or exceeds NFPA standards.

Prerequisite: FIRE 101.

FIRE 104. Firefighter II
8 Credits (6+6P)
This course will train the student to the Firefighter II level as outlined in NFPA 1001, Standard for Firefighter Professional Qualifications. Firefighter II certification issued through the New Mexico Firefighter's Training Academy upon successful completion (IFSAC accredited). May be repeated up to 8 credits. Consent of Instructor required.

Prerequisite(s)/Corequisite(s): FIRE 252. Prerequisite(s): FIRE 101. Restricted to Community Colleges campuses only.

FIRE 112. Principles of Emergency Services
3 Credits
This course provides an overview to fire protection and emergency services; career opportunities in fire protection and related fields; culture and history of emergency services; fire loss analysis; organization and function of public and private fire protection services; fire departments as part of local government; laws and regulations affecting the fire service; fire service nomenclature; specific fire protection functions; basic fire chemistry and physics; introduction to fire protection systems; introduction to fire strategy and tactics; life safety initiatives. Restricted to: Community colleges only.

FIRE 114. Fire Behavior and Combustion
3 Credits
This course explores the theories and fundamentals of how and why fires start, spread, and are controlled. Restricted to: Community colleges only.

FIRE 115. Hazardous Materials Awareness and Operations
3 Credits
This course will train the student to the Hazardous Materials Awareness and Operations level as outlined in NFPA 472, Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents and OSHA 29 CFR 1910.120. Hazardous Materials Awareness and Operations certification issued through the New Mexico Firefighter's Training Academy upon successful completion (IFSAC accredited). May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

FIRE 120. Fire Protection Hydraulics and Water Supply
3 Credits
This course will train students on skill requirements for becoming a safe and effective fire apparatus driver/operator. The focus will be on pump operation, construction, testing, and mathematical calculation required for effective pump operation and fire control. Responsibilities of the driver/operator will be taught and assessed consistent with applicable NFPA standards and NMFTA guidelines. Students who meet all course requirements will be eligible for International IFSAC certification through the NMFTA. May be repeated up to 3 credits. Consent of Instructor required.

Prerequisite(s)/Corequisite(s): FIRE 128. Restricted to Community Colleges campuses only.

FIRE 126. Fire Prevention
3 Credits
This course provides fundamental knowledge relating to the field of fire prevention. Topics include: history and philosophy of fire prevention; organization and operation of a fire prevention bureau; use and application of codes and standards; plans review, fire inspection; fire and life safety education; and fire investigation. Restricted to: Community colleges only.

FIRE 127. Rescue Operations
3 Credits
A course designed to acquaint the student with the equipment and procedures employed in search and rescue operations to safely remove persons from burning structures, automobile accidents, and natural disasters. Restricted to majors.

Prerequisite: consent of instructor.

FIRE 128. Apparatus and Equipment
2 Credits
This course is a pre/co-requisite to FIRE 120. The course will train students on attitude and skill requirements for becoming a safe and effective fire apparatus driver/operator. The focus will be on apparatus inspection, operation, maintenance, and specification. Responsibilities of the driver/operator will be taught and assessed consistent with applicable NFPA standards and NMFTA guidelines. Students who meet all course requirements will be eligible for IFSAC certification through the NMFTA. Consent of Instructor required. Restricted to Community Colleges campuses only.

FIRE 130. Principles of Fire and Emergency Services Safety and Survival
3 Credits
This course introduces the basic principles and history related to the national firefighter life safety initiatives, focusing on the need for cultural and behavior change throughout the emergency services. Consent of instructor required. Restricted to: Community colleges only.

FIRE 142. Fire Fighter Training S-130
3 Credits
Wildland Fire Training FFT2: A field course providing entry-level fire fighting skills through 13 instructional units of study. May also serve as refresher training for returning fire fighters and a means of testing personnel with undocumented prior experience. Instructed in accordance to NWCG standards.

FIRE 200. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. Course may be repeated for credit as topics change.
FIRE 201. Independent Study
1-3 Credits
Research on an approved topic to meet graduation requirements. Meets or exceeds NFPA standards. May be repeated for total of 9 credits.
Prerequisite: consent of instructor.

FIRE 202. Wildland Fire Control
1-3 Credits
Focuses on factors affecting wildland fire control and prevention, fire behavior, control techniques, command structure and other operations including Standards for Survival I-100, S-130 and S-190. Meets or exceeds NWCG Training Curriculum and NFPA 1051 standards. Restricted to: Community Colleges Only.

FIRE 203. Fire and Emergency Services Administration
3 Credits
This course introduces the student to the organization and management of a fire and emergency services department and the relationship of government agencies to the fire services department and the relationship of government agencies to the fire service. Emphasis is placed on fire and emergency service, ethics, and leadership from the perspective of the company officer. Restricted to: Community colleges only.

FIRE 204. Wildland Fire Control
1-3 Credits
Focuses on factors affecting wildland fire control and prevention, fire behavior, control techniques, command structure and other operations including Standards for Survival I-100, S-130 and S-190. Meets or exceeds NWCG Training Curriculum and NFPA 1051 standards. Restricted to: Community Colleges Only.

FIRE 205. Fire Chemistry
3 Credits
This course introduces the student to the organization and management of a fire and emergency services department and the relationship of government agencies to the fire services department and the relationship of government agencies to the fire service. Emphasis is placed on fire and emergency service, ethics, and leadership from the perspective of the company officer. Restricted to: Community colleges only.

FIRE 206. Fire Chemistry
3 Credits
Theories of combustion and extinguishment, including the analysis of flammable materials, the nature of extinguishing agents, and the properties of matter affecting fire behavior.
Prerequisite: CHEM 110G.

3 Credits
This course provides the components of building construction related to firefighter and life safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at emergencies. Restricted to: Community colleges only.

FIRE 214. Hazardous Materials Technician
3 Credits
Knowledge and skills about hazardous materials mitigation needed to certify as a Hazardous Materials Technician Level III. Meets or exceeds NFPA 471, 472, 473 standards, and OSHA 1910.102 part Q and New Mexico HMER plan. Restricted to: Community Colleges only.
Prerequisite(s): FIRE 115.

FIRE 216. Hazardous Materials Chemistry
3 Credits
This course provides basic chemistry relating to the categories of hazardous materials including recognition, identification, reactivity, and health hazards encountered by emergency services. Restricted to: Community colleges only.

FIRE 217. Operations in the Wildland-Urban Interface S-215
3 Credits
Provides training for initial attack incident commanders and company officers confronting wildfire presenting a threat to life and property. Instructional units include: size-up, initial strategy and action plan, structure triage, tactics, action plan, assessment, public relations and follow up, and safety. Presented in a classroom environment. Instructed in accordance to NWCG standards.
Prerequisite: qualified as any Single Resource Boss or FIRE 231.

FIRE 220. Cooperative Experience I
1-3 Credits
Supervised cooperative work program. Student is employed in an approved occupation and rated by the employer and instructor. May be repeated for a maximum of 6 credits. Graded S/U.
Prerequisite: consent of instructor.

FIRE 221. Cooperative Experience II
3 Credits
Apply advanced firefighting knowledge and skills while working with fire protection agencies. Meets or exceeds NFPA standards. Consent of instructor required. Graded: S/U. Restricted to: Community Colleges only.
Prerequisite(s): FIRE 220.

FIRE 222. Aircraft Fire Control
3 Credits
Provides a broad understanding of airport operations required to effectively perform aircraft firefighting and other emergencies. Meets or exceeds NFPA 402, 403, 405 standards. Restricted to: Community Colleges only.

FIRE 223. Fire Investigations I
3 Credits
This course is intended to provide the student with the fundamentals and technical knowledge needed for proper fire scene interpretation, including recognizing and conducting origin and cause, preservation of evidence and documentation, scene security, motives of the firesetter, and types of fire causes. Restricted to: Community colleges only.

FIRE 224. Strategy and Tactics
3 Credits
This course provides the principles of fire ground control through utilization of personnel, equipment, and extinguishing agents. Restricted to: Community colleges only.

FIRE 225. Fire Protection Systems
3 Credits
This course provides information relating to the features and design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, water supply for fire protection and portable fire extinguishers. Restricted to: Community colleges only.

FIRE 226. Fire Investigations II
3 Credits
This course is intended to provide the student with advanced technical knowledge on the rule of law, fire scene analysis, fire behavior, evidence collection and preservation, scene documentation, case preparation and court-room testimony. Restricted to: Community colleges only.

FIRE 230. Fire Service Instructor
3 Credits
Provides the instructor candidate with methods and techniques of instruction including oral communications, preparing lesson plans, writing performance objectives, use of audio and other training aids, and the selection, evaluation and preparation of performance tests. Meets and exceeds NFPA 1041 Level I standards. Restricted to: Community Colleges only.

FIRE 232. Firefighter Internship
3 Credits
Application of knowledge, skills and abilities in a fire service department, as a firefighter intern and integrated member of a fire affiliated agency. Restricted to majors.
Prerequisites: FIRE 101, FIRE 102, FIRE 115, FIRE 202 and EMT-B and consent of instructor.
FIRE 233. Practical Approach to Terrorism
3 Credits
Gives responder an overall safety approach in recognizing and responding to incidents involving terrorism. Presents an overview in types of harm, explosive weapons, chemical weapons, biological weapons and radiological weapons. Restricted to: Community Colleges only. Crosslisted with: LAWE 233

FIRE 251. Incident Command System-NIMS 700
3 Credits
NIMS provides a consistent nationwide Homeland Security template to enable all government, private-sector, and nongovernmental organizations to work together during domestic incidents, Community Colleges only.

FIRE 252. Vehicle Extrication
2 Credits (1+2P)
This course will train the student to the Vehicle & Machinery Extrication level I as outlined in NFPA 1006, Standard for Technical Rescuer Professional Qualifications. Vehicle & Machinery Extrication certification issued through the New Mexico Firefighter’s Training Academy upon successful completion (IFSAC accredited). May be repeated up to 2 credits. Restricted to Community Colleges campuses only.

FREN-FRENCH (FREN)

FREN 111. Elementary French I
4 Credits
French language for beginners.

FREN 112. Elementary French II
4 Credits
French language for beginners.
Prerequisite: C or better in FREN 111.

FREN 211. Intermediate French I
3 Credits
Speaking, reading and writing.
Prerequisite: C or better in FREN 112.

FREN 212. Intermediate French II
3 Credits
Speaking, reading and writing.
Prerequisite: C or better in FREN 211.

FREN 306. Topics in French Culture and Civilization
3 Credits
Selected topics focusing on French culture and civilization. Topics identified in the Schedule of Classes. May be repeated for a maximum of 6 credits.
Prerequisite: FREN 212 or consent of instructor.

FREN 315. French Grammar
3 Credits
A thorough review of French grammar through the study of grammatical elements and the use of grammatical exercises.
Prerequisite(s): FREN 212 or consent of instructor.

FREN 325. Intermediate Conversation
3 Credits
French conversation through intensive oral practice with emphasis on vocabulary acquisition and pronunciation.
Prerequisite: FREN 212 or consent of instructor.

FREN 341. Introduction to French Linguistics
3 Credits
This course aims to introduce the basic concepts of contemporary linguistics and to show how the French language functions in regard to form and meaning.
Prerequisite(s): FREN 212.

FREN 352. French Phonetics
3 Credits
Prerequisite(s): FREN 212 or consent of instructor.

FREN 358. French Civilization
3 Credits
A detailed study of important events in French civilization from its origins to the twentieth century through the study and discussion of history, literature, fine arts and politics.
Prerequisite(s): FREN 212 or consent of instructor.

FREN 362. Contemporary Women Writers in French
3 Credits
Exploration of literary texts by contemporary women writers in France and the Francophone world; emphasizes the cultural contexts that have defined women’s relationship to writing. Selections will vary from year to year.
Prerequisite(s): FREN 212 or consent of instructor.
FREN 425. Advanced French Conversation
3 Credits
Mastery of spoken French language through discussion of personal
readings and group work to develop vocabulary, syntactical and
conversational skills. The class is conducted entirely in French.
Prerequisite(s): FREN 325 or consent of instructor.
FREN 449. Special Problems
1-3 Credits
Directed reading for graduate students in specific field to satisfy
language requirement for master's or doctoral programs.
FREN 451. Special Topics in French
1-3 Credits
Selected topics relating to the cultures or literatures of the countries
where French is spoken will be announced in the Schedule of Classes.
May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.
FREN 453. Independent Studies in French
1-3 Credits
Individualized, self-paced projects for advanced students. May be
repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.
FREN 462. Advanced Contemporary French Culture
3 Credits
Advanced study of institutions, lifestyles and popular attitudes in modern
France. Emphasis on everyday life rather than prestigious monuments in
civilizations.
Prerequisite: FREN 212 or consent of instructor.
FREN 466. Introduction to French Linguistics
3 Credits
This course aims to introduce the basic concepts of contemporary
linguistics and to show the French language functions with regard to
form and meaning. Consent of instructor required.
Prerequisite(s): Advanced level in French.
FREN 471. The French Novel
3 Credits
Development of the novel and analysis of selected texts with emphasis
on the nineteenth and twentieth centuries.
Prerequisite(s): FREN 212 or consent of instructor.
FREN 472. The French Short Story
3 Credits
Study and discussion of French short stories through the ages.
Prerequisite(s): FREN 212 or consent of instructor.
FREN 478. Studies in Francophone Cultures Around the World
3 Credits
Advanced studies of representative Francophone cultures through their
history, literature, music and films.
Prerequisite(s): FREN 212 or consent of instructor.
FREN 486. Advanced Contemporary Women Writers in French
3 Credits
Advanced study of literary texts by contemporary women writers in
France and the Francophone world; emphasizes the cultural contexts
that have defined women's relationship to writing. Selections will vary
from year to year.
Prerequisite(s): FREN 212 or consent of instructor.

FRMG - FAMILY RESOURCE MGT (FRMG)
FRMG 450. Special Topics
1-4 Credits
Special subjects and credits to be announced in the Schedule of Classes.
May be taken for a maximum of 4 credits per semester and a total of 9
credits toward a degree.
FRMG 492. Special Problems
1-4 Credits (1-4)
Individual research study in a selected subject of Family and Consumer
Sciences. Maximum of 4 credits per semester and a grand total of 8
credits towards a degree. Consent of Instructor required.
FRMG 590. Special Topics
1-4 Credits
Special subjects and credits to be announced in the Schedule of Classes.
May be taken for a maximum of 4 credits per semester and a total of 9
credits toward a degree.

FSTE - FOOD SCIENCE & TECHNOLOGY (FSTE)
FSTE 164G. Introduction to Food Science and Technology
4 Credits (3+2P)
An introductory course in the scientific study of the nature and
composition of foods and their behavior during all aspects of their
conversion from raw materials to consumer food products.
FSTE 175. ACES in the Hole Foods I
4 Credits
Food production activities related to operation of ACES in the Hole
Foods, a student-run food company that will give FSTE majors hands-on
experience in all aspects of developing, producing and marketing food
products Restricted to Las Cruces campus only.
Prerequisite(s): Students enrolled in this class must possess a Food
Handler Card.
FSTE 200. Special Topics
1-4 Credits
Specific topics and credits to be announced in the Schedule of Classes.
Maximum of 4 credits per semester and a grand total of 9 credits.
FSTE 210G. Survey of Food and Agricultural Issues
3 Credits
Same as AG E 210G.
FSTE 263G. Food Science I
4 Credits (3+2P)
The scientific study of the principles involved in the preparation and
evaluation of foods. May be repeated up to 4 credits.
FSTE 275. ACES in the Hole Foods II
4 Credits
Food production activities related to operation of ACES in the Hole
Foods, a student-run food company that will give FSTE majors hands-on
experience in all aspects of developing, producing and marketing food
products. May be repeated up to 4 credits.
Prerequisite(s): FSTE 175 and Have a Food Handler Card.
FSTE 320. Food Microbiology
4 Credits (3+2P)
Detrimental and beneficial microbiological aspects of food products. Methods of quantification and identification of microorganisms associated with food spoilage and preservation. May be repeated up to 4 credits.
Prerequisite(s): BIOL 111G, CHEM 111G, or consent of instructor.

FSTE 325. Food Analysis
3 Credits (2+2P)
Basic chemical and physical techniques used in establishing nutritional properties and overall acceptance of food products. May be repeated up to 3 credits.
Prerequisite(s): CHEM 111 or consent of instructor.

FSTE 328. Introduction to Food Engineering
3 Credits (2+2P)
Basic engineering principles including mass and energy balances, fluid flow, heat transfer and chemical kinetics and their application to food processing unit operations. Video and laboratory participation are used to enhance course content and relevance. May be repeated up to 3 credits.
Prerequisite(s): MATH 142G or consent of instructor.

FSTE 331. Food Preservation
3 Credits (2+2P)
Processes used in home and commercial food preservation, including canning, freezing, drying, and irradiation. May be repeated up to 3 credits.
Prerequisite(s): HNFS 263.

FSTE 375. ACES in the Hole Foods III
4 Credits (2+8P)
Food production activities related to operation of ACES in the Hole Foods, a student-run food company that will give FSTE majors hands-on experience in all aspects of developing, producing and marketing food products. May be repeated up to 8 credits. Restricted to: FSTE majors.
Prerequisite(s): FSTE 275 and Have a Food Handler Card.

FSTE 421. Food Chemistry
3 Credits
Comprehensive study of the chemical and physiochemical properties of food constituents. Chemical changes involved in the production, processing, and storage of food products and basic techniques used to evaluate chemical and physiochemical properties of foods.
Prerequisites: CHEM 111G, CHEM 112G, and CHEM 211, or consent of instructor.

FSTE 423. Food Processing Technologies
4 Credits (3+2P)
Common food processing unit operations such as raw material preparation, separation, concentration, fermentation, pasteurization, sterilization, dehydration, baking, frying, chilling, freezing, controlled atmosphere storage, water, waste and energy management, packaging, materials handling and storage and process control. Application of principles to processing food in a laboratory setting.
Prerequisite(s): FSTE 328.

FSTE 425. Sensory Evaluation of Foods
3 Credits (2+2P)
Principles and procedures involved in the sensory evaluation of foods. Physiological, psychological and environmental factors affecting the evaluation of sensory properties. Analysis and interpretation of sensory data.
Prerequisite(s): FSTE 263G and A ST 311 or STAT 251.

FSTE 429. Product Development
3 Credits (1+4P)
Application of chemical, physical, nutritional and psychological principles and experimental methods to the development and evaluation of a food product for a specified food product development competition.
Prerequisite(s): FSTE 320 and FSTE 425.

FSTE 430. Designing and Brewing Great Beers of the World
3 Credits (1+4P)
The science and technology of brewing unit operations and the ingredients used in beer brewing. That knowledge is then applied to designing and brewing classic world beer styles. Styles investigated change every semester but typically include India Pale Ale, Pale Ale, Stout, Porter, Hefeweizen, Scottish Ale, and Black IPA. Comprehensive evaluation of the product relative to style guidelines completes the design-brew-evaluate cycle. Students must be at least 21 years of age on the first day of class. May be repeated up to 3 credits.

FSTE 450. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits towards a degree. Consent of instructor required.

FSTE 475. ACES in the Hole Foods IV
1-4 Credits (2-8P)
Food production activities related to operation of ACES in the Hole Foods, a student-run food company that will give FSTE majors hands-on experience in all aspects of developing, producing and marketing food products. May be repeated up to 8 credits. Restricted to: FSTE majors.
Prerequisite(s): FSTE 375 Have a Food Handler Card.

FSTE 492. Special Problems
1-4 Credits
Individual research study in a selected subject of Family and Consumer Sciences. Maximum of 4 credits per semester and a grand total of 8 credits towards a degree. Consent of instructor required.

FSTE 500. Data Analysis for Food Scientists
3 Credits (3)
An introduction to data analysis of food scientists. Modern statistical techniques used to analyze typical data collected by food scientists and researchers will be covered. Consent of Instructor required.

FSTE 520. Graduate Study in Food Microbiology
3 Credits (2+3P)
Detrimental and beneficial microbiological aspects of food products. Methods of quantification and identification of microorganisms associated with food spoilage and preservation. Additional work required at the graduate level.
Prerequisite(s): BIOL 111G/111L, or BIOL 211G/211L, or BIOL 190, or consent of instructor.

FSTE 521. Graduate Study in Food Chemistry
3 Credits
Comprehensive study of the chemical and physiochemical properties of food constituents. Chemical changes involved in the production, processing and storage of food products and basic techniques used to evaluate chemical and physiochemical properties of foods. Additional work required at the graduate level.
Prerequisites: CHEM 111G, CHEM 112G, and CHEM 211, or consent of instructor.
FSTE 523. Food Processing Technologies
4 Credits (3+2P)
Common food processing unit operations such as raw material preparation, separation, concentration, fermentation, pasteurization, sterilization, extrusion, dehydration, baking, frying, chilling, freezing, controlled atmosphere storage, water, waste and energy management, packaging, materials handling and storage and process control. Application of principles to processing food in a laboratory setting. Additional work beyond that for FSTE 423 required at the graduate level. 
Prerequisite(s): FSTE 528.

FSTE 524. Sensory Evaluation of Foods
3 Credits (2+3P)
Principles and procedures involved in the sensory evaluation of foods. Physiological, psychological and environmental factors affecting the evaluation of sensory properties. Analysis and interpretation of sensory data. 
Prerequisite(s): FSTE 263G and A ST 311 or STAT 251.

FSTE 525. Graduate Study in Food Analysis
3 Credits (2+3P)
Covers basic chemical and physical techniques used in establishing nutritional properties and overall acceptance of food products. Additional work required at the graduate level. 
Prerequisite(s): CHEM 111 or consent of instructor.

FSTE 528. Principles of Fish and Wildlife Management
4 Credits (3+2P)
Principles and procedures involved in the sensory evaluation of foods. Physiological, psychological and environmental factors affecting the evaluation of sensory properties. Analysis and interpretation of sensory data. 
Prerequisite(s): FSTE 263G and A ST 311 or STAT 251.

FSTE 529. Graduate Study in Food Analysis
3 Credits (2+3P)
Covers basic chemical and physical techniques used in establishing nutritional properties and overall acceptance of food products. Additional work required at the graduate level. 
Prerequisite(s): CHEM 111 or consent of instructor.

FSTE 530. Sensory Evaluation of Foods
3 Credits (2+3P)
Principles and procedures involved in the sensory evaluation of foods. Physiological, psychological and environmental factors affecting the evaluation of sensory properties. Analysis and interpretation of sensory data. 
Prerequisite(s): FSTE 263G and A ST 311 or STAT 251.

FSTE 532. Designing and Brewing Great Beers of the World
3 Credits (2+2P)
The science and technology of brewing unit operations and the ingredients used in beer brewing. That knowledge is then applied to designing and brewing classic world beer styles. Styles investigated change every semester but typically include India Pale Ale, Pale Ale, Stout, Porter, Hefeweisen, Scottish Ale, and Black IPA. Comprehensive evaluation of the product relative to style guidelines completes the design-brew-evaluate cycle. Students must be at least 21 years of age on the first day of class.

FSTE 560. Rumen Microbiology (so)
3 Credits
Same as ANSC 560.

FSTE 575. ACES in the Hole Foods
1-4 Credits (2-8P)
Food production activities related to operation of ACES in the Hole Foods, a student-run food company that will give FSTE majors hands-on experience in all aspects of developing, producing and marketing food products. May be repeated up to 8 credits.
Prerequisite(s): Students must possess a food handler card.

FSTE 598. Special Research Programs
1-4 Credits
Individual investigations either analytical or experimental. Maximum of 4 credits per semester and no more than 6 credits towards a degree.
Consent of instructor required.

FWCE-FISH, WILDLF, CONSERV ECOL (FWCE)

FWCE 109. Contemporary Issues in Wildlife and Natural Resources Management
3 Credits
Ecological, socioeconomic, and political issues surrounding the management of our natural resources with an emphasis on fish and wildlife resources. May be repeated up to 3 credits. Restricted to Las Cruces campus only.

FWCE 110. Introduction to Natural Resources Management
4 Credits (3+2P)
This class covers historical and current issues affecting the management of renewable natural resources with an emphasis on water, soil, rangeland, forest, fish, and wildlife resources. An emphasis is placed on the scientific method and critical thinking. In the laboratory students collect and analyze field data on topics covered above and write up each unit as a laboratory report. May be repeated up to 4 credits.

FWCE 255. Principles of Fish and Wildlife Management
3 Credits
Basic principles of fish and wildlife management including history, ecology, economics, and policy. Emphasis on wildlife and fisheries. Uses an ecosystem approach integrating living and nonliving resources.
Prerequisite(s): FWCE 110.

FWCE 301. Wildlife Ecology
3 Credits
General ecological theory with emphasis on concepts including biogeography, species interactions, population dynamics and disease ecology as they relate to the management and conservation of vertebrates.
Prerequisite(s): BIOL 111G or BIOL 190.

FWCE 330. Natural History of the Vertebrates
4 Credits (3+3P)
Evolution, ecology, and diversity of vertebrates. Topics include comparative anatomy and physiology, biogeography, community ecology, behavior, and conservation. Laboratory emphasizes identification of local taxa. Field trips may be required.
Prerequisite(s)/Corequisite(s): BIOL 322 Zoology. Prerequisite(s): BIOL 111G and BIOL 111L.

FWCE 355. Wildlife Techniques and Analysis
4 Credits (3+2P)
FWCE 355 will provide a broad overview of basic skills and techniques that are commonly used by biologists in performing management, research, and reporting functions in natural resource fields with an emphasis on wildlife techniques, data processing and analysis.
Prerequisite(s): FWCE 301, A ST 311.

FWCE 357. Fisheries Management and Analysis
4 Credits (3+2P)
Lectures and laboratory exercises provide a broad overview of basic skills and techniques used for assessing and managing fish populations.
Prerequisite(s): FWCE 301 and A ST 311.

FWCE 391. Internship
1-3 Credits (1-3)
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 3 credits toward a degree. Consent of instructor required. S/U Grading (S/U, Audit).
Prerequisite(s): Consent of instructor.
FWCE 393. Professional Experience and Communication
3 Credits
Professional work experience under the supervision of employer and/or a faculty member. Written report and presentation is required.
Prerequisite(s)/Corequisite(s): FWCE 255.

FWCE 402. Seminar in Natural Resource Management
1 Credit
Prerequisite: senior standing or above.

FWCE 409. Introduction to Population Ecology
3 Credits
Quantitative analysis of vital statistics and mechanisms affecting dynamics of wild populations. Patterns of growth, age structure, survival, and natality. Population theories and life tables. May be repeated up to 3 credits.
Prerequisite(s): MATH 142G and FWCE 255.

FWCE 430. Avian Field Ecology
4 Credits (3+3P)
Principles of avian ecology and management with an emphasis on taxonomy, physiology, behavior and field studies. Includes weekly field trips focusing on identification and behavior of Southwest birds. Pre/Corequisite(s): FWCE 330.

FWCE 431. Mammalogy
4 Credits (3+2P)
Classification, identification, anatomy, physiology, life history, and ecology of mammals. Field trips required. May be repeated up to 4 credits.
Prerequisite(s): FWCE 255 and FWCE 330.

FWCE 432. Environmental Biology of Fishes
4 Credits (3+3P)
What makes a fish, a fish. Mechanisms of circulation, gas exchange, osmotic and ionic regulation, swimming, migration, reproduction, and chemoreception. Taught with FWCE 532.
Prerequisite(s): CHEM 111G and senior standing.

FWCE 433. Fisheries Management
3 Credits
This course is designed to introduce students to the basic principles of fisheries management. Students will learn the techniques and tools used to collect, analyze, and interpret fisheries data needed to undertake fisheries management decisions. Taught with FWCE 533. Consent of Instructor required.
Prerequisite(s): FWCE 482 and A ST 311.

FWCE 434. Aquatic Contaminants and Toxicology
4 Credits (3+3P)
Prerequisite(s): CHEM 111G and senior standing.

FWCE 436. Large Mammal Ecology, Conservation and Management
3 Credits
This course will cover aspects of large mammal ecology, management and conservation. Will include aspects of foraging ecology, resource and habitat selection, competition and resource partitioning, predation and population dynamics. Taught with FWCE 530. Consent of Instructor required.

FWCE 437. Wildlife Damage Management
3 Credits
Introduction to basic need and appropriate methods for resolving human-wildlife conflicts and management of animal damage. Socioeconomic, ecological, and political factors. Field trips required. Taught with FWCE 537.
Prerequisite(s): BIOL 111G, FWCE 255, FWCE 301, FWCE 409.

FWCE 439. Game Bird Ecology and Management
3 Credits
In this class we will look at the overall history of game bird management and conservation, how management and conservation of game birds was and still is the foundation for wildlife conservation in North America, define the challenges both past and present to managing and conserving game bird populations, and explore the conceptual and quantitative models used to manage migratory and non-migratory game birds. Taught with FWCE 539. Consent of Instructor required. Restricted to: FISH, WLSC majors.
Prerequisite(s): FWCE 301, FWCE 409, A ST 311 or equivalent.

FWCE 440. Wildlife Habitat Relationships
3 Credits
The study of wildlife-habitat relationships primarily seeks to describe how the distribution and abundance of resources used for food, cover and security, and constraints on the use of these resources influence the distribution of animals. This course will cover aspects of animal behavior related to how animals select habitat, theoretical models of habitat selection, the influence of inter-and intra-specific interactions on habitat selection, habitat quality, study designs for wildlife-habitat studies, modeling habitat selection and data analyses. Taught with FWCE 540. Consent of Instructor required. Restricted to: FWCE majors.

FWCE 447. Wildlife Law and Policy
3 Credits
Introduction to state and federal laws and policies for wildlife and the historical context for their development. Taught with FWCE 547.
Prerequisite(s): Junior or Senior level standing.

FWCE 448. Problems
1-3 Credits (1-3)
Individual investigations in fishery or wildlife science. Maximum 3 credits per semester and a grand total of 6 credits. Consent of instructor required.
Prerequisite(s): 18 credits in FWCE.

FWCE 450. Special Topics
1-4 Credits (1-4)
Specific subjects and credits as announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits. Consent of instructor required.

FWCE 457. Ecological Biometry
3 Credits
Use of ecological data to test scientific hypotheses. Stochastic and statistical models for environmental data, data visualization, likelihood-based and information-based model selection. Emphasis on open-source software tools.
Prerequisite(s): MATH 142G or 191G, A ST 311, FWCE 301.
FWCE 459. Aquatic Ecology 4 Credits
Ecological functions of plant and animal communities in aquatic ecosystems with emphasis on chemical and physical properties, productivity, species interactions, population dynamics, and concepts for diagnosing problems and restoring aquatic ecosystems. Taught with FWCE 559.
Prerequisite(s): FWCE 301 or BIOL 301, CHEM 112, MATH 142G.

FWCE 464. Management of Aquatic and Terrestrial Ecosystems 4 Credits (3+2P)
Principles and methods for managing aquatic and terrestrial ecosystems and their fish and wildlife resources. Emphasis on quantitative techniques, data collection and analysis for management of systems at a landscape spatial scale. May be repeated up to 4 credits.
Prerequisite(s): FWCE 459 or FWCE 301 FWCE 330, A ST 311G.

FWCE 467. Herpetology 4 Credits
Systematics, taxonomy, ecology, behavior, and conservation of amphibians and reptiles. Field trips required. Taught with FWCE 567.
Prerequisite(s): FWCE 330.

FWCE 471. GIS for Natural Resource Scientists 4 Credits
Practical GIS class for students with little or no GIS experience. Class focuses on learning to use industry-standard software and applications in natural resource management. Taught with FWCE 571.

FWCE 472. Wildlife Museum Internship 1-4 Credits (1-4)
Substantial directed work experience in various functions of the wildlife natural history museum developed by the student in consultation with the faculty curator. Internships may involve aspects of collection development and management, public education programs, or other related museum activities. Internship must be approved by the faculty curator. May be repeated up to 9 credits. Consent of Instructor required.
Prerequisite(s): BIOL 111G and BIOL 111G.

FWCE 473. NAT HIST MUSEUM FUNCTION MTHDS 3 Credits
Fundamentals of the function and methods of natural history museums in research, education, service, and biodiversity conservation. Emphasis on experiential learning. Includes lectures, paper discussions, laboratory activities, specimen preparation, required full-day Friday field trips, and an individual term project.
Prerequisite(s): FWCE 330 or BIOL 322 or BIOL 312 or RGSC 316.

FWCE 482. Ichthyology 4 Credits (3+2P)
Classification, morphology, identification, life history, and ecology of fishes. May be repeated up to 4 credits.
Prerequisite(s): FWCE 330 or consent of instructor.

FWCE 509. Population Ecology (s) 3 Credits (2+2P)
Quantitative analysis of vital statistics and mechanisms promoting stability in wild populations. Theory and application of life tables and population models.

FWCE 515. Graduate Seminar 1 Credit
Current topics. May be repeated up to 4 credits.

FWCE 530. Large Mammal Ecology, Conservation and Management 3 Credits
This course will cover aspects of large mammal ecology, management and conservation. Will include aspects of foraging ecology, resource and habitat selection, competition and resource partitioning, predation and population dynamics. Taught with FWCE 436.

FWCE 532. Environmental Biology of Fishes 4 Credits (3+3P)
What makes a fish a fish. Mechanisms of circulation, gas exchange, osmotic and ionic regulation, swimming, migration, reproduction, and chemoreception. Students are responsible for all requirements for FWCE 432 plus additional work.

FWCE 533. Fisheries Management 3 Credits
This course is designed to introduce students to the basic principles of fisheries management. Students will learn the techniques and tools used to collect, analyze, and interpret fisheries data needed to undertake fisheries management decisions. Taught with FWCE 433. Consent of Instructor required.
Prerequisite(s): FWCE 482, A ST 311.

FWCE 534. Aquatic Contaminants and Toxicology 4 Credits (3+3P)
Basic principles and methodologies of aquatic toxicity testing. Routes of exposure and modes of action. Environmental legislation and ecological risk assessment. Students are responsible for all requirements for FWCE 434 plus additional work.

FWCE 535. Special Topics 1-4 Credits (1-4)
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

FWCE 536. Advanced Avian Ecology 3 Credits
Focuses on current topics and literature in avian ecology including systematics, mating systems, behavior, physiology, movement patterns and conservation. Includes required overnight field trips.
Prerequisite(s): Graduate standing or consent of instructor.

FWCE 537. Wildlife Damage Management 3 Credits
Introduction to basic need and appropriate methods for resolving human-wildlife conflicts and management of animal damage. Socioeconomic, ecological, and political factors. Field trips required. Taught with FWCE 437. Students are responsible for all requirements for FWCE 437 plus additional work.
Prerequisite(s): FWCE 409.

FWCE 539. Game Bird Ecology and Management 3 Credits
In this class we will look at the overall history of game bird management and conservation, how management and conservation of game birds was and still is the foundation for wildlife conservation in North America, define the challenges both past and present to managing and conserving game bird populations, and explore the conceptual and quantitative models used to manage migratory and non-migratory game birds. Taught with FWCE 439. Restricted to: FISH,WLSC majors.
Prerequisite(s): FWCE 301, FWCE 409, A ST 311 or equivalent.
FWCE 540. Wildlife Habitat Relationships
3 Credits
The study of wildlife-habitat relationships primarily seeks to describe how the distribution and abundance of resources used for food, cover and security, and constraints on the use of these resources influence the distribution of animals. This course will cover aspects of animal behavior related to how animals select habitat, theoretical models of habitat selection, the influence of inter- and intra-specific interactions on habitat selection, habitat quality, study designs for wildlife-habitat studies, modeling habitat selection and data analyses. Taught with FWCE 440. Restricted to: WLSC majors.

FWCE 547. Wildlife Law and Policy
3 Credits
Introduction to state and federal laws and policies for wildlife and the historical context for their development. Taught with FWCE 447.

FWCE 548. Graduate Problems
1-3 Credits (1-3)
Individual studies in fishery and wildlife sciences. Maximum of 3 credits per semester. No more than 6 credits of this course and FWCE 598, combined, toward a degree. May be repeated up to 6 credits.

FWCE 558. Nonthesis Project
1-6 Credits (1-6)
Independent study to satisfy nonthesis project requirement. Maximum of 6 credits toward degree. Available only to nonthesis students.

FWCE 559. Aquatic Ecology
4 Credits
Ecological functions of plant and animal communities in aquatic ecosystems with emphasis on chemical and physical properties, productivity, species interactions, population dynamics, and concepts for diagnosing problems and restoring aquatic ecosystems. Taught with FWCE 459.
Prerequisite(s): FWCE 301 or BIOL 301, CHEM 112, MATH 142G.

FWCE 567. Herpetology
4 Credits
Systematics, taxonomy, ecology, behavior and conservation of amphibians and reptiles. Field trips required. Taught with FWCE 467.

FWCE 571. GIS for Natural Resource Scientists
4 Credits
Practical GIS class for students with little or no GIS experience. Class focuses on learning to use industry-standard software and applications in natural resource management. Taught with FWCE 471.

FWCE 582. Ichthyology
4 Credits
Classification, morphology, identification, life history, and ecology of fishes. Taught with FWCE 482.

FWCE 598. Special Research Programs
1-3 Credits (1-3)
Individual investigations, either analytical or experimental. Maximum of 3 credits per semester. No more than 6 credits of this course and FWCE 548, combined, toward a degree. Not available to students in the nonthesis program.

FWCE 599. Master’s Thesis
1-9 Credits (1-9)

G S 500. Masters Non-Thesis Final Exam Credit
1 Credit
Course for non-thesis masters students who have completed all program requirements except the final comprehensive exam. A maximum of 12 credits may be earned. Graded S/U.
Prerequisites: advisor signature required.

G S 600. Doctoral Research
1-15 Credits
Course number is used for assigning credit for research performed prior to successful completion of the doctoral comprehensive examination.

G S 700. Doctoral Dissertation
15 Credits
Dissertation.

GENE-GENETICS (GENE)

GENE 110. Experimental Systems in Genetics
1 Credit
Survey of molecular, biochemical, organismal, and computer science based approaches to investigate how genes determine important traits. Historical development and topics of current interest will be discussed.

GENE 303V. Genetics and Society
3 Credits
Relates the science of genetics with social ramifications. Ways in which genetics and evolution interact with social, political, and economic issues. Includes genetic engineering, gene therapy, DNA fingerprinting, ancient DNA, plant and animal improvement, and future prospects. Students required to formulate value judgments on contemporary biological issues that will impact society. Crosslisted with: AGRO303V.

GENE 305. Principles of Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals. Crosslisted with: AGRO 305, ANSC 305, BIOL 305 and HORT 305
Prerequisite(s): BIOL 111G, BIOL 211G and either CHEM 111G or CHEM 115.

GENE 305 L. Genetic Techniques
1 Credit
Experimental procedures used in genetic research including: sexual transmission genetics, eukaryotic DNA isolation, DNA marker development and genotyping, polymerase chain reaction, and cytogenetics. Pre/Corequisite(s): GENE 315, or AGRO/ANSC/BIOL/HORT 305.

GENE 315. Molecular Genetics
3 Credits
Covers fundamental principles of DNA structure and replication, transcription, translation, gene regulation, recombinant DNA technology, and a survey of genomics and bioinformatics.
Prerequisite(s)/Corequisite(s): Prerequisite(s): CHEM 112 and BIOL 211. Recommend CHEM 313.
GENE 320. Hereditary and Population Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in plants and animals including: Mendelian inheritance, mitosis, meiosis, genetic linkage, random mating, genetic drift, natural selection, inbreeding, migration, mutation, interrelationships between individuals, populations and communities and the environment.
Prerequisite(s): CHEM 111G & BIOL 211G.

GENE 440. Genetics Seminar
1 Credit
Organization, preparation, and presentation of genetic studies in model microorganism, plant, or animal systems that have been used to solve problems in molecular, cellular, and developmental biology. Consent of instructor required.
Prerequisite(s): Seniors only; GENE 315 & GENE 320.

GENE 449. Special Problems
1-3 Credits (1-3)
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and a grand total of 3 credits toward a degree. Consent of instructor required.

GENE 450. Special Topics
1-3 Credits (1-3)
Specific subjects to be announced in the schedule of classes. Maximum of 3 credits per semester and a total of 3 credits toward a degree. Consent of instructor required.

GENE 452. Applied Bioinformatics
3 Credits
Survey and application of publicly available bioinformatic tools that treat genomic DNA, cDNA, and protein sequences, RNA abundance, as well as tools that allow inference based on phylogenetic relationships.
Prerequisites: AGRO/ANSC/BIOL/HORT 305 or GENE 315 and GENE 320, and BCHE 341, or BCHE 395.

GENE 486. Genes and Genomes
3 Credits
Extensive coverage of nuclear and organelle genome structure in plants and animals, genome restructuring including duplication, aneuploidy, chromosome translocations and inversions, comparative genomics, and molecular systematics.
Prerequisites: AGRO/ANSC/BIOL/HORT 305 or GENE 315, and GENE 320.

GENE 488. Gene Regulation
3 Credits
Extensive coverage of signal transduction processes and approaches used to monitor large scale changes in gene regulation and protein synthesis that occur during development and in response to environmental changes.
Prerequisites: AGRO/ANSC/BIOL/HORT 305 or GENE 315.

GENEGEOGRAPHY (GEOG)

GEOG 111G. Geography of the Natural Environment
4 Credits (3+3P)
Introduction to the physical processes that shape the human environment: climate and weather, vegetation dynamics and distribution, soil development and classification, and geomorphic processes and landform development.

GEOG 112G. World Regional Geography
3 Credits
Overview of the physical geography, natural resources, cultural landscapes, and current problems of the world's major regions. Students will also examine current events at a variety of geographic scales.

GEOG 120G. Culture and Environment
3 Credits
Study of human-environmental relationships: how the earth works and how cultures impact or conserve nature. Introduction to relationships between people and natural resources, ecosystems, global climate change, pollution, and conservation.

GEOG 257. Introduction to Weather Science
4 Credits (3+3P)
Introduction to Earth’s atmosphere and the dynamic world of weather as it happens. Working with current meteorological data delivered via the Internet and coordinated with learning investigations keyed to the current weather; and via study of select archives. Crosslisted with: SOIL 257 and AGRO 257
Prerequisite(s): None.

GEOG 259. Introduction to Oceanography
4 Credits (3+3P)
Introduces the origin and development of the ocean and marine ecological concepts. Examines physical processes such as waves, tides, and currents and their impact on shorelines, the ocean floor, and basins. Investigates physical processes as they relate to oceanographic concepts. Includes media via the Internet and laboratory examination of current oceanic data as an alternative to the actual oceanic experience. Students will gain a basic knowledge and appreciation of the ocean’s impact on the world’s ecology.

GEOG 281. Map Use: Reading, Analysis and Interpretation
3 Credits (2+3P)
Exploration of the cartographic medium. Development of critical map analysis and interpretation skills, and map literacy. Comprised of traditional lecture, labs, and map use projects.

GEOG 291. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

GEOG 295. Introduction to Climate Science
4 Credits (3+3P)
Examines fundamentals and related issues of Earth’s climate system, climate variability, and climate change. Develops solid understandings of Earth’s climate system framed in the dynamic, Earth system based approach to the science.

GEOG 315V. World Agriculture and Food Problems
3 Credits
Same as AG E 315V.

GEOG 325V. New Mexico and the American West
3 Credits
Examination of the cultural and historical patterns, economic activities and physical characteristics of New Mexico with comparisons made with other western states.

GEOG 326. U.S. National Parks
3 Credits
Exploration of origins, landscapes, ecosystems, management issues, and conflicts in U.S. National Parks. The regional geography of the United States as seen through the creation and protection of biologically and culturally significant lands.
GEOG 328V. Geography of Latin America
3 Credits
Explores Latin America from a geographical perspective, integrating environmental, cultural and socioeconomic factors in an in-depth study of the development of the region and contemporary issues and challenges facing the region.

GEOG 331V. Europe
3 Credits
Focus on the cultural continent of Europe, from Iceland to the Ural Mountains and from Archangel, Russia, to Malta. An overview of climate, geology, topography, soils, and vegetation, as well as a brief historical geography of the continent. Current environmental, social, and political issues of Europe will be discussed. A series of regional studies is also offered.

GEOG 351. Fundamentals of Biogeography
3 Credits
Floristic and physiognomic characteristics of the Earth's major ecosystems and their distributions; ecosystem dynamics, evolution, and physical environment; field and laboratory techniques including remote sensing. Taught with GEOG 557.

GEOG 353. Geomorphology
3 Credits (2+3P)
Examination of the principle theories and concepts of landform creation; exploration of the roles of structure, processes, climate, and time in the formation of various types of landforms. Taught with GEOG 553.
Prerequisite(s): GEOL 353

GEOG 357. Climatology
3 Credits
Elements and controls of climate. Energy and hydrologic cycles, general circulation, climate classification, distribution of climate types, microscale effects, applications. Same as AGRO 357, SOIL 357.
Prerequisites: MATH 120.

GEOG 361V. Economic Geography
3 Credits
The geographic relationships of supply and demand resources, population, and transportation. Site analysis and decision-making in different economic systems and cultures and how these decisions affect the environment and the location of economic activities.

GEOG 363V. Cultural Geography
3 Credits
The world's diverse cultural landscapes. Emphasis on the connections between social, political, religious, and agricultural patterns and the impact of societies on the natural environment.

GEOG 365V. Urban Geography
3 Credits
The global historical development of urban areas, as well as the changing functions of today's cities. A comparison between the North American city system and cities in Europe, Asia, and South America, including the development of the city form, the internal spatial organization of commercial, residential, and industrial areas, and socio-economic and political factors.

GEOG 373. Introduction to Remote Sensing
4 Credits (3+3P)
Introduction to the theory, techniques, and applications of remote sensing. Topics include electromagnetic radiation; remote sensing systems; remote sensing of the biosphere, hydrosphere, atmosphere, lithosphere, and cultural landscapes. Course includes lectures and also labs focused on the basic analysis and interpretation of remote sensing products. Taught with GEOG 573. May be repeated up to 4 credits.

GEOG 381. Cartography and Geographic Information Systems
4 Credits (3+3P)
Design and construction of thematic maps. Introduction to cartographic principles in lecture. Emphasis on map-making using GIS software in the labs. Taught with GEOG 571. May be repeated up to 4 credits.

GEOG 382. Aerial Photo Interpretation
3 Credits (2+3P)
Introduction to use and analysis of aerial photographs. Emphasis on physical features and cultural patterns.

GEOG 401. Internship/Co-op
1-3 Credits (1-3)
Provides an opportunity whereby students work with a local, regional, or federal agency, or private sector firm on applied geographic work, under the supervision of an agency or firm professional and a geography faculty member. Consent of instructor required.

GEOG 435. Environmental Planning
3 Credits
Exploration of planning tools that advance the management of land and water resources, meeting current societal needs, while also minimizing damage to nature and society. Class activities include applied exercises that explore contemporary planning issues, including land conservation, natural hazards, biophysical analysis, water resource management, Federal land issues, and remediation of Superfund sites. Crosslisted with: GEOG 535.

GEOG 441. System Design for Geographic Information Science and Technology (GIS&T)
3 Credits
A critical aspect of GIS is its ability to provide the necessary products within the organization within which it is implemented. This is an in-depth analysis of currently accepted planning methodologies designed to create a successful implementation of GIS inside organizations. Taught with GEOG 581.
Prerequisite(s): GEOG 481 or consent of instructor.

GEOG 452. Landscape Ecology
4 Credits (3+2P)
Analysis of the structure, function and change of natural and anthropogenic landscapes. Patches, corridors, matrix and network, spatial organization, landscape dynamics, and role of disturbance in overall functioning of landscapes. Role of landscape heter. Taught with GEOG 552.
Prerequisite(s): Either GEOG 351, BIOL 301, or other basic ecology course or consent of instructor.

GEOG 455. Southwest Environments
3 Credits
The U.S. Southwest: physical and human geography, coupled human-environment interactions, causes and consequences of environmental issues, and implications for sustainable development. Taught with GEOG 555. May be repeated up to 3 credits. Consent of Instructor required.
GEOG 467. Transportation Geography
3 Credits
Nature and distribution of land, air and water transport facilities and their importance in regional development.
Prerequisite: GEOG 120G or consent of instructor.

GEOG 472. Soil Morphology and Classification
4 Credits (2+2P)
Same as SOIL 472. May be repeated up to 4 credits. Crosslisted with: SOIL 472.
Prerequisite(s): SOIL 252.

GEOG 473. Advanced Remote Sensing
4 Credits (3+3P)
Introduction to advanced topics in digital image processing, analysis, interpretation, and visualization. Topics include geometric and radiometric correction, image enhancement, image classification, change detection, and accuracy assessment. Lectures focus on the discussion of advanced remote sensing concepts, techniques, and applications; labs are applications-oriented. Taught with GEOG 573. May be repeated up to 4 credits.

GEOG 481. Fundamentals of Geographic Information Science and Technology (GIS & T)
4 Credits (3+3P)
Fundamentals of computer-based systems which organize, analyze, and present spatially referenced data. Taught with GEOG 578.
Prerequisite(s): GEOG 281 or GEOG 381.

GEOG 482. Geodatabase Design
3 Credits (2+3P)
A practical introduction to designing geodatabases. The course takes you through the eleven steps of geodatabase design divided into four stages: thematic characterization; developing the database elements, relationships and properties; capture and collection; and finally, implementation and documentation. Taught with GEOG 583. May be repeated up to 3 credits.

GEOG 483. Field Explorations in Geography
3 Credits
A field-based class where students complete exercises in physical, human, and environmental geography in the Southwest. May be offered as a two-week intensive class where students are away from Las Cruces and camping; or may be offered with weekend field trips depending on the instructor. A lab fee for transportation and other expenses is required. Taught with GEOG 583. May be repeated up to 3 credits.

GEOG 488. GIS and Water Resources
3 Credits
Explores a range of GIS tools, routines, and data structures and then applies them to a range of research questions and management issues in the area of Water Resources. The class has both a lecture and laboratory component, and students will have opportunities to explore a range of GIS tools in formal lab exercises and a project in the student's area of interest. Crosslisted with: GEOG 588.

GEOG 491. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits. Consent of instructor required.

GEOG 492. GIS&T Applications and Modeling
3 Credits
Group oriented class in which students conduct an applied research project in GIS application or modeling area of choice and conduct focused library research. Taught with GEOG 521
Prerequisite(s): GEOG 481 or Consent of Instructor.

GEOG 493. Special Problem Research
1-3 Credits
For advanced and exceptional students. Research, and preparation of a paper in some phase of geography. A maximum of 6 credits may be earned. Consent of instructor required.

GEOG 495. Directed Readings
1-3 Credits
Individual study through selected readings. A maximum of 6 credits may be earned. Consent of instructor required.

GEOG 501. Research Design and History of Geographic Thought
3 Credits
Understanding and application of the research process, including conceptualization and definition of a research problem, study designs, data sources, data collection, and report writing in development of geographic thought.

GEOG 521. GIS & T Applications and Modeling
3 Credits
Group oriented class in which students conduct an applied research project in a GIS application or modeling area of choice and conduct focused library research. Taught with GEOG 492.
Prerequisite(s): GEOG 481, or consent of instructor.

GEOG 535. ENVIRONMENTAL PLANNING
3 Credits
Exploration of planning tools that advance the management of land and water resources, meeting current societal needs, while also minimizing damage to nature and society. Class activities include applied exercises that explore contemporary planning issues, including land conservation, natural hazards, biophysical analysis, water resource management, Federal land issues, and remediation of Superfund sites. Crosslisted with: GEOG 435.

GEOG 552. Landscape Ecology
4 Credits (3+2P)
Analysis of the structure, function and change of natural and anthropogenic landscapes. Patches, corridors, matrix and network, spatial organization, landscape dynamics, and role of disturbance in overall functioning of landscapes. Role of landscape heterogeneity in landscape management. Taught with GEOG 452.
Prerequisite(s): Either GEOG 351, BIOL 301, or other basic ecology course or consent of instructor.

GEOG 553. Geomorphology
3 Credits (2+3P)
Examination of the principle theories and concepts of landform creation; exploration of the roles of structure, processes, climate, and time in the formation of various types of landforms. Taught with GEOG 353.
Prerequisite(s): GEOG/GEOL 353 or GEOG/GEOL 111G.

GEOG 555. Southwest Environments
3 Credits
The U.S. Southwest: physical and human geography, coupled human-environment interactions, causes and consequences of environmental issues, and implications for sustainable development. Taught with GEOG 455. May be repeated up to 3 credits.
GEOG 557. Fundamentals of Biogeography
3 Credits
Floristic and physiognomic characteristics of the Earth's major ecosystems and their distributions; ecosystem dynamics, evolution, and physical environment; field and laboratory techniques including remote sensing. Taught with GEOG 351.

GEOG 571. Cartography and Geographic Information Systems
4 Credits (3+3P)
Graduate level design and construction of thematic maps. Introduction to cartographic principles in lecture. Emphasis on map-making using GIS software in the labs. Taught with GEOG 381. May be repeated up to 4 credits.

GEOG 572. Geodatabase Design
3 Credits (2+3P)
Graduate level introduction to designing geodatabases. The course takes you through the eleven steps of geodatabase design divided into four stages: thematic characterization; developing the database elements, relationships and properties; capture and collection; and finally implementation and documentation. Taught with GEOG 482. Consent of instructor required.
Prerequisite(s): GEOG 481.

GEOG 573. Introduction to Remote Sensing
4 Credits (3+3P)
Graduate level introduction to the theory, techniques, and applications of remote sensing. Topics include electromagnetic radiation; remote sensing systems; remote sensing of the biosphere, hydrosphere, atmosphere, lithosphere, and cultural landscapes. Course includes lectures and also labs focused on the basic analysis and interpretation of remote sensing product. Taught with GEOG 373. May be repeated up to 4 credits.

GEOG 578. Fundamentals of Geographic Information Science and Technology (GIS & T)
4 Credits (3+3P)
Graduate level fundamentals of computer-based systems that organize, analyze, and present spatially referenced data. Taught with GEOG 481.
Prerequisite(s): GEOG 571 or consent of instructor.

GEOG 581. System Design for Geographic Information Science and Technology (GIS & T)
3 Credits
A critical aspect of GIS is its ability to provide the necessary products within the organization within which it is implemented. This is an in-depth analysis of currently accepted planning methodologies designed to create a successful implementation of GIS inside organizations. Taught with GEOG 441.
Prerequisite(s): GEOG 481 or consent of instructor.

GEOG 582. Advanced Remote Sensing
4 Credits (3+3P)
Graduate level introduction to advanced topics in digital image processing, analysis, interpretation, and visualization. Topics include geometric and radiometric correction, image enhancement, image classification, change detection, and accuracy assessment. Lectures focus on the discussion of advanced remote sensing concepts, techniques, and applications; labs are applications-oriented. May be repeated up to 4 credits.

GEOG 583. Field Explorations in Geography
3 Credits
A graduate level field-based class where students complete exercises in physical, cultural, and environmental geography in the Southwest. May be offered as a two-week intensive class where students are away from Las Cruces and camping; or may be offered with weekend field trips depending on the instructor. A lab fee for transportation and other expenses is required. May be repeated up to 3 credits.

GEOG 585. Advanced Spatial Analysis
3 Credits (3+2P)
Introduction to basic spatial and aspatial descriptive statistics, statistical analysis of point and area patterns, critical review of quantitative research in geography, and exploration of advanced spatial analysis routines including cluster analysis, hot/cold spot analysis, and spatially weighted regression.
Prerequisite(s): STAT 251 or A ST 311; or consent of instructor.

GEOG 588. GIS and Water Resources
3 Credits
This is a graduate level class that explores a range of GIS tools, routines, and data structures and then applies them to a range of research questions and management issues in the area of Water Resources. The class has both a lecture and laboratory component, and students will have opportunities to explore a range of GIS tools in formal lab exercises and a project in the student’s area of interest. Crosslisted with GEOG 488.

GEOG 595. Directed Readings
1-3 Credits
Advanced individual study through selected readings. May be repeated for a maximum of 6 credits.

GEOG 596. Residency
3-12 Credits
A contractual learning experience in the public or private sector under the supervision of a field supervisor and two faculty members. Restricted to majors. PR/U grading only.

GEOG 598. Selected Topics
1-3 Credits
Readings, discussions, lectures or laboratory studies of selected geographic themes. May be repeated for unlimited credit.

GEOG 599. Master's Thesis
12 Credits
Supervised individual study of a student’s thesis topic. May be repeated for an unlimited number of credits.

GEOG 111G. Introductory to Geology
4 Credits (3+3P)
Covers the fundamental principles of physical geology, including the origin of minerals and rocks, geologic time, rock deformation, and plate tectonics. May be repeated up to 4 credits.

GEOG 212G. The Dynamic Earth
4 Credits (3+3P)
Introduction to earth systems. Geology and the solid earth, geologic time and earth history, water and the world oceans, atmosphere and weather, the solar system. Community Colleges only.
GEOL 220. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. Community Colleges only. May be repeated for a maximum of 12 credits. May be repeated up to 12 credits.

GEOL 295. Environmental Geology
3 Credits
Earth processes that affect humans and their works, properties of rocks and soils, and use and application of environmental geologic data.

GEOL 305V. Fossils and the Evolution of Life
3 Credits
Examination of the fossil record within the context of geologic time. Special emphasis on critical evaluation of possible terrestrial and extraterrestrial causes for the evolution of plants and animals and for periods of mass extinction.

GEOL 310. Mineralogy
3 Credits (2+3P)
Crystalllography and the physical and chemical aspects of minerals. Prerequisite(s): GEOL 111G and CHEM 111G.

GEOL 312. Optical Mineralogy
3 Credits (2+3P)
Principles of optical mineralogy as applied to the identification and characterization of rock-forming minerals. Prerequisite or Corequisite: GEOL 310.

GEOL 320. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

GEOL 335V. Earthquakes, Volcanoes, Hurricanes, and Floods: The Role of Natural Hazards in Civ Past and Present
3 Credits
This class will provide an introduction to geologic hazards and natural disasters, their effects on society and the attempts at preparation and mitigation for these events. Hazards to be covered include earthquakes, volcanic eruptions, floods, landslides, hurricanes, tsunamis and others.

GEOL 353. Geomorphology
3 Credits
Same as GEOG 353.

GEOL 360. General Geochemistry
3 Credits
The chemistry of the earth and its parts, with emphasis on geochemical systems and cycles, distribution of the elements, and mineral equilibria. Crosslisted with: CHEM 360 Prerequisite(s): CHEM 111G or CHEM 110G.

GEOL 399. Igneous and Metamorphic Petrology
3 Credits (2+3P)
Mineralogical composition, classification, and genesis of igneous and metamorphic rocks. Prerequisite(s): GEOL 312 for geology majors, GEOL 310 for majors other than geology.

GEOL 401. Geology Colloquium
1 Credit
Presentations by visiting speakers and students. May be repeated up to 6 credits.

GEOL 420. Stratigraphy and Sedimentology
3 Credits (2+3P)
Identification and interpretation of sedimentary rocks with emphasis on classification, deposition, and stratal geometry. Prerequisite: GEOL 310.

GEOL 424. Soil Chemistry
3 Credits
Same as SOIL 424, CHEM 424.

GEOL 434. Tectonics of Sedimentary Basins
3 Credits
Origin of sedimentary basins with emphasis on subsidence mechanisms, geometry of basin fill, depositional systems and tectonic setting. Course includes two off-campus field trips. Crosslisted with: GEOL 534. Prerequisite(s): GEOL 420.

GEOL 441. Tutorial Geology
2 Credits (1+3P)
Participation in teaching lower-division laboratories and conducting tutorial sessions. May be repeated for a total of 4 credits. Prerequisite: junior or above standing and nomination by faculty.

GEOL 444. GIS for Geology
3 Credits
Tools-based introduction to using GIS software for solving problems in geology. Emphasis on effectively portraying and analyzing geologic maps. One required field trip. Crosslisted with: GEOG 544. Prerequisite(s): GEOL 470.

GEOL 449. The Geological Profession
1 Credit
Investigation of graduate school and employment opportunities, writing the resume, conduct at interviews, and ethics of the profession. Also outcomes assessment exit exams. For graduating seniors only.

GEOL 452. Geohydrology
4 Credits (3+2P)
Origin, occurrence, and movement of fluids in porous media assessment of aquifer characteristics. Development and conservation of ground water resources, design of well fields. Crosslisted with: C E 452 and E S 452. Prerequisite(s): Junior or senior.

GEOL 455. Undergraduate Research
1-3 Credits
Geological research and field projects for the advanced student. May be repeated for a total of 6 credits. May be repeated up to 6 credits. Consent of Instructor required. Prerequisite(s): Consent of instructor.

GEOL 465. Isotope Geochemistry
3 Credits
Geochemistry of stable and radiogenic isotopes and its application to a wide range of problems in the earth and planetary sciences. Prerequisite(s): CHEM 112G, GEOL 360, GEOL 399.

GEOL 470. Structural Geology
3 Credits (2+3P)
Deformation of rocks of the earth. Prerequisite: GEOL 310
GEOL 471. Volcanology  
3 Credits  
Identification and interpretation of volcanic deposits (including air fall, ash flow tuffs, surges, lava flows), with focus on how the characteristics of these deposits can reveal eruption styles and eruption dynamics. Other topics covered include: magma migration and storage, volcanic hazards, volcano monitoring and volcanoes and climate. Crosslisted with: GEOL 571.  
Prerequisite(s): GEOL 399.

GEOL 475. Geology of Mineral Resources  
3 Credits (2+3P)  
Introduction to ore deposits and industrial rocks and minerals; genesis, mining methods, estimation of reserves, exploration, and economic aspects of selected commodities.  
Prerequisite: GEOL 399.

GEOL 477. Special Problems  
1-3 Credits  
Selected advanced topics of current interest or importance. May be repeated for a total of 6 credits.  
Prerequisite: consent of instructor.

GEOL 478. Petroleum Systems and Stratigraphy  
3 Credits (2+3P)  
Sedimentation, stratigraphy, depositional environments, and tectonics in relation to the occurrences and exploration of hydrocarbons. Course includes two off-campus field trips. May be repeated up to 3 credits.  
Prerequisite(s): GEOL 420.

GEOL 479. Environmental Soil Chemistry  
3 Credits  
Same as SOIL 479.

GEOL 480. Seminar  
1-3 Credits  
Supervised study of a subject not covered by regular courses. For organized group meetings treating selected advanced topics. May be repeated for a maximum of 6 credits.  
Prerequisite: consent of instructor.

GEOL 482. Zuhl Collection Internship  
1-3 Credits (1-3)  
Applied experience working with the Zuhl Collection of rocks, minerals, fossils, and petrified wood, supervised by the Director of the Zuhl Collection. Activities include tours, display development, research on aspects of the collection, and other work in the museum. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: GEOL majors.

GEOL 490. Field Geology  
3 Credits  
Mapping, instrumentation, and interpretation of geology in the field.  
Prerequisites: either GEOL 420 and GEOL 470.

GEOL 491. Tectonic Evolution of North America  
3 Credits  
Current ideas regarding the plate-tectonic evolution of North America from Archean through Holocene time, emphasizing the use of regional stratigraphy and structural geology to interpret mountain building, magmatism, and basin development.  
Prerequisites: GEOL 111G, GEOL 399, GEOL 420 and GEOL 470.

GEOL 495. Geology Field Camp  
4 Credits  
Three week intensive summer course. Geologic mapping in a site-based setting, emphasizing spatial relations, cross-section construction, and preparation of geologic reports. Prerequisite: GEOL 490

GEOL 499. Senior Thesis  
1-3 Credits  
Writing a formal paper describing original geologic research conducted under supervision of a faculty advisor. Restricted to majors.  
Prerequisite: consent of instructor.

GEOL 501. Geology Colloquium  
1 Credit  
Presentations by visiting speakers and graduate students.

GEOL 520. Selected Topics  
1-3 Credits  
Selected topics in geology. May be repeated for unlimited credit.  
Prerequisites: graduate standing and consent of instructor.

GEOL 534. Tectonics of Sedimentary Basins  
3 Credits  
Origin of sedimentary basins with emphasis on subsidence mechanisms, geometry of basin fill, depositional systems and tectonic setting. Course includes two off-campus field trips. Restricted to: GEOL majors.  
Prerequisites: GEOL 420 or equivalent or consent of instructor.

GEOL 544. GIS FOR GEOLOGY  
3 Credits  
Prerequisite(s): GEOL 470 or equivalent.

GEOL 553. Applied Geomorphology  
3 Credits (2+3P)  
Same as GEOG 553.

GEOL 562. Analytical Geochemistry  
3 Credits  
Techniques used to determine the major element, trace element and isotopic composition of rocks and minerals and the determination of mineral structure.

GEOL 565. Isotope Geochemistry  
3 Credits  
Trace element partitioning and isotope systematics applied to problems in petrology and ore genesis.

GEOL 567. Global Geochemical Systems  
3 Credits  
Generation of major element, trace element, and isotopic signatures of igneous rocks in different tectonic settings and propagation or destruction of those signatures by sedimentary and metamorphic processes.

GEOL 571. Volcanology  
3 Credits  
Identification and interpretation of volcanic deposits (including air fall, ash flow tuffs, surges, lava flows), with focus on how the characteristics of these deposits can reveal eruption styles and eruptions dynamics. Other topics covered include: magma migration and storage, volcanic hazards, volcano monitoring and volcanoes and climate. Crosslisted with: GEOL 471.  
Prerequisite(s): GEOL 399 or equivalent.
GEOL 578. Petroleum Systems and Stratigraphy
3 Credits (2+3P)
Sedimentation, stratigraphy, depositional environments and tectonics in relation to the occurrences and exploration of hydrocarbons. Course includes two off-campus field trips.
Prerequisite(s): GEOL 420.

GEOL 582. Plate Tectonics
3 Credits
Plate tectonics as a fundamental model for geological activity on a dynamic earth. Focuses on plate tectonic theory development and mechanisms, plus modern analogs of ancient processes.

GEOL 585. Geochronology
3 Credits
The principles, analytical methods, and interpretation of the most common geochronologic methods.

GEOL 598. Special Research Programs
1-3 Credits
Investigations into contemporary geological problems. May be repeated for unlimited credit.
Prerequisites: graduate standing and consent of instructor.

GEOL 599. Master's Thesis
15 Credits
Thesis research.

GER-GERMAN (GER)

GER 111. Elementary German I
4 Credits
German for beginners. Stress on speaking skills.

GER 112. Elementary German II
4 Credits
German for beginners and students with one year of high school German. Stress on speaking skills.
Prerequisite: C or better in GER 111.

GER 211. Intermediate German I
3 Credits
Speaking, reading and writing.
Prerequisite: C or better in GER 112.

GER 212. Intermediate German II
3 Credits
Speaking, reading and writing.
Prerequisite: C or better in GER 211.

GER 305. Topics in German Culture
3 Credits
Overview of Germany - states, cities, landscapes and people. May be repeated up to 6 credits.
Prerequisite(s): GER 212 or consent of instructor.

GER 313. Intermediate Composition and Grammar
3 Credits
Exercises in written German with emphasis on advanced grammatical features. Preparation for Zertifikat Deutsch.
Prerequisite: GER 212, or high school German 3, or consent of instructor.

GER 325. German Conversation I
3 Credits
Spoken German with emphasis on everyday situations.
Prerequisite: GER 212, or high school German 3, or consent of instructor.

GER 333V. German Culture through Cinema
3 Credits
Events, values and issues in German culture as reflected in motion pictures made in Germany between 1913 and 1990. Familiarization with cinema as art form. Taught in English. Does not satisfy Arts and Sciences second language requirement.

GER 340. German Linguistics
3 Credits
Analysis of the German language.
Prerequisite(s): GER 212 or consent of instructor.

GER 341. German Folklore and Culture
3 Credits
Customs, traditions, mythology, folk literature and art; everyday culture of German-speaking Europe.
Prerequisite: GER 212 or equivalent or consent of instructor.

GER 343. Readings in Current Events
3 Credits
Practice in improving reading skills with a wide variety of texts. Discussion in German also enhances oral skills.
Prerequisite(s): GER 212 or consent of instructor.

GER 350. Introduction to German Literature
3 Credits
Basic literary genres and major figures in German literature from the 18th century to the present.
Prerequisite(s): GER 212 or consent of instructor.

GER 399. Intermediate Independent Study in German
1-3 Credits (1-3)
Tutorial in reading, writing and oral expression. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s): GER 212 or consent of instructor.

GER 410. Practicum in Conversational German
1-3 Credits
Intensive oral practice as language monitor. May be repeated for a maximum of 6 credits.
Prerequisite: two upper division German courses or consent of instructor.

GER 413. Advanced Composition and Grammar
3 Credits
Exercises in written German with emphasis on stylistic features.
Prerequisite: GER 313 or consent of instructor.

GER 425. Advanced German Conservation
3 Credits
Advanced conversation through intensive oral practice.
Prerequisite(s): GER 325 or consent of instructor.

GER 449. Special Problems
1-3 Credits
Directed reading for graduate students in their specific fields to satisfy language requirements for master's or doctoral programs. May be repeated for a maximum of 6 credits.

GER 451. Special Topics in German
1-3 Credits
Selected topics in German language, literature or area studies announced in Schedule of Classes. May be repeated for credit when topic changes. May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.
GER 453. Independent Studies in German
1-3 Credits (1-3)
Individualized, self-paced projects for advanced students. May be repeated up to 12 credits.
Prerequisite(s): Consent of instructor.
GER 471. Studies in German Literature
3 Credits
Selected readings from authors representative of each literary period. May be repeated up to 6 credits.
Prerequisite(s): GER 212 or consent of instructor.

GERO-GERONTOLOGY (GERO)
GERO 415. Introduction to Gerontology
3 Credits
Social, psychological, and physiological aspects of aging, with an interdisciplinary emphasis on health promotion. Demographic characteristics of the aging population. Taught with MPH 515.
GERO 450. Health Promotion for the Older Adult
3 Credits
Common health concerns and lifestyle issues relevant to older adults. Facts about the content area, health behaviors, and practices to promote health and prevent disease; program development strategies applicable to a variety of settings. Same as MPH 557.
GERO 451. Aging and Public Policy
3 Credits
Exploration of public policies relating to elders, historical development, current status and trends in public policy for this age group. Impact of political behavior of elders on policy making and implementing processes.
GERO 493. Adulthood and Aging
3 Credits
Normal transitions in later life; those occurring from 40 years of age to the end of life are discussed. Changes in interpersonal relationships and adaptations commonly made by individuals and meeting those alterations are presented through research findings, case studies, and autobiographies. Same as MPH 593.
GERO 498. Independent Study
1-3 Credits
Individual studies with prior approval of health science department head. May be repeated for maximum of 6 credits.
Prerequisite: senior standing and consent of instructor.

GOVT-GOVERNMENT (GOVT)
GOVT 100G. American National Government
3 Credits
Class critically explores political institutions and processes including: the U.S. constitutional system; legislative, executive and judicial processes; political parties, elections, media, policy making, civic participation, popular and group influence
GOVT 101. Introductory Government Seminar
1 Credit
Introduction to the government major. Designed to assist students in planning college experience and preparing for professional or advanced educational opportunities upon graduation. Graded: S/U. Restricted to: Main campus only.
GOVT 110G. Introduction to Political Science
3 Credits
This class covers fundamental concepts such as justice, sovereignty and power; political theories and ideologies; and government systems that range from democratic to authoritarian.
GOVT 150G. American Political Issues
3 Credits
Major contemporary problems of American society and their political implications.
GOVT 160G. International Political Issues
3 Credits
Current developments and issues in world politics.
GOVT 201. Special Topics
3 Credits
Specific topics to be announced in Schedule of Classes. Community Colleges only. May be repeated for a maximum of 12 credits.
GOVT 300. Political Research Skills
3 Credits
Introduction to methods of political analysis and fundamentals of research design, including basic methods for the collection and analysis of political data.
GOVT 308. Prepping for Law School Admissions Test
1 Credit
This workshop helps students prepare to take the Law School Admissions Test and apply for law school. Graded: S/U.
GOVT 313. Model United Nations
3 Credits
Issues related to the United Nations and international law/organizations through simulations, discussions and research projects.
Prerequisites: GPA of 2.5 or better and consent of instructor.
GOVT 314. Advanced Model UN
3 Credits
Advanced topics, research and preparation for Model United Nations activities. Consent of instructor required. Restricted to: Main campus only.
Prerequisite(s): GOVT 313, minimum GPA 2.5.
GOVT 315. Politics and Film
3 Credits
Exploration of political themes, images, and representation in film and other media. May be repeated for a maximum of 6 credits under different subtitles.
GOVT 320. Domestic Policy
3 Credits
The course examines how U.S. public policy is made, including the players, politics, issues and power critical to the policy process. An interactive class that bridges theory and political action. Restricted to: Main campus only.
GOVT 321. Topics in Public Policy
3 Credits
Course examines issues in public policy. May be repeated under different subtitles.
GOVT 324. Environmental Policy
3 Credits
This introductory course explores environmental policy issues. Students study perspectives of policy-makers, political activists and policy analysts, and apply policy models to solve pressing environmental problems. Focus may be on U.S. or global concerns.
GOVT 325. Education Policy and Politics
3 Credits
Overview of current pressing policy issues and political debates on education in the U.S., including school choice, vouchers, accountability, and affirmative action. Multiple topics and perspectives covered, with political economy as the main approach.

GOVT 330. Introduction to Public Administration
3 Credits
What is public administration? Course examines public service, focusing on federal and state government. Issues include management and leadership, personnel, bureaucratic politics, organizational theory, personnel, budgeting and administrative law. Restricted to: Main campus only.

GOVT 331. Special Topics in Public Administration
3 Credits
Special topics in public administration. May be repeated for a maximum of 6 credits under different subtitles.

GOVT 335. Management of Nonprofit Organizations
3 Credits
This course provides an overview of a range of nonprofit management concerns and practices. Students will be challenged to assess their own theories of nonprofit accountability and excellence, while confronting critical issues facing the sector. Activities are designed to expand the management skills of students by offering analytical tools and knowledge, and providing opportunities to test the application of these skills.

GOVT 340. American State and Local Government
3 Credits
Development, structure, functions, and contemporary problems.

GOVT 341. Special Topics: American Politics
3 Credits
Course examines contemporary issues and trends in American government and politics. May be repeated under different subtitles.

GOVT 343. Congress and the Legislative Process
3 Credits
This class reviews the history, structure, membership, operation, power and culture of the American Congress. Restricted to: Main campus only.

GOVT 344. The American Presidency
3 Credits
A comprehensive overview of the U.S. presidency, including powers, electoral politics, decision-making styles, domestic and foreign policy, and relations with Congress, courts, media and interest groups.

GOVT 345. The Supreme Court
3 Credits
This class studies the history and operation of the Supreme Court, as well as landmark cases that have shaped American government and the Court.

GOVT 348. Political Parties and Interest Groups
3 Credits
Organization, principles, and functions of political parties and interest groups in the U.S.

GOVT 350. Special Topics in American Government
3 Credits
Special topics in American government. May be repeated for a maximum of 6 credits under different subtitles.

GOVT 351. Campaigns and Elections
3 Credits
Dynamics of campaigns and electoral politics, and their relationship to the formulation of public policy.

GOVT 353. Women, Politics and Administration
3 Credits
An examination of women’s participation in U.S. electoral politics as voters, candidates, and officeholders; political activism in issue-based movements and strategies for affecting public policy; leadership as administrators and managers in public service agencies. Also explores the influence of feminism in changing women’s roles socially, legally, and politically. Crosslisted with: W S 453

GOVT 354. American Indian Politics
3 Credits
Introduction to American Indian tribal governments, politics, policy, and administration; historical and contemporary leadership of Indian Nations; and the history and current status of American Indian-U.S. relations. Students learn about Native peoples' cultural responses, forms of resistance, and adaptations to colonization. Restricted to: Main campus only.

GOVT 360. International Relations
3 Credits
Introduction to world politics; fundamental international issues and problems.

GOVT 361. Special Topics in International Relations
3 Credits
Course examines contemporary issues in international relations. May be repeated under different subtitles.

GOVT 362. International Political Economy
3 Credits
Political factors in international economic relations; theories of political economy.

GOVT 364. National Security Policy
3 Credits
Evolution of U.S. national security policy; problems in defining national interests and related allocation of resources.

GOVT 365. Formulation, content and rationale of current foreign policies of the U.S.

GOVT 367. Terrorism
3 Credits
An introductory course using an interdisciplinary framework to explore definitions, historical roots, contemporary manifestations and future trends in political terrorism.

GOVT 368. Fundamentals of Intelligence Studies
3 Credits
Introductory survey of the major theoretical approaches and substantive issues in intelligence studies.

GOVT 369. Nationalism, Ethnic Cleansing, and Genocide in 20th Century
3 Credits
Same as HIST 377.

GOVT 370. Comparative Politics
3 Credits
Introduction to functional approaches to comparing similarities and differences among political systems.
GOVT 371. Latin American Politics
3 Credits
Basic structure of politics in major Latin American countries; role of groups, including church, labor, and parties.

GOVT 372. Special Topics in Comparative Politics
3 Credits
Course examines contemporary issues in comparative politics. May be repeated under different subtitles. Restricted to: Main campus only.

GOVT 373. Resistance Movements in World Politics
3 Credits
Research on violent and non-violent resistance movements around the world. Focus on their origins, demands, ideologies, strategies and impacts in the post-Cold War context of economic globalization, US military power and new geopolitical dynamics.

GOVT 374V. The European City: History and Culture
3 Credits
Course presents the rich, complex history and cultures of European cities from ancient to modern times, lining these cities to crucial issues in European history.

GOVT 375. Self Determination and Minority Rights
3 Credits
Comparative study of ethnic relations, minority rights, identity, citizenship and political representation.

GOVT 378. U.S.-Mexico Border Politics
3 Credits
Comparative perspectives applied to the problems of the U.S.-Mexican border.

GOVT 379. Mexican Politics
3 Credits
Introduction to the politics and government of contemporary Mexico.

GOVT 380V. Contemporary World Political Ideologies
3 Credits
Introduction to the prevailing political ideologies in the modern world and the ways in which modern nations operating under one or more of these ideologies attempt to answer fundamental questions about the allocation and distribution of rights, liberties, and other things of value. In addition, the course work and discussions attempt to address recent political, social, and economic events in various areas of the world.

GOVT 381. Special Topics in Political Theory
3 Credits
Course explores special topics or theorists in political theory. May be repeated under different subtitles.

GOVT 382. Classical Political Thought
3 Credits
Analysis of main currents in political thought from ancient Greece and Rome to the high Middle Ages.

GOVT 383. Modern Political Thought
3 Credits
Historical and theoretical examination of political ideas and ideologies from Machiavelli to Nietzsche. Topics include liberalism, conservatism, romanticism, communism, and Nihilism.

GOVT 384. Contemporary Political Thought
3 Credits
Examination of major currents in political theory from early twentieth century to the present. Includes positivism, fascism, neo-liberalism, and varieties of postmodernism.

GOVT 385. American Political Thought
3 Credits
Introduction to major American thinkers and historical currents from colonial time to the present.

GOVT 386. Political Economy
3 Credits
Analysis of political ideas concerning the role of the state in management of national economies, in both European and American contexts.

GOVT 387. Religion and Politics
3 Credits
Survey of major points of interaction between politics and religion in the U.S., using theoretical, historical, and institutional analysis.

GOVT 389. Special Topics in Public Law
3 Credits
Course examines various issues in public law. May be repeated under different subtitles.

GOVT 390. Constitutional Law
3 Credits
The class explores the reasoning and political context of the Supreme Court cases that define the distribution and limits of governmental powers and duties under the U.S. Constitution, including separation of powers and federalism. Restricted to: Main campus only.

GOVT 391. Civil Liberties
3 Credits
The course examines the reasoning and political context of major Supreme Court cases defining constitutional rights of free speech, religious liberty, free press and criminal procedural rights.

GOVT 394. Judicial Process
3 Credits
Class examines the structure, function and purpose of the American judicial system. Restricted to: Main campus only.

GOVT 395. Law and Society
3 Credits
Class critically explores the development, role and impact of law on our society, covering different theories of law, conceptions of justice and the values they reflect. These models are then applied to current legal issues. Not a class in legal reasoning, but one where students evaluate their beliefs about the legal system. Restricted to: Main campus only.

GOVT 396. International Law
3 Credits
Nature, growth, and scope of law of nations, rights and obligations of states in peace and war, current issues.

GOVT 399. New Mexico Law
3 Credits
New Mexico legal system, court structure and procedures; legal terms and concepts; constitutional, criminal, mass media, historical and social issues relating to New Mexico. Same as C J 399, HIST 399, JOUR 399, and SOC 399.

GOVT 405. Directed Readings
1-3 Credits
Individualized readings. Course subtitled. May be repeated for a maximum of 6 credits. Graded S/U. Consent of instructor required.

GOVT 406. Independent Study
1-3 Credits
Individualized research. Course subtitled. May be repeated for a maximum of 6 credits. Consent of instructor required.
GOVT 407. Workshop  
1-6 Credits  
Focus on skills related to careers in government and political science. Specific topics announced in the Schedule of Classes; may be repeated for a total of 6 credits. Only 3 credits apply toward government major or minor requirements. Graded S/U.

GOVT 410. Internship  
1-12 Credits  
Hands-on experience working with public agencies, political campaigns, elected officials & non-profits. May be repeated for a maximum of 12 credits; only 3 credits apply toward government major or minor requirements. Consent of instructor required. Graded: S/U.  
Prerequisite(s): Completion of 12 government credits, 2.5 GPA, junior and above standing.

GOVT 411. Service Learning Experience  
3 Credits  
Experiential learning through a community service project. May be subtitiled to reflect service activity. May be repeated for a total of 6 credits; only 3 credits apply toward government major or minor requirements.  
Prerequisites: completion of 12 government credits, junior or above standing, and consent of instructor.

GOVT 412. Practicum in Student Government  
3 Credits  
Research of issues in student government. Consent of instructor required. Graded: S/U.  
Prerequisite(s): Student government participation, completion of 12 GOVT credits, junior or senior standing.

GOVT 415. Senior Seminar  
2 Credits  
Review and integration of political skills acquired in the Government Department. Students will prepare a professional portfolio for entry into the workforce, advanced study, and civic participation. S/U Grading (S/U, Audit).

GOVT 465. Peru: From Incas to Inca Kola  
3 Credits  
Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalization, and the drug trade. Same as ANTH 459 and HIST 459.

GOVT 468. Rebels, Guerrillas, and Terrorists in Modern Latin America  
3 Credits  
Explores history of rebels in Latin America. Examines guerilla struggles attaining national dimension. Focus on modern events, including Peru's Shining Path, Columbia's FARC, and Mexico's Zapatistas. Same as HIST 331.

GOVT 469. Globalization  
3 Credits  
Analysis of the globalization process. Covers theories of globalization, the global economy, political globalization, global culture, transnational social movements, transnational migration and world labor market, global cities, and local-global linkages. Same as SOC 489.

GOVT 473. Germany  
3 Credits  
Political, social, and cultural developments from the eighteenth century to the present, with emphasis on the Nazi era. Same as HIST 383.

GOVT 474. European Politics  
3 Credits  
Politics in European countries, European integration, post-communist states, regionalism and border politics.

GOVT 493. Mass Communications Law  
3 Credits  
Same as JOUR 493 and COMM 493.

GOVT 502. Research Methods in Government  
3 Credits  
Contemporary methods of political analysis, including mathematical and statistical techniques and computer applications. MPA students must complete this class with a B- or better. MA students must complete either GOVT 502 or GOVT 503 with a B- or better.

GOVT 503. Qualitative Research Methods  
3 Credits  
An overview of qualitative research methods such as fieldwork, ethnography, content analysis, case studies, focus groups and grounded theory. Introduces students to epistemology (the study of knowledge) and to basic components of research design. Explores activist scholarship, ethical dilemmas in research, and software tools for computer assisted analysis. Especially useful for students preparing theses, dissertation, or other research projects. MA students must complete either GOVT 503 or GOVT 502 with a B- or better.

GOVT 505. Directed Readings  
1-3 Credits  
Selected topics in government. May be repeated for a total of 6 credits. Graded S/U.  
Prerequisite: consent of instructor.

GOVT 510. Internship  
1-6 Credits  
Assignment with a public agency and research report. Only 3 credits apply toward degree requirements. Graded S/U.  
Prerequisite: approval of graduate advisor.

GOVT 517. Selected Topics in Government  
3 Credits  
Selected issues which may cross sub-fields of the discipline. May be repeated for a total of 6 credits.

GOVT 519. Proseminar in Public Administration  
3 Credits  
Review of classic and contemporary theory and practice in public administration. Application of written and oral skills to the presentation and defense of essays on various aspects of public administration. To be completed with a B- or better.  
Prerequisite(s): 30 credits of M.P.A.

GOVT 522. Public Sector Economics I  
3 Credits  
Same as AEEC 522.

GOVT 523. Public Sector Economics II  
3 Credits  
Same as AEEC 523.

GOVT 524. American Indian Politics  
3 Credits  
Introduction to American Indian tribal governments, politics, policy, and administration; historical and contemporary leadership of Indian Nations; and the history and current status of American Indian-U.S. relations. Students learn about Native peoples’ cultural responses, forms of resistance, and adaptations to colonization.
GOVT 526. Women, Politics and Administration
3 Credits
Examination of women’s participation in U.S. electoral politics as voters, candidates, and officeholders; their political activism in issue-based movements and strategies for affecting public policy; leadership as administrators and managers in public service agencies. Course also covers the influence of feminism in changing women’s roles socially, legally, and politically.

GOVT 527. Issues in Public Management
3 Credits
Selected issues in public management. May be repeated under different subtitles for a total of 6 credits.

GOVT 530. Seminar in Public Policy
3 Credits
Survey of the political, administrative, and technical aspects of policy making in government. MA students taking GOVT 530 as part of their core requirements must complete the class with a B- or better.

GOVT 535. Education Policy and Politics
3 Credits
Overview of current pressing policy issues and political debates on education in the U.S., including school choice, vouchers, accountability, and affirmative action. Multiple topics and perspectives covered, with political economy the main approach.

GOVT 536. Public Policy and Indigenous Communities
3 Credits
Indigenous communities are found throughout North, Central and South America. This course addresses the history, development and governance of these communities. Different sections of the course may choose to focus on different indigenous communities. All courses will consider the principles of governance internal to indigenous communities as well as the governing relationships between indigenous communities and modern states.

GOVT 537. Issues in Public Policy
3 Credits
Selected issues in public policy. May be repeated under a different subtitle for a total of 6 credits.

GOVT 540. Seminar in Public Administration
3 Credits
Survey course on the theory and practice of program, personnel, and financial management in government and the private, nonprofit sector. MA students taking Govt 540 as part of their core requirements must complete the class with a B- or better.

GOVT 541. Public Budgeting
3 Credits
Budgetary processes; budget classification, analysis, and evaluation. MPA students must complete this class with a B- or better.

GOVT 542. Public Sector Human Resources Management
3 Credits
Exploration of public personnel systems and practices, including job analysis, compensation, performance evaluation, recruitment, and labor-management relations. MPA students must complete this class with a B- or better.

GOVT 543. Skills Workshop
1-6 Credits
Focus on management of task skills in selected areas of public administration. Specific topics will appear in the Schedule of Classes; may be repeated for a total of 6 credits.

GOVT 544. Public Policy Analysis
3 Credits
Environment of policy analysis; various descriptive and quantitative designs for analyzing and evaluating public policy. Problems of policy analysis. MPA students must complete this class with a B- or better.

Prerequisite(s): GOVT 502 or consent of instructor.

GOVT 547. Government Organizations
3 Credits
Historical overview and present applications of organization theory in public management. MPA students must complete this class with a B- or better.

GOVT 548. Public Sector Leadership
3 Credits
Theories and styles of leadership.

GOVT 549. Ethics in Government
3 Credits
Examination of standards, perspectives, and issues for ethical decision-making in public agencies. MPA students must complete this class with a B- or better.

GOVT 550. Seminar in American Politics
3 Credits
Overview of American political institutions. Includes study of American constitutional theory; legislative, executive, and judicial functions and processes; political parties and interest groups; and public policy formulation. MA students taking Govt 550 as part of their core requirements must complete the class with a B- or better.

GOVT 553. Issues in American Politics
3 Credits
Selected issues in American Politics. May be repeated under a different subtitle for a total of 6 credits.

GOVT 560. Seminar in International Relations Theory
3 Credits
A critical overview of leading approaches and controversies in international relations theory. The purpose of the course is to introduce students to contending theoretical perspectives and conceptual frameworks that help make sense of contemporary world politics. MA students taking Govt 560 as part of their core requirements must complete the class with a B- or better.

GOVT 561. Nations and Soft Power
3 Credits
Course employs historical, theoretical and practical “best/worst practices” lenses to deal with key questions, such as how do the US and other states present themselves to the world? What are “soft power” and “national reputation management”? How does one build or damage a country’s image and “brand”? What are “public diplomacy” and “cultural diplomacy”, and how do they factor into the foreign relations of the US and other states?

GOVT 562. Advanced Issues in Security and Intelligence Studies
3 Credits
Selective issues in comparative security and intelligence studies.

GOVT 563. Issues in International Relations
3 Credits
Selected issues in international relations. May be repeated under a different subtitle for a total of 6 credits.

GOVT 564. Advanced National Security Policy
3 Credits
Major topical, theoretical, and regional issues in national security policy.
GOVT 566. Advanced Issues in American Foreign Policy  
3 Credits  
Major topical, theoretical, and regional issues in American foreign policy. May be repeated for a maximum of 6 credits under different subtitles.

GOVT 567. Terrorism and Political Violence  
3 Credits  
An advanced graduate course using an interdisciplinary framework to explore definitions, historical roots, contemporary manifestations and future trends in political terrorism. The course seeks to understand modern-day terrorism as a form of political violence.

GOVT 569. Advanced Issues in Globalization  
3 Credits  
Analysis of the globalization process. Covers theories of globalization; global economy; political globalization; global culture; transnational social movements; transnational migration and world labor market; global cities; local-global linkages. Same as SOC 589.

GOVT 570. Seminar in Comparative Politics  
3 Credits  
Examination of methods used for comparing various types of political entities. Investigation of criteria needed to examine a concept across cultures or national boundaries. MA students taking Govt 570 as part of their core requirements must complete the class with a B- or better.

GOVT 571. Seminar in Latin American Politics  
3 Credits  
Overview of the political structures of the Latin American region. Addresses a number of contemporary issues facing Latin American states, including interest groups, the church, labor, political parties, U.S.-Latin American relations, political development.

GOVT 573. Resistance Movements in World Politics  
3 Credits  
Advanced research on violent and non-violent resistance movements around the world. Focus on origins, demands, ideologies, strategies and impacts in the post-Cold War context of economic globalization, US military power and new geopolitical dynamics.

GOVT 574. Contemporary Comparative Studies  
3 Credits  
Major topical, theoretical, and regional issues in international politics. May be repeated once.

GOVT 575. Issues in Comparative Politics  
3 Credits  
Selected issues in comparative politics. May be repeated under a different subtitle for a total of 6 credits.

GOVT 576. Seminar in the U.S.-Mexican Border  
3 Credits  
An analysis of the political environment along the United States-Mexico border and a survey of the literature available for a number of contemporary issues.

GOVT 577. Seminar in Mexican Politics  
3 Credits  
Advanced research on politics and government of Mexico.

GOVT 580. Seminar in Political Theory  
3 Credits  
Examination of major issues in political theory, including democracy, sovereignty, classical and modern traditions of thought. May be repeated with different subject matter. MA students taking GOVT 580 as part of their core requirements must complete the class with a B- or better.

GOVT 587. Seminar in Religion and Politics  
3 Credits  
Historical, theoretical and comparative analyses of the interaction between politics and religion.

GOVT 590. Seminar Public Law and Legal Systems  
3 Credits  
Focus on U.S. Constitutional Law and other national legal systems. MA students taking Govt 590 as part of their core requirements must complete the class with a B- or better.

GOVT 591. Law for Administrators  
3 Credits  
Case-law definitions of the legal roles and powers of public administrators.

GOVT 592. Issues in Public Law  
3 Credits  
Selected issues in public law. May be repeated under a different subtitle for a total of 6 credits.

GOVT 596. International Law  
3 Credits  
Nature, growth and scope of law of nations; rights and obligations of states in peace and war; current issues.

GOVT 598. Special Research Programs  
1-3 Credits  
Individual investigations either theoretical, analytical or experimental. Three credits may be taken per semester for a total of 6 credits for thesis students, and 9 credits for non-thesis students. Consent of instructor required.

GOVT 599. Master's Thesis  
1-15 Credits  
Thesis.

GPHY-GEOPHYSICS (GPHY)

GPHY 340V. Planet Earth  
3 Credits  

GPHY 450. Selected Topics  
1-3 Credits  
Readings, discussions, lectures or laboratory studies of selected areas of geophysics. May be repeated for a maximum of 12 credits.  
**Prerequisite:** consent of instructor.

GPHY 510. Geophysical Field Methods  
1-3 Credits (3-9P)  
Field collection, reduction, and interpretation of geophysical data; equipment operation.

GPHY 520. Selected Topics  
1-3 Credits  
Formal treatment of graduate topics not covered in regular courses. May be repeated for unlimited credit.  
**Prerequisites:** graduate standing, consent of instructor, and selection of a specific topic prior to registration.

GPHY 530. Seismology  
3 Credits  
Seismic wave propagation in a layered earth, ray theory, exploration techniques, earth structure, and seismicity.  
**Prerequisites:** PHYS 511, MATH 472, or equivalent.
GPHY 540. Physics of the Earth and Planetary Interiors
3 Credits
Prerequisites: consent of instructor.

GPHY 560. Applied Inverse Theory
3 Credits
Inversion of data with an emphasis on geophysical problems. Curve fitting, tomography, earthquake location, over determined and under determined problems, linear and nonlinear problems. Computing experience desirable.
Prerequisite(s): Either MATH 280, equivalent, or consent of instructor.

GPHY 598. Special Research Problems
1-3 Credits
Individual investigations, either analytical or experimental. May be repeated for unlimited credit.

GPHY 599. Master's Thesis
15 Credits
Thesis.

GPHY 620. Advanced Topics in Geophysics
3 Credits
Advanced formal treatment of a topic or topics not covered in regular courses. May be repeated for unlimited credit.
Prerequisite: consent of instructor.

GPHY 630. Theoretical Seismology I
3 Credits
Advanced treatment of wave propagation, ray theory, inversion methods, extension to heterogeneous media, and free oscillations.
Prerequisite(s): GPHY 530.

GPHY 700. Doctoral Dissertation
15 Credits
Dissertation.

HIST-HISTORY (HIST)

HIST 101G. Roots of Modern Europe
3 Credits
Economic, social, political, and cultural development from earliest times to about 1700.

HIST 102G. Modern Europe
3 Credits
Economic, social, political, and cultural development from 1700 to the present.

HIST 110G. Making History
3 Credits
General introduction to history: how historians carry out research and develop interpretations about the past.

HIST 111G. Global History to 1500
3 Credits
Global economic, social, political and cultural developments to 1500. Thematic approach.

HIST 112G. Global History Since 1500
3 Credits
Global economic, social, political and cultural developments since 1500. Thematic approach.

HIST 201G. Introduction to Early American History
3 Credits
History of the United States to 1877, with varying emphasis on social, political, economic, diplomatic, and cultural development.

HIST 202G. Introduction to Recent American History
3 Credits
History of the United States since 1877, with varying emphasis on social, political, economic, diplomatic, and cultural development.

HIST 211G. East Asia to 1600
3 Credits
History of China, Korea, Vietnam, and Japan from earliest times through the sixteenth century. Emphasis on cultural and political developments and their social and economic contexts, and the interaction between East Asian societies.

HIST 212G. East Asia since 1600
3 Credits
History of China, Korea, Vietnam, and Japan from the sixteenth through the twentieth centuries. Emphasis on internal development of each country, as well as the social and political impact of Western Imperialism, and the emergence of each country's unique version of modern society.

HIST 221G. Islamic Civilizations to 1800
3 Credits
History of Islamic civilizations to 1800.

HIST 222G. Islamic Civilizations since 1800
3 Credits
History of Islamic civilizations since 1800.

HIST 261. New Mexico History
3 Credits
Economic, political, and social development of New Mexico from exploration to modern times. Community Colleges only.

HIST 269. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. Community Colleges only. May be repeated for a maximum of 12 credits.

HIST 300. Special Topics
1-9 Credits (1-9)
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 18 credits.

HIST 302V. Science in Modern Society
3 Credits
The social impact of scientific activity and thought from Newton to the present. The growth of modern scientific institutions; the political and social context of modern science. ENGL 111G recommended.
HIST 304. The Global Cold War
3 Credits
Survey of the global history of the Cold War. The emergence of the USSR and US as global superpowers, their involvement in the end of the European great-power empire, the rise of petropolitics and the nuclear era, modern terrorism, and the creation of the First, Second and Third Worlds all have their roots in the Cold War. Although the Iron Curtain ran through Europe, with the Berlin Wall considered its main front, the Cold War’s impact was not limited to Europe. Proxy wars were fought all over the world; the globe became a set or arenas of contestation. Students will carefully read historical documents as well as textbooks and literary works; in addition to close analysis of different kinds of sources, we will explore different kinds of historical writing.

HIST 309. American Indian History I
3 Credits
Cultural and social change from before contact with Europeans to 1840.

HIST 310. American Indian History II
3 Credits
Federal Indian policy, tribal histories, and the emergence of Pan-Indianism from 1840 to present.

HIST 311V. Colonial Latin America
3 Credits
Social, political, and economic development from Columbus to the Wars of Independence. Research paper required.

HIST 312V. Modern Latin America
3 Credits
Post-revolutionary developments in the nineteenth and twentieth centuries; the role of Latin America in world affairs and the Inter-American system. Research paper required.

HIST 313. Making the American West
3 Credits
Development of the American West from 1803 to 1900 with emphasis on conquest, federal and corporate roles in western development, environmental change, and the Mythic West. Includes meetings outside regular class time to view feature-length films.

HIST 315. From the Wild West to the Atomic West
3 Credits
Explores the transformation of the West with particular attention to the roles of race, class, gender and culture. Includes meetings outside regular class time to view feature-length films.

HIST 316. History of Women in the American West
3 Credits
Experiences and interactions among Native American, Spanish/Mexican, immigrant, and Anglo-American women in the American West from 1500 to the present. Same as WS 316.

HIST 321. History of Korea
3 Credits
Social, political, and cultural history of Korea from earliest times through twentieth century. Emphasis on the interaction between Korean traditions and influences from China and the West.

HIST 323. Cultural History of Later Imperial China
3 Credits
Covers art and literature of China from the Tang Dynasty (618-907) through the eighteenth century. Developments in cultural theory and practice are traced in the context of the social and economic changes fostering an understanding of Chinese cultural history and its legacy in East Asia today.

HIST 323 L. Splendor of Imperial China
1 Credit
This course consists of a FLIP trip to China, Spring 2014 which will explore the significant sites of imperial Chinese culture by spending 14 days traveling in China. Crosslisted with: ART 311 L and HIST 323.

HIST 324. History of Modern Terrorism in the Middle East and Europe
3 Credits
Historical analysis of the motives, methods, organization, and actions of terrorist groups.

HIST 325. History of the Arab-Israeli Conflict
3 Credits
History of the causes, course, and consequences of the Arab-Israeli conflict.

HIST 329. History of Egypt
3 Credits
History of Egypt from ancient times to the present.

HIST 330V. Introduction to Religious Studies
3 Credits
Provides an overview of old and new methods and theories for the study of religion. Exposure to the ways groups of people in diverse cultural systems construct and change their religious traditions to serve practical and meaningful ends. Same as SOC 330V and ANTH 330V.

HIST 331. Rebels, Guerrillas, and Terrorists in Modern Latin America
3 Credits
Explores history of rebels in Latin America. Examines guerilla struggles attaining national dimension. Focus on modern events, including Peru’s Shining Path, Colombia’s FARC, and Mexico’s Zapatistas. Same as GOVT 468.

HIST 334. Art and Life in Renaissance Italy
3 Credits
Examines how Italian Renaissance textual and visual culture offered Europe new ways of seeing and portraying itself, 1350-1550. Topics include: Florence, Venice, Rome, Leonardo, Michelangelo, Titian, humanism, the Medici, and republican and courtly culture. Same as ART 444.

HIST 338. World War I
3 Credits
Cultural, social, and intellectual background and impact of World War I. Military and diplomatic events of the war. Consequences of the war.

HIST 339. World War II
3 Credits
Social, cultural and political aspects of World War II, in addition to traditional military events. Emphasis on U.S. involvement.

HIST 340. American Economic History
3 Credits
The rise of big business and organized labor, increasing price rigidities, and growing government intervention. Same as ECON 340.

HIST 341. American Agricultural History
3 Credits
From Colonial times to the present, with emphasis upon historical development, politics, and legislation, especially in recent times.

HIST 342. Early American Military History
3 Credits
Emphasis on American wars up to and including the Civil War, and on the factors contributing to the development of modern military systems.
HIST 343. Recent American Military History
3 Credits
Emphasis on American wars since the Civil War, and on factors contributing to the development of modern military systems.

HIST 346. The Jacksonian Era 1800-1840
3 Credits
Jeffersonian period, War of 1812. Social, political, and economic history of the Jacksonian era.

HIST 347. Civil War Era 1840-1877
3 Credits
Mexican-American War, development of secession, American Civil War, Reconstruction.

HIST 353. Colonial Mexico
3 Credits
Covers major social, political, economic and cultural topics including pre-Columbian civilizations, early European incursions and indigenous responses, economic systems and labor exploitation, religion and spirituality, and resistance to colonial rule. Sixteenth to nineteenth centuries.

HIST 354. Modern Mexico
3 Credits
Examines the history of modern Mexico through the lens of the Mexican Revolution, 1910-1920. Course covers military, political, social, cultural and economic developments that shaped Mexico during and after the Revolution.

HIST 355. The Mexican Revolution
3 Credits
Examines the history of modern Mexico through the lens of the Mexican Revolution, 1910-1920. Course covers military, political, social, cultural and economic developments that shaped Mexico during and after the Revolution.

HIST 356. The Mexican Revolution
3 Credits
Examines the history of modern Mexico through the lens of the Mexican Revolution, 1910-1920. Course covers military, political, social, cultural and economic developments that shaped Mexico during and after the Revolution.

HIST 357. The Mexican Revolution
3 Credits
Examines the history of modern Mexico through the lens of the Mexican Revolution, 1910-1920. Course covers military, political, social, cultural and economic developments that shaped Mexico during and after the Revolution.

HIST 358. The Mexican Revolution
3 Credits
Examines the history of modern Mexico through the lens of the Mexican Revolution, 1910-1920. Course covers military, political, social, cultural and economic developments that shaped Mexico during and after the Revolution.

HIST 359. The Mexican Revolution
3 Credits
Examines the history of modern Mexico through the lens of the Mexican Revolution, 1910-1920. Course covers military, political, social, cultural and economic developments that shaped Mexico during and after the Revolution.

HIST 360. The Mexican Revolution
3 Credits
Examines the history of modern Mexico through the lens of the Mexican Revolution, 1910-1920. Course covers military, political, social, cultural and economic developments that shaped Mexico during and after the Revolution.

HIST 361. Afro-American History I
3 Credits
African background, slave trade, slavery; Civil War and Reconstruction; free blacks in a white society to about 1900.

HIST 362. Afro-American History II
3 Credits
Black Americans in the United States in the twentieth century; segregation; black leaders, organizations, methods and goals; white reaction; the struggle for equality.

HIST 365. Cold War Europe
3 Credits
Course deals with the Cold War’s bipolar international climate as well as the individual paths charted by each European nation in response. Events, leaders, thinkers, ideas and developments will all be featured.

HIST 366V. British Imperialism
3 Credits
Survey of the activities of the British empire from the 16th century through the 20th century, with emphasis on Ireland, North America and India. Assesses the impact of imperial activities on British domestic politics, culture and social history, and the process and impact of decolonization.

HIST 367. Mexican-Americans in the United States
3 Credits
Emigration; reception; impact upon society, politics, economics, and culture.

HIST 368. Teaching History
3 Credits
Philosophical and practical issues of teaching history are explored. Designed to help prospective teachers at all levels clarify their views about studying history. A variety of pedagogical strategies for teaching history are explored.

HIST 369. History of Latinos in the United States
3 Credits
Development of Latino communities since 1500 in what is today the U.S. Emphasis on 1846 to present, and on Mexican Americans, Puerto Ricans, and Cuban Americans. Major themes: race, colonialism, immigration, nationalism, class, culture, gender, and politics.

HIST 371. Ancient Greece
3 Credits
Social, cultural, and political history of Greece from the Minoan to Hellenistic periods.

HIST 372. The Roman World
3 Credits
Republic and Empire; Rome as a world power; institutional, cultural, and intellectual contributions; decline and fall.

HIST 373. Islam and the West: Cultural Contacts, Conflicts and Exchanges
3 Credits
Examines interactions, encounters and cross-fertilization between the Islamic world and the West from the seventh to the twenty-first centuries. Course includes origins of Islam, relationships between Islam, Judaism, and Christianity, and concludes with the post 9/11 present. May be repeated up to 3 credits.

HIST 374V. The European City: History and Culture
3 Credits
Course presents the rich, complex history and cultures of European cities from ancient to modern times, linking these cities to crucial issues in European history. Crosslisted with HON 374V, GEOG 374V, GOVT 374V.

HIST 376. Great Battles That Shaped Europe
3 Credits
Considers the most significant battles in the West from the 13th century BCE (Troy) to the 16th century CE (Spanish Armada).

HIST 379. History of Italy: Rome to the Twentieth Century
3 Credits
Examines the history of Italy from the Etruscan period (600 BCE) through the Roman Empire and Renaissance period to the 21st century CE.

HIST 382V. Modern Russia
3 Credits
Domestic policies and foreign relations from mid-nineteenth century to the present with emphasis on the Soviet period.

HIST 383. Germany
3 Credits
Political, social, and cultural developments from the eighteenth century to the present, with emphasis on the Nazi era. Same as GOVT 473.

HIST 385. The Spanish Borderlands
3 Credits
Examines historical relationships between Native American and Hispanic peoples in northern Mexico, American Southwest and other border regions from 1500s to 1821.
HIST 386. New Mexico History
3 Credits
Economic, political and social development of New Mexico from exploration to modern times.

HIST 387. Spain
3 Credits
From pre-Roman times to the modern era.

HIST 388. Women in Europe I
3 Credits
The roles of women and constructions of gender in medieval and early modern Europe, 1100 - 1550. Examines how conceptions of gender and sexuality both shaped and were shaped by political and social transformations in European history. Same as W S 388.

HIST 390V. The Holocaust
3 Credits
The attack upon European Jews by Adolf Hitler and the National Socialist Party in Germany and occupied Europe from his accession to chancellor in 1933 until the end of the Third Reich in 1945.

HIST 391. Twentieth Century World History
3 Credits
Includes globalization; imperialism; World Wars I and II and the changing roles of Europe: the Cold War; decolonization; the rise and collapse of Communism; new social and intellectual movements; and the growing roles of East Asia, India, Latin America, Africa and the Middle East. Thematic examples.

HIST 392. Tudor-Stuart England, 1485-1715
3 Credits
British history from 1485-1715, including the development of the monarchy and Parliament, the Protestant Reformation, the English Civil War and Restoration, and culture and society.

HIST 394. Victorian and Edwardian Britain, 1815-1914
3 Credits
Evolution of constitutional monarchy; industrialism and imperialism; repose and reform; increased influence of an intellectual elite and the emergence of the Labor Party.

HIST 395. From Rule Britannia to Cool Britannia: Twentieth-Century Britain
3 Credits
Edwardian Era, World War I; Reconversion, the 1926 General Strike; the Great Depression and appeasement; Churchill and the war against Nazi Germany; nationalization and the Welfare State.

HIST 397. Introduction to Public History
3 Credits
Surveys how historians do history in museums, archives, government agencies, and in communities. Hands-on experience provides students a better understanding of history and how historians work outside of the classroom. Seminar project required.

HIST 398. Historians and History
3 Credits
General historiography and philosophy of history; historical methodology, research, and writing; bibliographical aids and their uses. May be repeated up to 3 credits. Restricted to: HIST majors.

HIST 399. New Mexico Law
3 Credits
Same as GOVT 399, C J 399, JOUR 399, and SOC 399.

HIST 400. Special Topics
1-9 Credits (1-9)
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 401. Environmental History
3 Credits
Seminar discusses how the natural environment and people have shaped each other, and how people have perceived and imagined the natural world. May focus upon one specific topic or area. Course includes a field trip outside regular class times.

HIST 402. Special Topics in European History
3 Credits
Special topics in European history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 403. Special Topics in Middle Eastern History
3 Credits
Special topics in Middle Eastern history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 404. Special Topics in Asian History
3 Credits
Special topics in Asian history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 406. Special Topics in United States History
3 Credits
Special topics in United States history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 408. Cultures of Africa
3 Credits
Explores the rich history and cultural diversity of the continent of Africa. The course first examines the historical processes that have shaped modern Africa, including the evolution of modern humans in Africa, the origins of agriculture and pastoralism, the formation of indigenous African states, the slave trade, and European colonialism. The course also looks at contemporary African societies, including hunter-gatherer, pastoral, and farming/fishing peoples. In addition, contemporary issues facing modern Africa such as famine and agricultural policy, the status of women, and environmental changes such as deforestation are discussed. Crosslisted with: ANTH 404

HIST 410. New Mexico History for Educators
3 Credits
Course provides content and innovative techniques for teachers of New Mexico history. Covers pre-contact Native American history through Spanish Colonial and Mexican periods through the twentieth century.

HIST 411. Making the American West
3 Credits
This seminar course explores the history of disease, dying, death and funeral practices, and may include such topics as the social and cultural histories of murder, suicide, epidemics, death in wartime, the death penalty, and/or the corpse. The class may be taught with a different national or chronological focus in different semesters. Crosslisted with: HIST 513.

HIST 412. Travel Writing
3 Credits
Explores how writers describe their travels with an emphasis on the history of a place. Semester paper required. Crosslisted with: HIST 512.
HIST 413. Native American History
3 Credits
Seminar explores the history of Native Americans, including tribal conflicts, interactions with Europeans and Euro-Americans, land loss, degradation of natural resources, federal Indian policy, pan-Indian movements, cultural resistance and revitalization, and modern tribal economies.

HIST 415. Western American History
3 Credits
Seminar explores the development of the American West with emphasis on conquest, federal and corporate impact on the West, environmental changes, and the mythic West. Includes extra class meetings to view feature-length films.

HIST 417. The Mongol Empire
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 517.

HIST 419. Central Asia
3 Credits
An introduction to the political, cultural and social history of the Central Asian region from pre-history to the present, including coverage of the empires of the Mongols, Tamerlane and their successors. Crosslisted with: HIST 519.

HIST 420. History of Women and Gender
3 Credits
Seminar discusses the position of women and the roles of both sexes in a specific historical and geographic setting. Course emphasizes the ways in which women and gender were both central to and fundamentally affected by all political and social transformations in history.

HIST 423. The History of Food
3 Credits
Considers the history of the production and consumption of food in the West from the Neolithic Age to the present with an emphasis on the historical relationships between food, gender, social class, social identity and nationalism. Crosslisted with: HIST 523.

HIST 424. History of Art, Thought and Literature
3 Credits
Seminar discusses a variety of artistic and literary expressions in their historical contexts and focuses on the ways in which cultural forms both reflect and construct the broader historical trends that surround them.

HIST 425V. History of Magic and Witchcraft in Medieval and Renaissance Europe
3 Credits
Examines history of popular and scientific beliefs about magic and witchcraft in medieval and early modern Europe. Includes origins of occult Western sciences; Arabic sources of medieval magic; the occult sciences in scholasticism; witchcraft and scholasticism; witchcraft and medieval theology, witch hunts of the 16th and 17th centuries; and the decline of belief in magic and witchcraft. Emphasis on boundaries that defined and separated magic, science, and religion in Western thought from late antiquity through the Scientific Revolution. Crosslisted with: HON 425.

HIST 428. History of Terrorism in Modern Europe and the Middle East
3 Credits
Analyzes causes, methods, and consequences of terrorism in Europe and the Middle East from the Reign of Terror in the French Revolution to Al-Qaeda, Hamas and Hezbollah in the contemporary Middle East and beyond.

HIST 431. History of Race and Ethnicity
3 Credits
Seminar explores the historical social construction of race and ethnicity, and their relationship to other systems of social difference such as class and gender. Course will examine popular and academic theories of race and ethnicity as well as historical concrete effects of racial and ethnic differences in society.

HIST 432. United States Labor History to 1877
3 Credits
Seminar discussions explore United States labor and working-class history since 1877, including such topics as industrial labor, slavery, debt peonage, indentured servitude, and housework. May explore the history of labor organization, working-class culture and leisure activities, and responses to labor issues by the state.

HIST 433. United States Labor History Since 1877
3 Credits
Seminar discussions explore United States labor and working-class history since 1877, including such topics as industrial labor, debt peonage, and housework. May explore the history of labor organization, working-class culture and leisure activities, and responses to labor issues by the state.

HIST 434. Urban History
3 Credits
Seminar discusses cities as complex catalysts for cultural, political, and scientific development, both within cities themselves and more broadly for their nations and regions. Course deals with such topics as the relationship between social organization and physical space; city development, morphology and dynamics; and the cultural and intellectual history of cities.

HIST 435. History of War and Revolution
3 Credits
Seminar covers historical dynamics of violent social, political, and economic transitions. May focus upon a particular war or upheaval, such as World War II or the French Revolution, or may examine more generic characteristics of conflict and radical change across many historical examples. Extensive readings in scholarly literature. Research projects relating to specific course contents.

HIST 436. Nations and Nationalism
3 Credits
Seminar examines major theories of nationalism from the nineteenth century to the twenty-first century. Course includes nationalist case studies, from liberal nationalist state-building to ethnic cleansing in the Balkans.

HIST 438. Antiquity and Modernity
3 Credits
Seminar explores links between earlier and more recent historical periods. Examples may include the Renaissance rediscovery of ancient Rome or the early modern Chinese reassessment of its classical Confucian heritage. Readings include ancient sources and the modern reception of such works, and the scholarly assessment of these processes. Individual research projects required in areas of student interests.
HIST 443. The Cold War in Latin America
3 Credits
Seminar discusses Latin American political history during the Cold War. Course focuses on how Latin Americans (individuals, parties, military, states) acted in an increasingly politicized arena defined by growing United States concerns over Cuban and Soviet influence in the area.

HIST 448. Nuclear Nation
3 Credits
Explores post-World War II history and the impact atomic energy has had on the United States and the world.

HIST 449. Readings
1-3 Credits
Individual study of selected readings and problems. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

HIST 453. Cuba: Colony to Castro
3 Credits
Economic, social, and political development of Cuba and other colonies and nations in the Caribbean with emphasis on recent events.

HIST 455. Brazil
3 Credits
Economic, social, and political development of Brazil since independence. The influence of Brazil in the international arena.

HIST 459. Peru: From Incas to Inca Kola
3 Credits
Explores issues of cultural and national identity in Peru from the Incas to the present, focusing on the modern period. Themes include indigenous resistance and adaptation to colonial rule, nationalism, militarism, terrorism, globalization, and the drug trade. Same as ANTH 459 and GOVT 465.

HIST 471. China through the Ming Dynasty
3 Credits
History of China from origins to Ming dynasty, (1368-1644). Cultural and political development with emphasis on social and economic contexts and long term trends.

HIST 472. China in the Modern World
3 Credits
History of China from seventeenth through twentieth centuries. Rise and fall of the Manchu Qing dynasty, internal dynamics of social and political change in nineteenth and twentieth centuries, impact of Western Imperialism, and development of the Peoples Republic since 1949.

HIST 473. History of Japan
3 Credits
History of Japan through twentieth century. Political and cultural developments and their social and economic contexts. Chinese influence on early Japan, rise of Samurai and Shogunate, impact of Western Imperialism, and emergence of modern Japan.

HIST 474. Gender in East Asian History
3 Credits
Examines the position of women and the social roles of both sexes in traditional China and Japan, and traces the changes taking place in those societies in the course of modernization in the last century and a half. Scholarly literature and works of Chinese and Japanese literature in translation and cinema used. Same as W S 474.

HIST 475. History of the Global Political Economy
3 Credits
Traces development of global systems of economic interaction and the rise of European military and political dominance in the 18th and 19th centuries. Emphasis on East and South Asian roles in early modern history, and on challenges to European dominance in the 20th and 21st centuries.

HIST 479. Oral History
3 Credits
Oral history through readings, discussions, and interviews. Semester project required that includes an interview and transcript.

HIST 481. Time Traveling Through New Mexico's Past
3 Credits
Teaches historians and educators how to make history come alive. Semester project includes role playing characters and activities from a past era with local schools and museums.

HIST 483. Historic Preservation
3 Credits
Study of community development, the historic preservation movement, and the built environment. Field project.

HIST 486. Interpreting Historic Places for the Public
3 Credits
Explores historic site interpretation, the scholarship and philosophy of historic interpretation, and the nature of heritage interpretation for historic places.

HIST 488. Projects in History
3 Credits
Individual projects in history. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

HIST 500. Special Topics
1-9 Credits (1-9)
Specific subjects to be announced in the Schedule of Classes. Graduate research paper required. May be repeated for a maximum of 12 credits.

HIST 503. The Jacksonian Era, 1800-1840
3 Credits
Jeffersonian period, War of 1812. Social, political, and economic history of the Jacksonian era. Graduate research paper required.

HIST 504. Civil War Era, 1840-1877
3 Credits
Mexican-American War, development of secession, American Civil War, Reconstruction. Graduate research paper required.

HIST 507. The History of Food
3 Credits
Considers the history of the production and consumption of food in the West from the Neolithic Age to the present, with an emphasize on the historical relationships between food, gender, social class, social identity and nationalism. Crosslisted with: HIST 423.

HIST 508. Environmental History
3 Credits
Seminar discusses how the natural environment and people have shaped each other, and how people have perceived and imagined the natural world. May focus upon one specific topic or area. Course includes a field trip outside regular class times.
HIST 509. Native American History
3 Credits
Seminar explores the history of Native Americans, including tribal conflicts, interactions with Europeans, and Euro-Americans, land loss, degradation of natural resources, federal Indian policy, pan-Indian movements, cultural resistance and revitalization, and modern tribal economies.

HIST 510. New Mexico History for Educators
3 Credits
Course provides advanced content and innovative techniques for teachers of New Mexico history. Covers pre-contact Native American history through Spanish Colonial and Mexican periods through the twentieth century.

HIST 511. Making the American West
3 Credits
Development of the American West from 1803 to 1900, with emphasis on conquest, federal and corporate roles in western development, environmental change, and the mythic West. Includes extra class meetings to view feature-length films. Graduate research paper required.

HIST 512. Travel Writing
3 Credits
Explores how writers describe their travels with an emphasis on the history of a place. Semester paper required. Crosslisted with: HIST 412.

HIST 513. American Social and Cultural History to 1900
3 Credits
This seminar course explores the history of disease, dying, death and funeral practices, and may include such topics as the social an cultural histories of murder, suicide, epidemics, death in wartime, the death penalty, and/or the corpse. The class may be taught with a different national or chronological focus in different semesters. Crosslisted with: HIST 411.

HIST 514. History of Latinos in the United States
3 Credits
Development of Latino communities since 1500 in what is today the United States. Emphasis on 1846 to present, and on Mexican Americans, Puerto Ricans, and Cuban Americans. Major themes: race, colonialism, immigration, nationalism, class, culture, gender, and politics. Graduate research paper required.

HIST 515. U.S. Immigration from the Caribbean since 1868
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 516. From the Wild West to the Atomic West
3 Credits
Explores the transformation of the West, with particular attention to the roles of race, class, gender, and culture. Includes extra class meetings to view feature-length films. Graduate research paper required.

HIST 517. History of Women in the American West
3 Credits
An introduction into the political, cultural and social history of the Central Asian region from pre-history to the present, including coverage of the empires of the Mongols, Tamerlane and their successors. Crosslisted with: HIST 419.

HIST 518. History of Women and Gender
3 Credits
Seminar discusses the position of women and the roles of both sexes in specific historical and geographic setting. Course emphasizes the ways in which women and gender were both central to and fundamentally affected by all political and social transformations in history.

HIST 519. History of Terrorism in Modern Europe and the Middle East
3 Credits
Examines history of popular and scientific beliefs about magic and witchcraft in medieval and early modern Europe. Includes origins of occult Western sciences; Arabic sources of medieval magic; the occult sciences in scholasticism; witchcraft and scholasticism; witchcraft and medieval theology, witch hunts of the 16th and 17th centuries; and the decline of belief in magic and witchcraft. Emphasis on boundaries that defined and separated magic, science, and religion in Western thought from late antiquity through the Scientific Revolution.

HIST 520. Art, Thought and Literature
3 Credits
Seminar discusses a variety of artistic and literary expressions in their historical contexts and focuses on the ways in which cultural forms both reflect and construct the broader historical trends that surround them.

HIST 521. History of Latinos in the United States
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 522. History of America's Unfinished Revolution
3 Credits
Explores the transformation of the West, with particular attention to the roles of race, class, gender, and culture. Includes extra class meetings to view feature-length films. Graduate research paper required.

HIST 523. History of Women in the American West
3 Credits
An introduction into the political, cultural and social history of the Central Asian region from pre-history to the present, including coverage of the empires of the Mongols, Tamerlane and their successors. Crosslisted with: HIST 419.

HIST 524. History of Terrorism in Modern Europe and the Middle East
3 Credits
Examines history of popular and scientific beliefs about magic and witchcraft in medieval and early modern Europe. Includes origins of occult Western sciences; Arabic sources of medieval magic; the occult sciences in scholasticism; witchcraft and scholasticism; witchcraft and medieval theology, witch hunts of the 16th and 17th centuries; and the decline of belief in magic and witchcraft. Emphasis on boundaries that defined and separated magic, science, and religion in Western thought from late antiquity through the Scientific Revolution.

HIST 525. Art, Thought and Literature
3 Credits
Seminar discusses a variety of artistic and literary expressions in their historical contexts and focuses on the ways in which cultural forms both reflect and construct the broader historical trends that surround them.

HIST 526. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 527. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 528. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 529. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 530. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 531. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 532. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 533. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 534. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 535. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.

HIST 536. History of America's Unfinished Revolution
3 Credits
Examines the history and legacy of the Mongol World Empire founded by Chinggis Khan and his sons, and the dynasties that came to dominate Inner Asia in its wake. Crosslisted with: HIST 417.
HIST 538. Special Topics in European History
3 Credits
Advanced special topics in European history to be announced in the schedule of classes. May be repeated for a maximum of 12 credits.

HIST 540. Special Topics in Middle Eastern History
3 Credits
Advanced special topics in Middle Eastern history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 541. Intellectual History of Modern Europe
3 Credits
Culture and ideas in Europe from 1600 to the present, from the Scientific Revolution to Postmodernism, including ideas and their expression in science, art, literature, and politics. Graduate research paper required.

HIST 543. Special Topics in Asian History
3 Credits
Advanced special topics in Asian history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 544. Special Topics in Latin American History
3 Credits
Advanced special topics in Latin American history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 545. Special Topics in United States History
3 Credits
Advanced special topics in United States history to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

HIST 546. World War I
3 Credits
Cultural, social, and intellectual background and impact of World War I. Military and diplomatic events of the war. Consequences of the war. Graduate research paper required.

HIST 547. World War II
3 Credits
Social, cultural, and political aspects of World War II, in addition to traditional military events. Emphasis on U.S. involvement. Graduate research paper required.

HIST 548. Nuclear Nation
3 Credits
Explores post-World War II history and the impact that atomic energy has had on the United States and the world.

HIST 549. Graduate Readings
1-3 Credits
Individual study of selected readings and problems. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

HIST 549 L. Splendors of Imperial China
1 Credit
This course consists of a FLIP trip to China, Fall 2014 which will explore the significant sites of imperial Chinese culture by spending 14 days traveling in China. Consent of Instrctor required. Crosslisted with: HIST 323 L and ART 511 L.

HIST 551. Colonial Mexico
3 Credits
Political, economic, and social development from the Aztecs to 1821. Graduate research paper required.

HIST 552. Modern Mexico
3 Credits
From independence to the present, with emphasis on the Revolution. Graduate research paper required.

HIST 553. Cuba: Colony to Castro
3 Credits
Economic, social, and political development of Cuba and other colonies and nations in the Caribbean, with emphasis on recent events. Graduate research paper required.

HIST 554. Brazil
3 Credits
Economic, social, and political development of Brazil since independence. The influence of Brazil in the international arena. Graduate research paper required.

HIST 555. Latin America
3 Credits
Origins, causes, and scope of the Mexican Revolution, including leading personalities, with emphasis on the U.S.-Mexican border. Graduate research paper required.

HIST 556. History of Egypt
3 Credits
Crosslisted with: ANTH 559 and GOVT 565

HIST 557. The Mexican Revolution
3 Credits
Examines interactions, encounters and cross-fertilization between the Islamic world and the West, as well as its legacy for both civilizations.

HIST 558. The Cold War in Latin America
3 Credits
Study of the activities of the British empire from the 16th century through the 20th century, with emphasis on Ireland, North America and India. Assesses the impact of imperial activities on British domestic politics, culture and social history, and the process and impact of decolonization.

HIST 559. Peru: From Incas to Inca Kola
3 Credits
Crosslisted with: ANTH 559 and GOVT 565

HIST 560. History of Egypt
3 Credits
Advanced study of history of Egypt from ancient through modern times. Includes the study of Egypt's interactions with the Middle East and the West, as well as its legacy for both civilizations.

HIST 561. Islam and the West: Cultural Contacts, Conflicts and Exchanges
3 Credits
Examines interactions, encounters and cross-fertilization between the Islamic world and the West from the seventh to the twenty-first centuries. Course includes origins of Islam, relationships between Islam, Judaism, and Christianity, and concludes with the post 9/11 present.
Prerequisites: C or higher grade in HIST 221G or HIST 222 or HIST 461; or enrollment in one of these courses at the same time as enrollment in HIST 561.

HIST 566. British Imperialism
3 Credits
Survey of the activities of the British empire from the 16th century through the 20th century, with emphasis on Ireland, North America and India. Assesses the impact of imperial activities on British domestic politics, culture and social history, and the process and impact of decolonization.

HIST 568. Urban History
3 Credits
Seminar discusses cities as complex catalysts for cultural, political, and scientific development, both within cities themselves and more broadly for their nations and regions. Course deals with such topics as the relationship between social organization and physical space; city development, morphology and dynamics; and the cultural and intellectual history of cities.

HIST 570. The Cold War in Latin America
3 Credits
Seminar discusses Latin American political history during the Cold War. Course focuses on how Latin Americans (individuals, parties, militaries, states) acted in an increasingly politicized arena defined by growing United States concerns over Cuban and Soviet influence in the area.
HIST 571. China through the Ming Dynasty
3 Credits
History of China from origins to Ming Dynasty, 1368-1644. Cultural and political development with emphasis on social and economic contexts and long term trends. Research paper required.

HIST 572. China in the Modern World
3 Credits
Covers the history of China from 17th through 20th centuries. Rise and fall of the Manchu Qing dynasty, internal dynamics of social and political change in the 19th and 20th centuries, impact of Western imperialism, and development of the Peoples Republic since 1949. Research paper required.

HIST 573. History of Japan
3 Credits
Covers the history of Japan through the 20th century. Political and cultural developments and their social and economic contexts. Chinese influence on early Japan, rise of Samurai and Shogunate, impact of Western imperialism, and the emergence of modern Japan. Research paper required.

HIST 574. Gender in East Asian History
3 Credits (3+2P)
Examines the position of women and the social roles of both sexes in traditional China and Japan, and traces the changes taking place in those societies in the course of modernization in the last century and a half. Scholarly literature and works of Chinese and Japanese literature (in translation) and cinema used. Same as W S 574.

HIST 575. History of the Global Political Economy
3 Credits
Traces development of global systems of economic interaction and the rise of European dominance in the 18th and 19th centuries. Emphasis on East and South Asian roles in early modern history, and on challenges to European dominance in the 20th and 21st centuries.

HIST 576. The Holocaust
3 Credits
Advanced study of the attack on European Jews by Adolf Hitler and the National Socialist Party in Germany and occupied Europe from his accession as chancellor in 1933 until the end of the Third Reich in 1945.

HIST 578. Modern Russia
3 Credits
Domestic policies and international relations from the mid-nineteenth century to the present with emphasis on the Soviet experience.

HIST 579. Oral History
3 Credits
Oral history through readings, discussion, and interviews. Course project required that includes an interview and transcription.

HIST 580. Graduate Research Projects
1-6 Credits (1-6)
Intensive investigation of a selected area of history, including the completion of a research paper or a public history project. Consent of instructor required.

HIST 581. Time Traveling Through New Mexico's Past
3 Credits
Instructs historians and educators on how to make history come alive. Semester project includes role playing characters and activities from a past era with local schools and museums.

HIST 582. History and Memory
3 Credits
Seminar examines the interplay of memory and history. Explores how various nations and people construct the narratives of their past.

HIST 583. Advanced Historic Preservation
3 Credits
Covers the community development, the historic preservation movement, and the built environment. Field project and additional graduate work.

HIST 585. Public History Internship
3 Credits
Individual project in an area of public history, including a final written report. Research project required. May be repeated for a maximum of 9 credits.
Prerequisite: consent of instructor.

HIST 586. Interpreting Historic Places for the Public
3 Credits
Advanced study of historic site interpretation, the scholarship and philosophy of historic interpretation, and the nature of heritage interpretation for historic places.

HIST 587. United States Labor History to 1877
3 Credits
Seminar discussions explore United States labor and working-class history to 1877, including such topics as pre-industrial and industrial labor, slavery, debt peonage, indentured servitude and housework. May explore the history of labor organization, working-class culture and leisure activities, and responses to labor issues by the state.

HIST 588. United States Labor History since 1877
3 Credits
Seminar discussions explore United States labor and working-class history since 1877, including such topics as pre-industrial and industrial labor, slavery, debt peonage, indentured servitude and housework. May explore the history of labor organization, working-class culture and leisure activities and responses to labor issues by the state.

HIST 590. Reading Seminar: Borders, Boundaries and Frontiers
3 Credits
Explores questions and issues concerning different kinds of borders, boundaries and frontiers. Introduces relevant theoretical literature and considers specific places and times through case studies, including U.S.-Mexico border. Restricted to students in HIST program.

HIST 591. Reading Seminar: Modernity and its Discontents
3 Credits
Examines the problem of modernization and the meaning of becoming and being modern, including positive and negative effects on individuals, cultures, environments and societies.

HIST 592. Reading Seminar: Nature and Society
3 Credits
Considers how humans and nature have reshaped each other, how people have perceived nature, how different cultures have understood their relationships to nature, and how social groups and nations have struggled over natural resources. Takes a comparative, transnational approach.

HIST 593. Reading Seminar: History, Myth and Memory
3 Credits
Course analyzes the complex and often contested process of writing national histories, creating national heroes, and forging collective memories. Students assess written texts, memorials, parades and celebrations.
HIST 594. Public History Seminar
3 Credits
Introduction to the discipline of public history, including its methodology and literature. Fieldwork is required.

HIST 596. Research Seminar
3 Credits
Research seminar teaches students the process of conducting original historical research with primary source documents. Students will then use these research skills to produce a polished chapter or article-length manuscript. Restricted to HIST majors.

HIST 597. Public History Article
1-9 Credits (1-9)
Researching and writing an article suitable for publication about a student's public history internship or other topic of interest within the field of public history.

HIST 598. Craft of History: Historical Theories, Methods, and Criticism (f)
3 Credits
Introduction to historical theories, methodologies, criticism, and skills essential to graduate study in history. Required for all history graduate students; restricted to history majors.

HIST 599. Master's Thesis
15 Credits
Thesis.

**HIT-HEALTH INFO TECHNOLOGY (HIT)**

HIT 110. Electronic Health Records
3 Credits
Current electronic health record principles, methods and procedures, and computerized medical record concepts and software applications will be introduced. Restricted to: Community Colleges only.
Prerequisite(s): HIT 150 or AHS 120.

HIT 120. Health Information Introduction to Pharmacology
3 Credits
Introduction to the principles of pharmacology, including drug terminology; drug origins, forms, and actions: routes of administration; as well as the use of generic name drugs, trade name drugs and categories of drugs to treat multiple and specific body systems.

HIT 130. Health Information Technology Anatomy & Physiology
3 Credits
An introductory course in the basics of human structure and function. Body systems are examined as to how they relate to proper code selection and as part of the functioning of the body as a whole. Restricted to Community Colleges campuses only.

HIT 140. Health Information Introduction to Pathophysiology
3 Credits
Introduction to the nature of disease and its effect on body systems. Disease processes affecting the human body via an integrated approach to specific disease entities will be presented including a review of normal functions of the appropriate body systems. Diseases will be studied in relation to their etiology, pathology, physical signs and symptoms, diagnostic procedures, complications, treatment modalities and prognosis.

HIT 150. Introduction to Medical Terminology
3 Credits
The study and understanding of medical terminology as it relates to diseases, their causes and effects, and the terminology used in various medical specialties. Emphasis will be placed on learning the basic elements of medical words, appropriate spelling and use of medical terms, and use of medical abbreviations. Restricted to: Community Colleges only.

HIT 158. Advanced Medical Terminology
3 Credits
Builds upon the concepts covered in HIT 150 or AHS 120 providing greater understanding of how to properly use and apply medical terminology used in the various health fields. Medical terminology associated with the body system’s anatomy and physiology, pathology, diagnostic and therapeutic procedures, pharmacology, and abbreviations will be emphasized. Restricted to Community Colleges campuses only.
Prerequisite(s): HIT 150 or AHS 120.

HIT 221. Internship I
1-3 Credits (1-3)
Work experience that directly relates to a student’s major field of study that provides the student an opportunity to explore career paths and apply knowledge and theory learned in the classroom. Internships may be paid or unpaid. Students are supervised/evaluated by both the employer and the instructor. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: HIT & BOT majors. S/U Grading (S/U, Audit). Restricted to Dona Ana campus only.

HIT 228. Medical Insurance Billing
3 Credits
Comprehensive overview of the insurance specialist's roll and responsibilities. Concepts and applications that will assist the student in understanding the steps necessary for successfully completing the insurance claim filing and reimbursement processes for various insurance carriers, both private and government, will be emphasized. Restricted to Carlsbad campus only.
Prerequisite(s): HIT/NURS 150; BOT 208.

HIT 240. Health Information Quality Management
3 Credits
Introduction to basic concepts of quality improvement and performance improvement as they apply to health record systems and the health care industry. Quality assessment and improvement standards and requirements of licensing, accrediting fiscal and other regulatory agencies will be presented.

HIT 248. Medical Coding I
3 Credits (2+2P)
Comprehensive overview of the fundamentals, coding conventions, and principles of selecting the most appropriate ICD-10-CM/PCS diagnostic and procedure codes. The most recent version of ICD-10-CM/PCS and an in depth study of current Official Coding Guidelines for coding and reporting will be emphasized. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): BOT 228.

HIT 255. SPECIAL TOPICS
3 Credits
Specific topics to be announced in the Schedule of Classes. May be repeated up to 6 credits. Restricted to Community Colleges campuses only.
HIT 258. Medical Coding II
3 Credits (2+2P)
Continuation of Medical Coding I. Comprehensive overview of the coding and reporting guidelines, fundamentals, coding conventions, and principles of selecting the most appropriate CPT and HCPCS procedural codes for all medical specialties. The most recent version of CPT and a continued study of the ICD-10-CM/PCS coding conventions and principles will be emphasized. Designed as a medical coding capstone course. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): HIT 248.

HIT 268. Health Information Systems
3 Credits
Overview of health data management, work planning, and organization principles; an introduction to health care information systems; and review of the fundamentals of information systems for managerial, clinical support, and information systems.

HNDS-HUMAN NUTRITION & DIET (HNDS)

HNDS 201. Seminar 1- The Field of Dietetics
1 Credit
This course will introduce students to the field experience, careers, and professions in nutrition. This course is required for students pursuing a Didactic Program in Dietetics verification statement. May be repeated up to 1 credits. Consent of Instructor required. Restricted to: HNDS majors. Restricted to Las Cruces and Dona Ana campuses.

HNDS 251. Human Nutrition
3 Credits
Principles of normal nutrition. Relation of nutrition to health. Course contains greater amounts of chemistry and biology than HNDS 163. Open to nonmajors.

HNDS 300. Special Topics
1-4 Credits
Specific topics and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

HNDS 350. Nutrition Throughout the Lifecycle
3 Credits
Relationship of the stages of the human life cycle to changes in nutrient need.
Prerequisites: BIOL 254 and (HNDS 163 or HNDS 251), or consent of instructor.

HNDS 360. Food for Health
4 Credits
This course is designed to provide students the opportunity to learn about the intersection of nutrition and health in terms of food and diet. Students will be introduced to basic concepts within nutrition education, nutrition communication, nutrition and health and food culture.
Prerequisite(s): FSTE 263, HNDS 251.

HNDS 363. Quantity Food Production and Service
6 Credits (1+10P)
Covers quantity food production including cooking concepts, sanitation and safety, teamwork, and management responsibilities. Students will apply this knowledge developing product for sale in a student run restaurant. Proof of current ServSafe or NM Food Handler certification required. May be repeated up to 6 credits. Crosslisted with: HRTM 363.
Prerequisite(s): HRTM 263.

HNDS 401. Field Experience- Clinical Dietetics
1-8 Credits (1-8)
Experience in various areas of clinical nutrition facilities with emphasis on nutrition care of patients. Practical experience with supervision by resident faculty as well as supervisor at work site. Performance at work site graded in accordance with university standards. May be repeated for a maximum of 8 credits. Consent of instructor required. Restricted to: Main campus only.
Prerequisite(s): HNDS 201, overall GPA of 2.5 or higher and junior or senior standing and consent of instructor.

HNDS 403. Community Nutrition
3 Credits
Overview of the practice of community nutrition. Includes program planning, needs assessment, program implementation and program evaluation. Role of public and private agencies in nutrition programs that impact on nutrition of individuals and groups in the community.
Prerequisite: HNDS 350 or consent of instructor.

HNDS 404. Maternal, Infant and Child Nutrition
3 Credits
Nutritional needs and status during pregnancy, infancy, childhood, and adolescence. Applications also made to preschools and day care centers.
Prerequisite: HNFS 251 or consent of instructor.

HNDS 405. Seminar II- Entering the Field of Dietetics
1 Credit
Students will develop professional materials that will be used in their future careers including a personal statement, curriculum vitae, resume, and interview dialogues. Students will become familiar with career options in the field of dietetics and learn to navigate the processes of becoming a registered dietitian or dietetic technician, registered. Consent of Instructor required. Crosslisted with: HNDS 505. Restricted to: HNDS majors.
Prerequisite(s): Students must be enrolled in their last fall semester prior to planned graduation from the DPD program; HNDS 201, HNDS, 251, HNDS 350.
Corequisite(s): HNDS 403, HNDS 446, AND HNDS 448.

HNDS 407. Field Experience Community Nutrition
1-8 Credits
Experience working with nutritional problems of individual families of all socioeconomic and age levels and with agencies concerned with community nutrition. Practical experience with supervision by resident faculty as well as supervisor at the work site. Performance at work site graded in accordance with university standards. May be repeated for a maximum of 8 credits. Restricted to majors.
Prerequisites: HNFS 201, overall GPA of at least 2.5 and junior or senior standing or consent of instructor.

HNDS 409. Dietetic Science Capstone
3 Credits
This course will provide a cumulative review and assessment of the foundational knowledge, concepts, and skills presented throughout the didactic program in nutrition and dietetics to ensure readiness to proceed within the field of dietetics. Students will apply professional skills to prepare them for their future careers. Students will also be guided through the dietetic internship application process. Consent of Instructor required. Crosslisted with: HNDS 509. Restricted to: Dietetics Option majors.
Prerequisite(s): Students must be enrolled in their last spring semester prior to planned graduation from the DPD program.
HNDS 410. Sports Nutrition
3 Credits
Role of nutrition in physical performance of competitive and recreational sports participants.
Prerequisites: BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.

HNDS 420. Nutrition Counseling and Communication
3 Credits
This course is designed to meet the needs of individuals entering the healthcare/dietetics field who have little counseling experience, but have a strong foundational knowledge in the field of dietetics. It includes counseling techniques and strategies, behavior change, interviewing, cultural competence, mass media, and nutrition education. Consent of instructor required.
Prerequisite(s): HNDS 251, HNDS 350.

HNDS 430. Food Service Organization and Management
3 Credits
Personnel, financial and general management in institutional and commercial food service operations.
Prerequisite: junior/senior standing or consent of instructor.

HNDS 440. Nutrition Education and Research
3 Credits
Course will enable students to apply general education and research knowledge to the field of nutrition. Nutrition information will be applied to education topics including learning objective development, backwards design of curriculum, student centered learning and learning assessment. Crosslisted with: HNDS 540.
Prerequisite(s)/Corequisite(s): HNDS 251, 350, and 360.

HNDS 446. Diet Therapy I
3 Credits
Special diets and physiological basis for their use. Laws and regulations concerning the practice of dietetics.
Prerequisites: BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.

HNDS 446 L. Diet Therapy I Laboratory
1 Credit
Supplements HNDS 446. Students will perform nutrition assessments, nutrition focused physical exams, apply medical nutrition therapy-based interventions and practice patient discharge education for specific disease states. Must be taken with HNDS446. Restricted to: HNDS majors.
Corequisite(s): HNDS 446.

HNDS 448. Advanced Nutrition
3 Credits
Application of biochemistry and physiology to nutrition. Restricted to: Main campus only.
Prerequisite(s): BIOL 254, BCHE 341, and HNFS 251, or consent of instructor.

HNDS 449. Diet Therapy II
3 Credits
Continuation of HNDS 446.
Prerequisite: HNDS 446 or consent of instructor.

HNDS 449 L. Diet Therapy II Laboratory
1 Credit
Supplements HNDS 449. Students will apply medical nutrition therapy to specific disease states with special emphasis on writing nutrition support orders and learning to utilize nutrition support equipment. Must be taken with HNDS449. Restricted to: HNDS majors.
Corequisite(s): HNDS 449.

HNDS 450. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

HNDS 455. Billing and Coding for Dietetics
3 Credits
This course provides students with an overview of billing and coding practices for medical nutrition therapy that ensure proper reimbursement for services. Students will learn nutrition related billing codes, apply nutrition care process terminology to documentation, and discover how policy affects current and future coverage of nutrition services. Crosslisted with: HNDS 555.
Prerequisite(s): HNDS 446, HNDS 449.

HNDS 492. Special Problems
1-4 Credits
Individual research study in a selected subject area of family and consumer sciences. Maximum of 4 credits per semester and a total of 8 credits.

HNDS 500. Orientation to Dietetic Internship
3 Credits
Dietetic interns prepare for supervised practice rotations. Topics include professionalism, Code of Ethics, and dietetic internship portfolios. Consent of Instructor required.
Prerequisite(s): Acceptance into Dietetic Internship program.

HNDS 501. Advanced Animal Nutrition (so)
3 Credits
Same as ANSC 501.
Prerequisite: CHEM 211 or consent of instructor.

HNDS 507. Laboratory Techniques in Nutrition
4 Credits (2+6P)
Methodology and experimental procedures in measuring nutrient requirements and values of diets. Same as ANSC 507.
Prerequisites: ANSC 422 and CHEM 321, or consent of instructor.

HNDS 509. Dietetic Science Capstone
3 Credits
This course will provide a cumulative review and assessment of the foundational knowledge, concepts, and skills presented throughout the didactic program in nutrition and dietetics to ensure readiness to proceed within the field of dietetics. Students will apply professional skills to prepare them for their future careers. Students will also be guided through the dietetic internship application process. Consent of Instructor required. Crosslisted with: HNDS 409.
Prerequisite(s): Students must be enrolled in their last semester of the DPD program.
HNDS 510. Graduate Study in Sports Nutrition
3 Credits
Role of nutrition and nutrients in physical performance of competitive and recreational sports participants. Additional work required at the graduate level.
Prerequisites: BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.

HNDS 512. Research Methods in Animal Science
4 Credits
Same as ANSC 512.

HNDS 517. Graduate Seminar
1 Credit
Current topics. Same as ANSC 515.
Prerequisite: consent of instructor.

HNDS 522. Animal Nutrition (f)
3 Credits
Same as ANSC 522.
Prerequisite: CHEM 211.

HNDS 530. Graduate Studies in Food Service Organization and Management
3 Credits
Personnel, financial, and general management in institutional and commercial food service operations. Additional work required at the graduate level.

HNDS 546. Diet Therapy I
3 Credits
Special diets and physiological basis for their use. Laws and regulations concerning the practice of dietetics. Additional assignments beyond HNFS 446 required for students registering in HNDS 546.
Prerequisites: BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.

HNDS 548. Graduate Studies in Advanced Nutrition
3 Credits
Covers biochemistry and physiology applied to nutrition. Students enrolled in the 500-level class will be required to complete additional assignments beyond what is required for HNDS 448. Restricted to: Main campus only.
Prerequisite(s): BIOL 254, BCHE 341, and HNDS 251, or consent of instructor.

HNDS 549. Diet Therapy II
3 Credits
Continuation of HNDS 546.
Prerequisites: HNDS 546 or consent of instructor.

HNDS 551. Graduate Study in Community Nutrition
3 Credits
Overview on the practice of community nutrition to include program planning, needs assessment, program implementation and program evaluation. Role of public and private agencies in nutrition programs that impact on nutrition of individuals and groups in the community. Additional work required at the graduate level.
Prerequisite: HNDS 350 or consent of instructor.

HNDS 560. Dietetic Intern Seminar
1 Credit
Portfolio development for dietetic interns during supervised practice rotations. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Acceptance into the NMSU dietetic internship.

HNDS 562. Dietetic Internship: Supervised Practice in Community Nutrition
1-8 Credits (2-6P)
Provides dietetic interns with a minimum of 500 clock hours of supervised practice in community nutrition to include an emphasis in Cooperative Extension Service. Dietetic interns work under the guidance of faculty and community nutrition professionals. May be repeated up to 8 credits. Consent of Instructor required. Restricted to: HNFS majors.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 563. Community Nutrition for Dietetic Interns
3 Credits
Advanced topics in community nutrition to include conducting community nutrition needs assessments, program planning and grant writing. Consent of instructor required. Restricted to HNDS majors.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 564. Dietetic Internship: Supervised Practice in Food Service Management
1-5 Credits (2-10P)
Provides dietetic interns with a minimum of 300 clock hours of supervised practice in foodservice management. Dietetic interns work under the guidance of faculty and foodservice management professionals. Students must complete a total of 4 credit hours of HNDS 564. May be repeated up to 5 credits. Consent of Instructor required.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 565. Foodservice Management for Dietetic Interns
3 Credits
Advanced topics in foodservice systems management to include business planning and marketing. Consent of Instructor required. Restricted to: HNFS majors.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 566. Dietetic Internship: Supervised Practice in Clinical Dietetics
1-8 Credits (2-16P)
Provides dietetic interns with a minimum of 500 clock hours of supervised practice in clinical dietetics. Dietetic interns work under the guidance of faculty and dietetics professionals. May be repeated up to 8 credits. Consent of Instructor required.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 567. Nutrition Care Process for Dietetic Interns
3 Credits
Advanced topics in nutrition care process and model to include medical nutrition therapy and evidence-based research and outcomes assessment in clinical dietetics. Consent of instructor required. Restricted to HNDS majors.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 568. Review Course for National RD Exam
3 Credits
Completion of dietetic internship portfolio and preparation for the national registration examination for dietitians. Consent of Instructor required.
Prerequisite(s): Acceptance into Dietetic Internship.

HNDS 590. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree.
HNDS 598. Special Research Programs
1-4 Credits
Individual investigations either analytical or experimental. Maximum of 4 credits per semester and no more than 6 credits toward a degree.

HNDS 626. Nutrient Metabolism II: Carbohydrates, Lipids, and Energetics (se)
4 Credits
Same as ANSC 626.

HON-HONORS (HON)

HON 115. Journeys of Discovery
1 Credit
Weekly conversations among students and a faculty member; organized around a particular subject and a small selection of readings. The seminars illuminate the many paths of discovery explored by the New Mexico State University faculty.
Prerequisite(s): Honors eligible.

HON 200. Cognitive Science
3 Credits
An interdisciplinary investigation of intelligence. Core disciplines include cognitive psychology, computer science (artificial intelligence), philosophy, and linguistics. Examination of perception, memory, language, reasoning, problem solving, and consciousness from the varying perspectives of the core disciplines.

HON 205G. Life, Energy, and Evolution
4 Credits (3+3P)
Principles of modern biological science with discussion on the impact of this science in today's world. Selected topics include principles of metabolism, genetics, physiology, evolution, and ecology. Students who pass HON 205G will fulfill the same requirements fulfilled by BIOL 111G and BIOL 111GL.

HON 208G. Music in Time and Space
3 Credits
Survey of music as it interacts with art, mathematics, science (acoustics), and ideas from exotic cultures through the history of Western civilization.

HON 214. Successful Fellowship Writing
1 Credit
Same as HON 314, for freshmen and sophomores.

HON 216G. Encounters with Art
3 Credits
A multicultural examination of the principles and philosophies of the visual arts and the ideas expressed through them.

HON 218. Women Across Cultures
3 Credits
Historical and critical examination of women's contributions worldwide with emphasis on the issues of representation that have contributed to exclusion and marginalization of women and their achievements. Restricted to: Main campus only. Crosslisted with: W S 202G

HON 219G. Earth, Time, and Life
4 Credits (3+3P)
Covers how the earth's materials form, processes involved in changing the earth's configuration, and extent of people's dependence upon the earth's resources. Includes mineral and energy resources, development of landscapes, environmental problems, evolution of the earth and life forms. May be taken in place of GEOL 111G.

HON 222G. Foundations of Western Culture
3 Credits
Critical reading of seminal texts relating to the foundations of culture and values in Western civilization, from ancient Greece to about 1700. Focus on the development of concepts of nature, human nature, and the state.

HON 225G. History of Ethics
3 Credits
A critical examination of questions with respect to the meaning and justification of moral judgments and principles. Provides a basic preparation for serious study of contemporary moral problems.

HON 227G. Plato and the Discovery of Philosophy
3 Credits
Examines arguments and theories found in the Platonic dialogues with a view to determining the nature and value of philosophy both from Plato's point of view and absolutely.

HON 228G. Religion and the State
3 Credits
Moral and political questions that arise in connection with church-state relations, including religious toleration, separation of church and state, the individual's moral duty to ignore religious convictions when performing functions of democratic citizenship, and the extent to which these ideas are embodied in our nation's traditions.

HON 229G. The New Testament as Literature
3 Credits

HON 230G. Bamboo and Silk: The Fabric of Chinese Literature
3 Credits
Introductory survey of traditional and modern Chinese prose and poetry in translation with emphasis on genre, theme, and social/historical context.

HON 232G. The Human Mind
3 Credits
Examination of the current understanding of the intricate relationship between mind and matter, with particular emphasis on the functional organization of the human brain. Evolutionary origins of this functional design and its implications for understanding human emotional and cognitive processes.

HON 233. Social Problems
3 Credits
Introduction to contemporary social problems from multiple perspectives. Discussions of definition, impact, and prospective solutions to major social issues, such as crime, drug abuse, social inequality, family, population, environment, and social change.

HON 234G. The Worlds of Arthur
3 Credits
Arthurian texts and traditions from medieval chronicle histories to modern novels. Emphasis on both the continuities of the Arthurian tradition and the diversity of genres, media, and cultures that have given expression to the legend.
HON 239G. Medieval Understandings: Literature and Culture in the Middle Ages
3 Credits
Intensive, interdiscipliary introduction to the thought and culture of medieval Europe. Core texts will include works by St. Augustine, Marie de France, and Dante, as well as anonymous works such as Sir Gawain and the Green Knight, all supplemented by study of medieval art, architecture, philosophy, and social history.

HON 242G. Claiming an American Past
3 Credits
Survey of history of the United States in the nineteenth and twentieth centuries, with an emphasis on multicultural social and cultural history. Focus on understanding American history from the point of view of dispossessed, impoverished, and disenfranchised Americans who have fought to claim both their rights as Americans and American past.

HON 248G. The Citizen and the State: Great Political Issues
3 Credits
The fundamental questions of politics: why and how political societies are organized, what values they express, and how well they satisfy those normative goals and the differing conceptions of citizenship, representation, and freedom.

HON 249G. American Politics in a Changing World
3 Credits
American politics and policies examined from a historical and global perspective. Philosophical underpinnings of American national government, the structure of government based on that philosophy, and the practical implications of both the philosophical and structural base. How American government influences and is influenced by the world community.

HON 255G. Principles of Human Communication Honors
3 Credits
Study and practice of interpersonal, small group, and presentational skills essential to effective social, business, and professional interaction.

HON 270G. Theatre: Beginnings to Broadway
3 Credits
Intercultural and historical overview of live theatre production and performance, including history, literature and professionals. Students attend and report on stage productions.

HON 304V. Dilemmas of War and Peace
3 Credits
A multi-disciplinary introduction to war, peace, and world order studies. The origins of war and the foundations of peace are explored in the context of a rapidly changing world order.

HON 305V. Global Environment
3 Credits
Covers global environmental problems with focus on causes and possible solutions.

HON 306V. Science, Ethics and Society
3 Credits
Investigation of the ethical issues related to scientific investigation and the ethical implications of scientific discoveries for society. Emphasis on discussion of case studies about specific ethical issues in science, and readings by both scientists and non-scientists.

HON 308V. Into the Final Frontier
3 Credits
Exploration of space; a brief review of the history of space flight, the Apollo program, joint U.S.-Soviet space missions, and unstaffed exploration of the planets. Emphasis on knowledge gained through these efforts. Includes new space initiatives.

HON 313. Research and Writing
3 Credits
Workshop format designed to prepare students for research and writing associated with production of an honors thesis or a major research assignment. Does not count for general education or honors certification credit.

HON 314. Successful Fellowship Writing
1 Credit
Provides scholars with hands-on skills to complete proposals for fellowships such as the Truman, Rhodes, Marshall, Goldwater, Udall, and others. Other skills include how to write resumes, develop general research skills, and find grant and foundation sources.

HON 318V. The World of Cinema
3 Credits
Appreciation of the art of motion pictures as world-wide medium specific to national cultures. Refinement of cinematic literacy and critical viewing skills. Historical and thematic overview emphasizes collaborative nature of medium in various genres from 1895 to present. Selected films from different periods and different countries. Substantial library research projects.

HON 319V. Science, Ethics and Society
3 Credits
Investigation of the ethical issues related to scientific investigation and the ethical implications of scientific discoveries for society. Emphasis on discussion of case studies about specific ethical issues in science, and readings by both scientists and non-scientists.

HON 321V. Agriculture in an Interconnected World
3 Credits
Study of the impact of agriculture on cultural and social systems, with special emphasis on twentieth century urban development.

HON 324V. Science and the Arts: Theatre and Story
3 Credits
This course examines present day relations between the sciences and the representation and communication of science, especially in connection with theatre, narrative fiction, and autobiography. Crosslisted with: THTR329.

HON 326V. Art and Mythology
3 Credits
Mythological figures, past and present, in the visual arts. Through iconographical studies (attributes and symbols), trace the development of visual traditions that evolved from the literary sources of classical Mediterranean mythology.
HON 328V. Rock History: 20th Century Popular Music
3 Credits
Evolution of popular music in the 20th Century. Examines the history of popular music conventions, influences, and breakthroughs through the 20th Century. Topics include the origination of major music styles and their evolution as cultivated by key artists, scientific advancements, and sociopolitical change, contextualized within the contemporaneous history. Of particular concern are the influences of groundbreakers; the effect of evolving playback electronics, recording devices, and musical instruments; and the interplay between music and economic depression, war, civil rights, sexual revolution, and other sociopolitical events.

HON 335V. Legal Issues in Modern Society
3 Credits
Case study approach to contemporary legal problems involving environment, consumer protection, international law, corporate responsibility.

HON 336. Latina Feminisms: Testimonios from the Borderlands
3 Credits
This course is about the testimonies and autobiographical writings of and by Latinas in the United States. Life stories are told through many forms: “testimonios,” memoirs, autobiographies and autobiographical fiction, oral histories and short stories, poetry and poetic prose pieces, essays, and audio-stories. Drawing from these sources of knowledge, we will explore feminist epistemologies and cast a critical eye on traditional knowledge claims and objectivity. The course focuses on Chicana/Latina feminist theories, the empirical educational research that draws upon these theories, and testimonios as method, epistemology, and pedagogy. Among the questions we will examine will be those concerning knowledge production, sexual politics, the mind-body-spirit connection, voice, representation, and truth.

HON 340V. Indian Law and Policy
3 Credits
Explores the principles, doctrines, and texts governing the legal relations between the United States and Indian tribes, the history of federal Indian law and policy, tribal property, treaty rights and sovereignty, congressional plenary power, the trust doctrine, jurisdiction in Indian country, and tribal government. Topic specifically examined in the course include tribal lawmaking powers, gaming and economic development in Indian country, protection of Indian religious rights and cultural property, water rights, fishing, hunting and other treaty-based rights.

HON 341V. The Old Testament as Literature
3 Credits (3)
Old Testament surveys a portion of the thirty-nine canonical books of the Old Testament from a literary approach, centered on the so-called historical-critical method that developed in the 19th C under such figures as Julius Wellhausen. Higher criticism of the texts, their sources, authorship, dating and interdependency has led to deeper insights as well as scholarly conflict. In addition, we will examine several apocryphal books that have continuing importance in our understanding of Old Testament. We will read the Old Testament along with an introduction and some supplementary materials.

HON 347V. World Dance
3 Credits
Examination of dance forms from a cross-cultural perspective, focusing on the role of dance in different cultures around the globe. Same as DANC 451V with differential assignments for Honors students.

HON 348V. Comparative Mythology: Myth, Ritual, and the Life Cycle
3 Credits
Exploration of the central myths of several religious traditions and investigation of how each, through ritual, has given meaning to key moments in the journey of the individual through life.

HON 349V. Islam and the West: Cultural Contacts, Conflicts, and Exchanges
3 Credits
This course examines interactions, encounters and cross-fertilization between the Islamic world and the West from the 7th -21st century. It begins with the origins of Islam and its relationship to Judaism and Christianity and ends in the post 9/11 present, an era some characterize as dominated by a "clash of civilizations."

HON 351V. Interpersonal Relations and the Self
3 Credits
Course explores the ways in which culture influences interpersonal relations and conceptions of the self. The course considers a variety of issues such as: interpersonal communications, self-awareness, self-disclosure, non-verbal behavior, intimacy, love, trust, jealousy, conflict management, self-management, culturally determined views of the self, self-presentation, and self-identity. Differences between the way issues are viewed by different groups within our society, as well as between societies, will be considered.

HON 353V. Justice without Prejudice
3 Credits
Exploration of central questions about race, ethnicity, and justice. Students will learn to argue persuasively from different perspectives, both orally and in writing.

HON 362V. Native American Philosophy and Spirituality
3 Credits
Survey of philosophical traditions of Indigenous peoples of the Western Hemisphere. This course examines various forms of spiritual expression which encompasses art, dance, music, political/social activism, and the relationship to land. This course looks at present-day spiritual issues and ongoing practices in Native America.

HON 365V. African and Caribbean: Literature and Film
3 Credits
Selected films and literary works shaped by colonial and post-colonial experiences in contemporary Africa and the Caribbean. Focus on the ongoing search for alternative identities in the form of a decolonized literature and culture.

HON 366V. The Gothic Imagination
3 Credits
Introduction to Gothic literature from its beginnings in the late eighteenth century that focuses on the political, psychological, religious, social, and familial values this literary genre explores and questions.

HON 370V. Design: The Creative Act
3 Credits
Explores the nature of design and what it means to design in various diverse media. Included are creative efforts in writing, art, music, and technology. Commonalities and differences are considered.
HON 371V. Paris: Beyond the Eiffel Tower
3 Credits (3+3P)
This interdisciplinary course focuses on the evolution of the city of Paris from its earliest beginnings in the fifth century to modern times. Through the use of historical, political, sociological and artistic texts and films, we will explore the various narratives which emerge from the built environment of Paris as well as its mythic status as the “City of Light and Romance” and “Capital of Revolution”, Modernity and Art.”

HON 374V. The European City: History and Culture
3 Credits
Historical overview of development, growth, and culture of European cities.

HON 375V. The U.S. City: A History of Race, Space, and Urbanization
3 Credits
This course takes the city as a starting point to understand larger social and political developments in the United States. Processes of segregation and exclusion have placed people of color in the United States on the periphery of social, cultural and geographical power in the nation. We will explore how Asian Americans, Latinas/os, and African Americans have navigated, created, and made sense of urban environments. Students will learn to interpret space for evidence of past and present social relationships, including how race intersects with gender, class, sexuality, and nation.

HON 377V. Freedom of Speech and the Law
3 Credits
Examination of freedom of speech and of press both in the United States and in other societies. Examines a wide range of laws, court rulings and regulatory schemes covering areas such as defamation, sedition, and regulation of broadcasting and advertising.

HON 378V. Technology and Policy
3 Credits
Study of the processes through which society sets goals for science and technology, of the allocation of resources needed to achieve these goals, and of the obligations and conflicts that develop as the goals are realized. International comparisons of public policies.

HON 379V. Literature as Film
3 Credits
Considers the various results of literary adaptations to the screen. Participants will read literary texts written or translated into English and watch films from various countries as illustrations of this process.

HON 380V. Comparative Economic Systems
3 Credits
A global comparison of economic institutions and problems.

HON 381V. Economic Development of Latin America
3 Credits
Economic analysis of problems related to development in Latin America, including the agrarian problem, debt and austerity programs, industrialization, inflation and unemployment, the drug trade, U.S.-Latin American relations, development strategies. Also individual counties' problems.
Prerequisite(s): 3.2 cumulative GPA.

HON 384V. Ethical Decisions in Organizations
3 Credits
Examines ethical decisions in business, non-profit, and governmental organizations from a managerial perspective. Topics include ethical principles, recognition and application of principle-based ethics, stakeholders in ethical decisions, and analysis of the consistency between organizational decisions and ethical principles.

HON 385V. Consumers and the Law
3 Credits
A study of the multidisciplinary synergism of law, societal concerns, business, and ethics of consumer issues and attendant liability and remedies for the domestic and international markets.

HON 387V. Comparative Perspectives on Women
3 Credits
The history, antecedents, and consequences of sex and gender systems around the world from the perspective of sociology, anthropology, and psychology.

HON 388V. Leadership and Society
3 Credits
Exploration of the multifaceted nature of leadership in modern society through readings and seminar discussion.

HON 390. Worlds of Buddhism
3 Credits (3)
This course is an introduction to Buddhism and its contribution to the formation of (East) Asian cultures. It provides students with Buddhist and (East) Asian “case studies” - i.e., examples of the ways in which Buddhism has influenced, and has been influenced by, the region’s various cultural and social milieux over time. The course is designed to offer opportunities to critically reflect on Buddhism as a transformative philosophical, cultural and individual system. May be repeated up to 3 credits.

HON 394V. Southwestern and Border Literature
3 Credits
Introduction to the culturally diverse literature of the American Southwest and borderlands region. Class analyzes evolution of the Southwest concept and considers degree to which the existence of a borderlands culture is manifest in literature.
Prerequisite: honors eligibility.

HON 400. Honors Thesis
3 Credits
Independent-study research and writing project to be carried out under the supervision of a faculty member.
Prerequisite: consent of instructor.

HON 410. Honors Internship
3-6 Credits
Assignments in departments to be supervised by faculty in the area. A cumulative 3.5 GPA is required. May be repeated for a maximum of 12 credits. May be repeated up to 12 credits. Consent of Instructor required.

HON 411V. Great Theorems: The Art of Mathematics
3 Credits
Same as MATH 411G.

HON 420. Independent Studies
1-3 Credits
Directed, individual studies and projects.
Prerequisites: consent of instructor and honors eligibility.

HON 421. Special Topics
1-3 Credits
Special course offerings, with specific titles listed in Schedule of Classes. May be repeated up to 6 credits. Consent of Instructor required. Crosslisted with: EDUC 317V.

HON 422. Directed Research
3 Credits
Individual research projects supervised by faculty advisers. Consent of instructor required.
HON 425V. Magic and Witchcraft in Medieval and Renaissance
3 Credits
Examines the history of popular and scientific beliefs about magic and
witchcraft in medieval and early modern Europe. Topics include the
origins of the occult sciences in the West, Arabic sources of medieval
magic, the occult sciences in scholasticism, witchcraft and medieval
theology, the witch hunts of the sixteenth and seventeenth centuries, and
the decline of belief in magic and witchcraft in the seventeenth century.
Of particular concern are the boundaries that defined and separated
magic, science, and religion in western thought from late antiquity
through the Scientific Revolution. Same as HIST 425 with differential
assignments for HON 425 students. Crosslisted with: HIST 425.

HON 450V. The Sundt Honors Seminar
3 Credits
The Sundt Honors Seminar is a unique, experience-based,
interdisciplinary seminar developed and taught by the holder of the
Sundt Honors Professorship for the year. The subject of the course
will vary according to the discipline of the Sundt Professor. The course
may include a travel experience related to the seminar topic, hosting
of outside specialists, or other unique activity. Open to students by
application. Students selected for the course are named Sundt Scholars.
Prerequisite(s): ENGL 111G or equivalent.

HON 521. Special Topics
3 Credits
Graduate level to be cross-listed with HON 421 Special Topics at the
undergraduate level.

HORT-HORTICULTURE (HORT)

HORT 100G. Introductory Plant Science
4 Credits (3+2P)
Introduction to the physical, biological, and chemical principles
underlying plant growth and development in managed ecosystems.
In the laboratory portion of the class, students perform experiments
demonstrating the principles covered in lecture. The course uses
economic plants and agriculturally relevant ecosystems to demonstrate
basic principles. Appropriate for nonscience majors. Same as
AGRO 100G.

HORT 110. Athletic Field and Golf Course Management
1 Credit
Survey of proper management of athletic fields, golf courses and other
turfgrass stands. Career opportunities in athletic field and golf course
management will be discussed. Course includes field trips to local and
regional sports turf facilities.

HORT 200. Special Topics
1-4 Credits
Specific subjects and credits as announced. Maximum of 4 credits per
semester and a grand total of 9 credits. May be repeated up to 9 credits.
Consent of Instructor required.

HORT 205. Introduction to Horticulture
3 Credits
Principles and practices of horticulture. Basic chemical, physical, and
biological principles that govern plant growth in different environments.
Economics of plant science as related to the field of horticulture. Online
course entirely. Intended for non-majors.

HORT 210. Ornamental Plants I
4 Credits (3+2P)
Covers identification, botanical characteristics, culture, and landscape
uses of woody plants. Emphasis on deciduous trees, native shrubs, and
evergreens.

HORT 211. Ornamental Plants II
4 Credits (3+2P)
Identification, botanical characteristics, culture, and landscape uses of
woody plants. Emphasis on flowering trees, cacti, and members of the
pea and rose families.

HORT 240. Floral Quality Evaluation and Design
2 Credits (1+2P)
Critical hands-on evaluation of the quality of cut and potted floral and
tropical foliage crops, their specific merits and faults, and fundamentals
of floral design.

HORT 241. Floriculture Field Practicum
1 Credit
Participation as team member in the National Intercollegiate Floral
Quality Evaluation and Design Competition. Intensive week-long travel for
competition, networking with industry, academia, and floriculture tours.
May be repeated for a maximum of 3 credits.
Prerequisite(s): HORT 240 or consent of instructor.

HORT 250. Plant Propagation
3 Credits (2+2P)
Practical methods of propagating horticultural plants by seed, cuttings,
layering, grafting, division and tissue culture. Examination of relevant
physiological processes involved with successful plant propagation
techniques. Same as AGRO 250.

HORT 300. Special Topics
1-4 Credits
Specific subjects as announced in the Schedule of Classes. Maximum
of 4 credits per semester and a grand total of 9 credits. May be repeated
up to 9 credits. Consent of Instructor required. Restricted to Las Cruces
campus only.

HORT 302V. Forestry and Society
3 Credits
Global study of the development and use of forest resources for
production of wood, fuel, fiber, and food products. Climatic, edaphic,
cultural, and economic influences on forests of the world evaluated.
Same as RGSC 302V.

HORT 305. Principles of Genetics
3 Credits
Covers fundamental principles of reproduction, variation, and heredity in
plants and animals. Crosslisted with: AGRO 305, ANSC 305, BIOL 305 and
GENE 305
Prerequisite(s): BIOL 111G, BIOL 211G and either CHEM 111G or
CHEM 115.

HORT 307. Landscape Design
3 Credits (1+4P)
Design elements, the design process, and contemporary planting design
used in the design of residential and small commercial landscapes.
Basic drafting, drawing, and landscape plan presentation techniques.
Prerequisites : HORT 210 or HORT 211 or concurrent enrollment or
consent of instructor.

HORT 310. Medicinal Herbs
3 Credits
Introduction to ethnobotany, including plant cultivation, extraction
methods, and analysis of active chemistries.
HORT 315. Crop Physiology
3 Credits
Whole plant physiological processes as related to growth, development, yield, quality and post harvest physiology of crop plants within the environment of the crop community. Crosslisted with: AGRO 315
Prerequisite(s): EPWS/BIOL 314 or consent of instructor.

HORT 365. Principles of Crop Production
4 Credits (3+3P)
Basic principles of crop production including environmental and physiological factors limiting production, plant nutrition and soil science, soil-water management, cropping systems and management, pest management, and economic factors influencing crop production. Crosslisted with: AGRO 365

HORT 377. Introduction to Turfgrass Management
4 Credits (3+3P)
Establishment and maintenance of turfgrass with emphasis on seeding methods, soil and water management, mowing, disease insects and turfgrass varieties. Crosslisted with: AGRO 377

HORT 378. Turfgrass Science
4 Credits (3+3P)
Introduction to the scientific fundamentals for turfgrass management. Cultural practices, pest management, rootzone construction and ecology. Crosslisted with: AGRO 378
Prerequisite(s): HORT 377 or consent of instructor.

HORT 391. Internship
1-6 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 6 credits toward a degree. Consent of instructor required. Graded: S/U. Crosslisted with: AGRO 391 and SOIL 391

HORT 447. Seminar
1 Credit
Review of current literature. Same as AGRO 447 and SOIL 447.

HORT 449. Special Problems
1-3 Credits
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and a grand total of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

HORT 450. Special Topics
1-4 Credits
Specific subjects as announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits. May be repeated up to 9 credits. Consent of Instructor required.

HORT 462. Plant Breeding
3 Credits
Principles and practices involved with the genetic improvement of plants. Same as AGRO 462.
Prerequisites: ANSC/AGRO/BIOL/HORT 305.

HORT 465. Landscape Construction and Maintenance
4 Credits (3+2P)
Application of landscape design and construction principles to build and maintain residential, small commercial and selected public managed landscapes.

HORT 471. Plant Mineral Nutrition
3 Credits
Basic and applied aspects of plant requirements for soil-derived minerals and the processes whereby minerals are acquired, absorbed, translocated, and utilized throughout the plant. Same as AGRO/EPWS 471.
Prerequisite: EPWS/BIOL 314, or concurrent enrollment, or consent of instructor.

HORT 479. Advanced Turfgrass Science
3 Credits
Extensive reviews of turfgrass sciences including ecology, physiology, entomology, pathology, weed science, and soil science. Crosslisted with: HORT 378 or consent of instructor.

HORT 485. Vegetable Crop Management
4 Credits (3+2P)
Physiological, environmental and cultural aspects of vegetable crop production. Crosslisted with: AGRO 365 or HORT 365, or consent of instructor.

HORT 486. Materials from Biorenewable Resources
3 Credits
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: AGRO 485, SOIL 485, ES 485 and CHME 485.
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

HORT 488. Greenhouse Management
4 Credits (3+3P)
Principles and practices involved in greenhouse structures and construction, site considerations, covering materials, heating and cooling systems, greenhouse crop production techniques, and case studies. Crosslisted with: AGRO 485, SOIL 485, ES 485 and CHME 485.

HORT 500. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

HORT 505. Research Orientation
4 Credits (3+2P)
Training in writing research proposals, presentation of research results, and interpretation of research results. Crosslisted with: AGRO 505 and SOIL 505

HORT 506. Plant Genetics
3 Credits
Advanced treatment of the principles of classical genetics and heredity with emphasis on the nature and action of the gene including molecular analysis. CHEM 345 recommended. Same as AGRO 506 and MOLB 506.
Prerequisite: AGRO 305 or consent of instructor.

HORT 514. Soil-Plant Relationships
3 Credits
Physical, chemical, and biological soil environment as it affects plant and crop growth. Same as AGRO/SOIL 514.
Prerequisites: BIOL 314, SOIL 252.
HORT 515. Crop Physiology
3 Credits
Whole plant physiological processes as related to growth, development, yield, quality and post harvest physiology of crop plants within the environment of the crop community. Crosslisted with: AGRO 515
Prerequisite(s): EPWS/BIOL 314 or consent of instructor.

HORT 516. Molecular Analysis of Complex Traits
3 Credits
Provide a comprehensive overview of molecular genetic analysis of complex phenotypes, including case histories/experiments in plants, animals and humans. Emphasize technological developments in DNA marker technologies and their application to molecular quantitative genetics. Explore the efficient application of these technologies in the future to complex genetic systems, breeding, and other areas of life sciences. Same as AGRO 516.
Prerequisite: AGRO 305 or consent of instructor.

HORT 525. Scientific Writing How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review Crosslisted with: AGRO 525, AGRO 625, EPWS 525, SOIL 625 and SOIL 525.
Prerequisite: BIOL 314 or consent of instructor.

HORT 533. Environmental Physiology of Plants
3 Credits
Integral responses of plants and crop productivity to naturally occurring and modified environmental factors such as radiation, temperatures, water vapor, carbon dioxide, and air flow. Same as AGRO/BIOL 533.
Prerequisite: BIOL 314 or consent of instructor.

HORT 590. Graduate Seminar
1 Credit
Current research discussions presented by masters level graduate students. Not more than one credit toward the degree. Same as AGRO/SOIL 590. Crosslisted with: AGRO 590 and SOIL 590.

HORT 595. Internship
1-6 Credits
Supervised professional on-the-job learning experience. Limited to Master of Horticulture or Plant & Environmental Science candidates. Not more than 6 credits toward the degree.

HORT 596. Masters Proposal
1 Credit
Current research proposal written by masters level graduate students. Consent of Instructor required. Crosslisted with: AGRO 596, E S 596, GENE 596 and SOIL 596. Restricted to: Masters HORT; Masters PLEN majors.
Prerequisite(s): Master level graduate students.

HORT 597. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: AGRO 597 and SOIL 597

HORT 598. Special Research Programs
1-6 Credits
Individual investigations, either analytical or experimental. Maximum of 6 credits per semester. No more than 9 credits toward a degree.
Prerequisite: consent of instructor.

HORT 599. Master’s Thesis
15 Credits
Thesis.

HORT 609. Breeding for Plant Disease Resistance
3 Credits
A practically-oriented course of lectures and discussion on concepts and principles of breeding for disease and pest resistance. Labs familiarize students with preparation, quantification, and application of inoculum to hosts. Same as AGRO 609.

HORT 610. Advanced Crop Breeding
4 Credits (3+3P)
Applications of breeding principles to crop improvement. Emphasis on breeding methodologies using modern techniques, including biotechnology. Same as AGRO 610.
Prerequisite: AGRO 462 or consent of instructor.

HORT 620. Instrumentation in Agronomy
3 Credits
Use of instruments used in research in all areas of agronomy including gas chromatography, high performance liquid chromatography, neutron soil moisture probe, and other instruments. Same as AGRO/SOIL 620.

HORT 625. Scientific Writing - How to be a Productive and Effective Writer
1-3 Credits (1-3)
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Students in the 625 course will be required to perform additional research than those students in the 525 cross-listing Crosslisted with: AGRO 525, EPWS 525, HORT 525 and SOIL 525.

HORT 670. Biometrical Genetics and Plant Breeding
3 Credits
A statistical approach to gene action and population parameters as applied to plant improvement. Same as AGRO 670.
Prerequisite: AGRO 462 or consent of instructor.

HORT 685. Plant Genetic Engineering
3 Credits
Analysis of plant genome structure and potential applications of emerging molecular techniques to the genetic improvement of plants. Same as AGRO/BIOL 685.
Prerequisites: HORT/AGRO 585 and AGRO/HORT 506 or CHEM 545, or consent of instructor.

HORT 696. Doctors Proposal
1 Credit
Current research proposal written by PhD level graduate students. Consent of Instructor required. Crosslisted with: AGRO 696, E S 696 and SOIL 696. Restricted to: Doctors PLEN majors.
Prerequisite(s): PhD level graduate students.

HORT 697. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: AGRO 697 and SOIL 697
HOST-HOSPITALITY AND TOURISM (HOST)

HOST 155. Special Topics
1-3 Credits (1-3)
Specific subjects to be announced in the Schedule of Classes. Restricted to: Community Colleges only.

HOST 201. Introduction to Hospitality Industry
3 Credits
Overview of hospitality industry; organization and operation of lodging, food and beverage, and travel and tourism segments; focus on career opportunities and future trends of hospitality industry. Restricted to: Community College campuses only.

HOST 202. Front Office Operations
3 Credits
Hotel/motel front office procedures detailing flow of business, beginning with reservations and extending to the night audit process. Restricted to: Community College campuses only.

HOST 203. Hospitality Operations Cost Control
3 Credits
Management of Food & Beverage facilities using cost control techniques. Functional training in menu analysis and development with all phases of product flow through a Food & Beverage organization explored. Restricted to: Community College campuses only.

HOST 204. Promotion of Hospitality Services
3 Credits
Organization of hotel marketing functions; developing a marketing plan to sell the varied services of the hotel/motel property. Restricted to: Community College campuses only.

HOST 205. Housekeeping, Maintenance, and Security
3 Credits
Function of housekeeping departments, including personnel, sanitation, maintenance, and materials. A survey of security procedures to include guest protection and internal security of hotel/motel assets. Restricted to: Community College campuses only.

HOST 206. Travel and Tourism Operations
3 Credits
Transportation, wholesale and retail operations, attractions, the traveler, tourism development, and operational characteristics of tourism business. Restricted to: Community College campuses only.

HOST 207. Customer Service for the Hospitality Industry
3 Credits
Concepts of service and the customer, integrating the need for service quality, and the continuing efforts to maximize returns for the operation. Classic service styles as well as more modern service techniques are covered. Students gain in-depth managerial knowledge, planning skills, and hands-on techniques for consistently delivering quality and service in a variety of operations. Restricted to: Community College campuses only.

HOST 208. Hospitality Supervision
3 Credits
Strategies for directing, leading, managing change and resolving conflict. Prepares students to meet expectations of management, guests, employees, and governmental agencies. Restricted to: Community College campuses only.

HOST 209. Managerial Accounting for Hospitality
3 Credits
Prepares students to make effective business decisions based on financial report information; forecasting, budgeting, cost analysis. Restricted to: Community College campuses only.
Prerequisite(s): BOT 120 or ACCT 252.

HOST 210. Catering and Banquet Operations
3 Credits
Teaches the basics of catering and banquet operations, including computer coordination, planning, set up, service, and completion. Restricted to Community Colleges campuses only.

HOST 214. Purchasing and Kitchen Management
3 Credits
Technical purchasing concepts, product selection, and specifications. Safety and sanitation as they relate to food service establishments. Prepares student for work with HACCP programs. Restricted to Community Colleges campuses only.

HOST 216. Event, Conference and Convention Operations
3 Credits
The ability to successfully plan, organize, arrange, and execute special events is critical to the success of many hospitality organizations. This course gives the student a grounding in the skills necessary to achieve success in this area. A variety of events are discussed and the similarities and differences with conferences and conventions are explored. Students are taught to organize and plan events of varying type and durations. Sales, logistics, and organizing skills are emphasized. Restricted to: Community College campuses only.

HOST 219. Safety, Security and Sanitation in Hospitality Operations
3 Credits
It is the responsibility of the manager to provide appropriate security, sanitation, and safety precautions in hospitality operations. Preparation for internal and external disasters is an important task for the Hospitality Manager. This course uses the National Restaurant Association ServSafe training material. Restricted to: Community College campuses only.

HOST 220. Experiential Travel
3 Credits
Course provides an opportunity for students to plan, prepare for and experience travel to destinations they might not otherwise have visited. Students experience local culture and peoples. May be repeated up to 9 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): HOST 201 or consent of instructor.

HOST 221. Internship I
1-3 Credits (1-3)
Work experience that directly relates to a student’s major field of study that provides the student an opportunity to explore career paths and apply knowledge and theory learned in the classroom. Internships may be paid or unpaid. Students are supervised/evaluated by both the employer and the instructor. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: OEHS,HOST majors. S/U Grading (S/U, Audit). Restricted to Community Colleges campuses only.

HOST 222. Cooperative Experience II
3 Credits
Continuation of HOST 221. Restricted to majors. Graded: S/U. Restricted to: Community College campuses only. Restricted to HOST majors.
Prerequisite(s): HOST 221.
HOST 223. Travel Agency Principles
3 Credits
Travel agents are called upon to exhibit broad knowledge about many different tourism products. This course prepares students to undertake the challenging job of an agent in a travel agency. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

HOST 224. Travel Agency Booking & Operations
3 Credits
Course trains students to use the common electronic booking software that is found in travel agencies. Familiarization with operational procedures of travel agencies. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

Prerequisite(s): HOST 223.

HOST 230. Wedding Events Management
3 Credits
This course will address various issues that could potentially arise in the preparation and management of a wedding or related event. All aspects of planning and attention to details that will ensure that students are prepared to provide services as a professional wedding planner. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

Prerequisite(s): HOST 223.

HOST 255. Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated up to 9 credits. Restricted to Community Colleges campuses only.

Prerequisite(s): Minimum 3.0 GPA and sophomore standing.

HRTM-HOTEL/RESTAURANT/TOURISM MGT (HRTM)

HRTM 111. Freshman Orientation
1 Credit
Introduction to university life, including available resources and methods to promote success at NMSU. Open to all freshmen and transfer students. Graded S/U.

HRTM 200. Special Topics
1-4 Credits
Specific subjects and credits to be assigned on a semester basis for both lecture and laboratory assignments. May be repeated for a maximum of 4 credits.

Prerequisite: consent of instructor.

HRTM 201. Introduction to Tourism
3 Credits
Survey of travel and tourism development and operating characteristics.

HRTM 221. Introduction to Hospitality Management
3 Credits
Overview of the major segments of the hospitality industry, with a focus on basic management principles.

HRTM 231. Safety, Sanitation and Health in the Hospitality Industry
2 Credits
Addresses public health, HACCP, safety and culinary nutrition responsibilities in the hospitality industry. Sanitation certification test allows students to receive national credential.

HRTM 263. Food Production and Service Fundamentals
3 Credits (1+4P)
Basic overview of food service systems including menu management, purchasing and production. The course includes basic principles of food fabrication and production. Topics include knife skills, culinary terminology, product identification, quality standards, nutritional cooking theory and application of food preparation techniques. The course includes laboratory aspects and demonstration of basic food production techniques, service styles, practices and procedures in food service operations including culinary math. This course provides students with an understanding of food service sanitation and culinary nutrition. Completion of a national certification examination is required. Restricted to Las Cruces campus only.

Prerequisite(s): HRTM 221 or FSTE 263G.

HRTM 301. Hotel, Restaurant, and Tourism Marketing
3 Credits
The development of effective marketing programs for hospitality service organizations. Prerequisites: HRTM 221

HRTM 302. Hospitality Management Accounting
3 Credits
Specialized accounting for hotel revenue and expenses; accounting for inventory, property, and equipment; hospitality payroll accounting; hotel departmental financial statements; income statement, balance sheet, and statement of cash flows; the analysis of financial statements; interim and annual reports; budgeting expenses; forecasting sales; budgetary reporting and analysis; and financial decision making.

Prerequisite: ACCT 221.

HRTM 304. Hospitality and Travel Law
3 Credits
Specialized applications of the law to the hospitality and tourism industry.

Prerequisite: HRTM 221.

HRTM 307. Professional Development
1 Credit
Covers essential elements of career management including preparation for a successful internship. Restricted to majors. Graded S/U.

HRTM 311. Hospitality Leadership Management
3 Credits
Examines modern leadership theory in the context of the hospitality industry. Connects contemporary leadership topics to their historical antecedents through focused reading, discussion and film.

Prerequisites: HRTM 221 and HRTM 201.

HRTM 331. Hotel Operations I
3 Credits
Analysis of hotel systems design, process, and applications for operating areas including guest services, reservations, reception, telecommunications, guest/city ledger, and the night audit.

Prerequisites: HRTM 201 and HRTM 221.
HRTM 363. Quantity Food Production and Service  
6 Credits (1+10P)
Covers quantity food production including cooking concepts, sanitation and safety, teamwork, and management responsibilities. Students will apply this knowledge developing product for sale in a student run restaurant. Proof of current ServSafe or NM Food Handler certification required. May be repeated up to 4 credits. Crosslisted with: HNDS 363.  
Prerequisite(s): HRTM 263.

HRTM 404. Gaming Operations and Organization  
3 Credits
Introduction to the multi-billion-dollar industry, including an historical overview, social and economic impacts of gaming, and casino operations.  
Prerequisites: HRTM 201 and HRTM 221.

HRTM 408. Hospitality Internship  
1 Credit
Hospitality and tourism professional work experience for HRTM majors only. Restricted to majors.  
Prerequisites: HRTM 307 and consent of instructor.

HRTM 409. HRTM Internship Seminar  
1 Credit
A case based approach to analyzing internship experiences. Students will write case studies about specific business issues they encountered during HRTM 408 (Internship) and analyze them. Restricted to majors.  
Prerequisites: HRTM 408.

HRTM 410. Hospitality Cost Control  
3 Credits
Familiarizes students with all aspects of cost control including financial data entry and hospitality accounting practices, financial report production, analysis and problem solving. Students will learn to understand the roles of the various stakeholders (owners, managers, employees and customers.) Provides tools needed to communicate effectively about global financial issues affecting the hospitality business.  
Prerequisite: HRTM 408.

HRTM 412. Beverage Management  
3 Credits
Survey of all aspects of beverage management, including wine/beer/ distilled spirits origins and trends, cost control, bar management, beverage purchasing, and wine appreciation.  
Prerequisite: HRTM 408.

HRTM 413. Restaurant Operations Management  
4 Credits (1+6P)
Provides a detailed understanding of the processes of restaurant operations management. Students are expected to increase kitchen technical skills, learn to cook from recipes and develop a personal culinary style. Provides the opportunity to perform a detailed analysis of a food and beverage operation, including running and selectively analyzing the reports from systems. Proof of current NM Alcohol Server certification required. May be repeated up to 4 credits.  
Prerequisite(s): HRTM 363.

HRTM 414. International Food and Wine  
3 Credits
An experiential examination of wine through lectures, films, guest speakers and focused tasting of food and wine. Topics include viticulture, wine making varietals, terroir, and food pairings. Student must be at least 21 years old.  
Prerequisite: consent of instructor.

HRTM 420. Club Management and Marketing  
3 Credits
Provides an understanding of the general operational and administrative procedures practiced in private clubs from a marketing perspective with a special emphasis on managing and marketing club food and beverage operations and service. It will provide the professional golf management and hospitality students with the unique sensitivities required in managing and operating in the increasingly lucrative club management market.

HRTM 430. Hospitality Facilities Management  
3 Credits
Exploration of the engineering and maintenance requirements specific to the hospitality industry. Emphasis on environmental issues, renovation and management of the physical plant.  
Prerequisite(s): HRTM 331, HRTM 408.

HRTM 431. Hotel Operations II  
3 Credits
The duties and administration of a hotel front office, including housekeeping. Additional focus on the procedures of reservations and night audit. Students also gain exposure to property management systems.  
Prerequisite(s): HRTM 331, HRTM 408.

HRTM 432. Hotel Revenue and Sales Management  
3 Credits
Examines methods used for profitably managing capacity, including dynamic pricing and allocation of the rooms inventory across market segments to maximize revenues. Focuses on the integration of revenue management principles with information technology, management, marketing and sales concerns at the property and market level.  
Prerequisite: HRTM 408.

HRTM 433. Training for Hospitality Operations  
3 Credits
Analysis of training needs and methods in hospitality organizations.  
Prerequisite(s): MGT 332.

HRTM 434. Senior Capstone Experience  
3 Credits
Synthesizes all previous work. Students apply multi-disciplinary principles to the analysis of hospitality business cases and tourism problems.  
Prerequisite: HRTM 408.

HRTM 443. Meetings, Conventions and Special Events  
3 Credits
Examination of the role of the meeting/event planner, including setting objectives, site selection, negotiations, design, budgeting, marketing, registration, on-site logistics, and evaluation. May be repeated up to 3 credits. Consent of Instructor required.  
Prerequisite(s): HRTM 408.

HRTM 450. Special Topics  
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.  
Prerequisite: consent of instructor.

HRTM 492. Special Problems  
1-4 Credits
Individual research in a selected subject area of hospitality management. Maximum of 4 credits per semester and a total of 6 credits toward a degree.  
Prerequisite: consent of instructor.
HRTM 507. Hospitality and Tourism Internship  
3 Credits  
Supervised placement in a hospitality or tourism organization. An in-depth written report of the experience is required. Graded S/U.  
Prerequisite: consent of instructor.

HRTM 510. Hospitality Cost Control  
3 Credits  
Familiarizes students with all aspects of cost control including financial data entry and hospitality accounting practices, financial report production, analysis and problem solving. Students will learn to understand the roles of the various stakeholders (owners, managers, employees and customers). Provides tools needed to communicate effectively about global financial issues affecting the hospitality business. Same as HRTM 410 with additional work for graduate credit. Consent of Instructor required.

HRTM 512. Beverage Management  
3 Credits  
Survey of all aspects of beverage management, including wine/beer/ distilled spirits origins and trends, cost control, bar management, beverage purchasing, and wine appreciation. Same as HRTM 412 with additional work for graduate credit. Consent of Instructor required.

HRTM 530. Facilities Management  
3 Credits  
Exploration of the engineering and maintenance requirements specific to the hospitality industry. Emphasis on environmental issues, renovation and management of the physical plant. Same as HRTM 430 with additional work for graduate credit. Consent of Instructor required.

HRTM 531. Hotel Operations II  
3 Credits  
The duties and administration of a hotel front office, including housekeeping. Additional focus on the procedures of reservations and night audit. Students also gain exposure to property management systems. Same as HRTM 431 with additional work for graduate credit. Consent of Instructor required.

HRTM 532. HOTEL REV/SALES MGT  
3 Credits  
Examines methods used for profitably managing capacity, including dynamic pricing and allocation of the rooms inventory across market segments to maximize revenues. Focuses on the integration of revenue management principles with information technology, management, marketing and sales concerns at the property and market level. Same as HRTM 432 with additional work for graduate credit. Consent of Instructor required.

HRTM 543. Meetings, Conventions and Special Events  
3 Credits  
Examination of the role of the meeting/event planner, including setting objectives, site selection, negotiations, design, budgeting, marketing, registration, on-site logistics, and evaluation. Same as HRTM 443 with additional work for graduate credit. Consent of Instructor required.

HRTM 590. Special Topics  
1-4 Credits  
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree.  
Prerequisite: consent of instructor.

HRTM 598. Special Research Programs  
1-4 Credits  
Individual investigations, either analytical or experimental. Maximum of 4 credits per semester and no more than 6 credits toward a degree.  
Prerequisite: consent of instructor.

HRTM 599. Master's Thesis  
6 Credits  
Thesis.  
Prerequisite: consent of instructor.

HVAC-HEATING/AC/REFRIGERATION (HVAC)

HVAC 100. EPA Clean Air Act: Section 608  
1 Credit  
Refrigerant certification preparation to include basics of refrigerant bearing equipment, ozone depletion and the new legislation, technician categories covered and the certification examination.

HVAC 101. Fundamentals of Refrigeration  
4 Credits (3+2P)  
Refrigeration cycle and the various mechanical components. Use of special tools, equipment, and safety precautions.

HVAC 102. Fundamentals of Electricity  
4 Credits (3+2P)  
Introduction to electricity theory, OHM s Law, circuits, AC/DC, and practical applications.

HVAC 103. Electrical and Mechanical Controls I  
4 Credits (3+2P)  
Applications of basic electrical and mechanical controls. Reading and drawing diagrams of simple refrigerating equipment. Safe use of testing equipment.  
Prerequisites: HVAC 101 and HVAC 102, or consent of instructor.

HVAC 110. Professional Development and Leadership  
1 Credit  
As members and/or officers of various student professional organizations, students gain experience in leadership, team building, and community service. Students competing in Skills USA are required to register for the course. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: HVAC majors. S/U Grading (S/U, Audit). Restricted to: Community Colleges only.

HVAC 113. Job Shadowing  
1 Credit  
Course will expose students to actual HVAC/R field work and provide them knowledge of the expectations of field work as they shadow an HVAC/R technician. Consent of instructor required. Restricted to: Community colleges only.

HVAC 205. Commercial Refrigeration Systems  
4 Credits (3+2P)  
Service and maintenance of commercial refrigeration equipment to include evacuation and charging procedures, electrical diagrams, and compressors and accessories.  
Prerequisites: HVAC 103 or consent of instructor.

HVAC 207. Residential Air Conditioning Systems  
4 Credits (3+2P)  
Applications and types of equipment used in comfort cooling. Preventive maintenance, service, and repairs common to evaporative coolers and refrigerated air conditioning systems. Air properties and psychometrics.  
Prerequisite: HVAC 103 or consent of instructor.
HVAC 209. Residential Heating Systems
4 Credits (3+2P)
Gas and electric systems used in comfort heating. Maintenance procedures, safety, troubleshooting, and servicing malfunctions in equipment.
Prerequisite: HVAC 103 or consent of instructor.

HVAC 210. Commercial Air Conditioning and Heating Systems
4 Credits (3+3P)
Covers troubleshooting mechanical and electrical problems associated with HVAC equipment in commercial buildings. Includes gas, electric, and heat pump systems. Restricted to Community Colleges campuses only.
Prerequisite(s): HVAC 103 or consent of instructor.

HVAC 211. Heat Pump Systems
4 Credits (3+2P)
Reverse cycle refrigeration systems utilized in comfort heating and cooling. Troubleshooting mechanical electrical problems associated with heat pumps. HVAC 103 or consent of instructor.

HVAC 213. Practicum
3 Credits
Working in the field with journeymen service technicians. Develop and apply job skills. Consent of instructor required. Restricted to: Community colleges only.
Prerequisite(s): Consent of instructor.

HVAC 220. Introduction to Sheet Metal Fabrication
4 Credits (3+2P)
Introduction to sheet metal fabrication to include hands-on practical laboratory applications, cutting and forming procedures, identifying types and gauges. Design and layout techniques.
Prerequisite: OETS 118 or equivalent math or consent of instructor.

HVAC 225. New Mexico Mechanical Codes: HVAC
1-4 Credits
Principles and regulations developed for HVAC, sheet metal, and plumbing occupations to include terminology, ventilation air supply, exhaust systems, duct systems, combustion air, chimneys and vents, boilers/water heaters, refrigeration, panel and hydronic panel heating, fuel gas piping, storage systems, solar systems, and workmanship standards. May be repeated for a maximum of 12 credits.

HVAC 255. Special Topics
1-6 Credits
Topics to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.

HVAC 290. Special Problems
1-4 Credits
Individual studies related to heating, air conditioning, and refrigeration.
Prerequisites: HVAC 101, HVAC 102, and consent of instructor.

I B 317. International Marketing
3 Credits
Same as MKTG 317.

I B 351. International Business
3 Credits
The various aspects of international business, and identification and analysis of problems encountered by multinational companies.
Prerequisite: junior standing or consent of instructor.
I E 200. Special Problems—Sophomore
1-3 Credits
Directed individual projects. May be repeated for a total of 3 credits.
Prerequisite: consent of faculty member.

I E 217. Manufacturing Processes
2 Credits
Manufacturing methods and industrial processes which include casting, forming and machining. Crosslisted with: E T 217
Prerequisite(s): MATH 121G.
Corequisite(s): I E 217L.

I E 217 L. Manufacturing Processes Laboratory
1 Credit
Laboratory associated with I E 217.

I E 300. Special Problems—Junior
1-3 Credits
Directed individual projects. May be repeated for a total of 3 credits.
Prerequisite: consent of faculty member.

I E 311. Engineering Data Analysis
3 Credits
Methodology and techniques associated with identifying and analyzing industrial data. May be repeated up to 3 credits. C- or better in I E 151, C S 110, or equivalent.
Prerequisite(s): C- or better in MATH 192G.

I E 316. Methods Engineering
3 Credits (2+3P)
Methods analysis and design. Work measurement techniques. Job evaluation and wage incentive methods.
Prerequisite: I E 311.

I E 330. Environmental Management Seminar I
1 Credit
Survey of practical and new developments in hazardous and radioactive waste management provided through a series of guest lectures and reports of ongoing research. Restricted to: Main campus only. Crosslisted with: C E 330, CH E 330, E E 330, E S 330, E T 330, M E 330 and WERC 330

I E 351. Applied Problem Solving in Industrial Engineering
3 Credits
Application of computational techniques to engineering problems including the use of commercial programs in statistics and applied mathematics. Restricted to majors.
Corequisite: I E 311.

I E 365. Quality Control
3 Credits
Statistical analysis of quality in manufacturing. Acceptance sampling and control charts.
Prerequisite: I E 311 or equivalent.

I E 375. Manufacturing Processes II
3 Credits
Review of basic manufacturing processes. Advanced topics in casting, forming, machining and joining; major process parameters; economics of processes.
Prerequisite: I E 217 or E T 217.

I E 381. Technology Ventures
3 Credits
This course looks at how new technology ventures are formed at the individual entrepreneur and corporate levels. It covers the development of science and engineering based ventures from ideas through creating customer value. This is the first course in the Entrepreneurship Minor. The roles of science and engineering specialists in the creation of customer value are defined in preparation for development of technology-based enterprises.

I E 382. Business for the Practicing Engineer
3 Credits
Business tools and skills, including technology commercialization, patent applications, preparing a technology-oriented business plan, reading and constructing financial documents, modeling and understanding markets, e-commerce, QFD, concurrent engineering, engineer's role in the global economy, and engineer's impact on product design and cost.
Prerequisite: engineering major, junior level or above.

I E 400. Undergraduate Research
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of faculty member.

I E 411. Occupational Safety
3 Credits
Practical methods to improve safety in the workplace. Topics include OSHA and other regulations, hazard recognition, assessment and control, industry standards, risk assessment and safety management. Material is applicable to a variety of workplace settings. This course is intended for College of Engineering students who have completed their lower-division requirements in mathematics, engineering, technology, and basic science. Same as I E 561 with differential assignments. Prerequisite: Junior standing

I E 413. Engineering Operations Research I
3 Credits
Deterministic operations research modeling including linear and integer programming.
Prerequisite: MATH 192G.

I E 423. Engineering Operations Research II
3 Credits
Probabilistic operations research modeling, including queuing systems and their optimization; Markov chains.
Prerequisite: I E 311.

I E 424. Manufacturing Systems
3 Credits
Organization and functions of manufacturing planning and control systems including forecasting, MRP, capacity planning, JIT systems, scheduling, and inventory control.
Prerequisite: I E 311.

I E 451. Engineering Economy
3 Credits
Discounted cash flows, economics of project, contract and specifications as related to engineering design. Same as CH E 451.

I E 453. Leadership and Motivation
3 Credits
Theories of leadership and motivation. Motivational programs for complex organizations. Relationships between organizational power, authority, and management styles. Same as MGT 453.
Prerequisite: MGT 309 or consent of instructor.
I E 460. Evaluation of Engineering Data
3 Credits
Analysis of engineering systems possessing variability, employing regression, analysis of variance, distribution theory, and experimental design methods.
Prerequisite: I E 311 or equivalent.

I E 466. Reliability
3 Credits
Application of statistical theory to engineering reliability estimation, reliability improvement, and the analysis of reliability test data.
Prerequisite: I E 311 or equivalent.

I E 467. Discrete-Event Simulation Modeling
4 Credits
Basic modeling concepts, organizations of simulations, input data analysis, random variate generation, simulation design and analysis, model validation, output analysis, and management of simulations. Differentiated graduate assignments. Same as I E 567.
Prerequisite: I E 311 or equivalent.

I E 478. Facilities Planning and Design
3 Credits
Plant location methods, total process analysis, process integration, materials handling analysis, and traditional and computerized plant layout methodologies. Pre/Prerequisite: I E 316.
Corequisite: I E 424.

I E 480. Senior Design
3 Credits (2+3P)
Multi-disciplinary team design project for external clients. Involves semester long activities including major design report and presentation.
Prerequisites: senior standing, I E 467.

I E 490. Selected Topics
1-3 Credits
May be repeated for a maximum of 9 credits.
Prerequisite: consent of the head of the department.

I E 505. Directed Readings
1-3 Credits
May be repeated for a maximum total of 6 credits.
Prerequisite: consent of the head of the department.

I E 515. Stochastic Processes Modeling
3 Credits
Introduction to the use of stochastic processes in the modeling of physical and natural systems. Use of generating functions, conditional probability and expectation, Poisson processes, random walk models, Markov chains, branching processes, Markov processes, and queueing processes in an applied setting.
Prerequisites: I E 311 or equivalent; and MATH 392 or equivalent.

I E 522. Queuing Systems
3 Credits
Elements and classification of queueing systems, single server models, multi-server models, cost analysis and applications.
Prerequisite: I E 311 or equivalent.

I E 523. Advanced Engineering Economy
3 Credits
Theoretical basis for engineering economy methods, problems of cost estimation, replacement, nonmonetary factors, and feasibility studies.
Same as C E 523.

I E 524. Advanced Production and Inventory Control
3 Credits
Organization and functions of manufacturing planning and control systems including forecasting, MRP, capacity planning, JIT systems, scheduling and inventory control. Same as I E 424 with differentiated assignments.

I E 525. Systems Synthesis and Design
3 Credits
Examination of the production management complex in terms of its components and the synthesis of these components into an effective operating unit. Development of input-output models representing the basis structure of all production activities.

I E 530. Environmental Management Seminar
1 Credit
Same as C E 530, E E 530, CH E 530.

3 Credits
Key concepts, terminology, paradigms, and methods of operations research: Linear programming including assignment and transportation algorithms; stochastic analysis, including inventory control and queueing systems; general approaches, including goal, integer, nonlinear and dynamic programming.

I E 533. Linear Programming
3 Credits
Linear programming problem formulation, simplex algorithm, theory of linear programming, duality, revised simplex algorithm, and sensitivity analysis.

I E 534. Nonlinear Programming
3 Credits
Theoretical and computational methods to solve optimization problems in engineering, statistics, economics, and operations research. Topics include convexity, optimality conditions, Newton's method, Lagrange multipliers, search algorithms for unconstrained and constrained problems, as well as barrier and penalty methods. Prerequisite: MATH 192G or equivalent

I E 535. Discrete Optimization
3 Credits
Combinatorial Optimization problems using both integer programming and graph theoretic approaches. Emphasis on modeling and computational algorithms.

I E 537. Large Scale Systems Engineering
3 Credits
Systems engineering approaches to large-scale complex technological and societal problems. Concepts of interaction and structural graphs, matrices, delta, and Gantt charts. The hall matrix approach, structural concepts, reachability matrices, and cross impact-analysis, modeling and decision making.

I E 539. Fundamentals of Transportation and Routing in Logistics
3 Credits
Introduction to the conceptual, methodological, and mathematical foundations of transportation and routing problems in logistics system. Emphasis on mathematical modeling and computational algorithms.
I E 545. Characterizing Time-Dependent Engineering Data
3 Credits
Theory and techniques employed in the characterization of stochastic processes commonly found in engineering applications. Distribution models include exponential, gamma, Weibull, and extreme value. Design and analysis of experiments involving complete and censored data and elevated stress. Analytical techniques include parametric, nonparametric, and graphical approaches with emphasis on modern computer tools. Exact and approximate maximum-likelihood techniques are stressed.
Prerequisite: I E 311 or equivalent.

I E 561. Advanced Safety Engineering
3 Credits
Regulation as well as qualitative, and quantitative methods to achieve and maintain safety in the workplace. Includes liability, worker's compensation, OSHA, hazard control, safety assessment, cost justification, and system analysis.
Prerequisite: graduate status in engineering.

I E 563. Topics in Engineering Administration
3 Credits
Study of qualitative and quantitative aspects. Consideration given to philosophical, psychological, political and social implications of engineering administrative decisions.

I E 567. Design and Implementation of Discrete-Event Simulation
3 Credits
Basic modeling concepts, organizations of simulations, input data analysis, random variate generation, simulation design and analysis, model validation, output analysis, and management of simulations. Taught with I E 467 with differentiated assignments for graduate students.

I E 571. Advanced Quality Control
3 Credits
Advanced topics in quality control and design of experiments for improvement of quality.
Prerequisite: I E 311 or equivalent.

I E 575. Advanced Manufacturing Processes
3 Credits
Covers major process parameters in casting, forming, machining, and joining. Process economics and selection of processes design and interactions.
Prerequisite: graduate standing.

I E 590. Selected Topics
1-3 Credits
May be repeated for a maximum of 9 credits.
Prerequisite: consent of the head of the department.

I E 598. Special Research Programs
1-3 Credits
Individual analytical or experimental investigations. May be repeated for a maximum total of 6 credits.
Prerequisite: consent of instructor.

I E 599. Master's Thesis
15 Credits
Thesis.

I E 610. Topics in Operations Research
3 Credits
Selected topics of current interest, to be designated by subtitle. May be repeated for a maximum of 6 credits.

I E 620. Topics in Computer Modeling
3 Credits
Selected topics of current interest, to be designated by subtitle. May be repeated for a maximum of 6 credits.

I E 630. Topics in Engineering Management
3 Credits
Selected topics of current interest, to be designated by subtitle. May be repeated for a maximum of 6 credits.

I E 690. Selected Topics
1-15 Credits
May be repeated.
Prerequisite: consent of department head.

I E 700. Doctoral Dissertation
15 Credits
Dissertation.

ICT-INF0 & COMMUNICATION TECH (ICT)

ICT 320. Introduction to Internet Protocols
3 Credits
Present an overview of Internet Protocols Applications. May be repeated up to 3 credits.

ICT 339. Introduction to Digital Forensics and Incident Response
3 Credits
Introduction to the skills required to perform digital forensics and incident response on Windows operating systems. Topics include: live response, evidence acquisition, Windows operating system artifacts, documentation and reporting.
Prerequisite(s): ICT 360.

ICT 345. Computer Hardware Fundamentals
3 Credits
Computer hardware fundamentals including architecture, interfacing, peripherals, troubleshooting, system upgrades, and maintenance.
Prerequisite(s): junior standing.

ICT 352. Software Programming for Information and Communication Technology
3 Credits
Computer programming techniques for information and communication technology topics.

ICT 360. Operating Systems for ICT
3 Credits
Command Line interface, File systems, File manipulations, remote login. For information and communication technologists.

ICT 362. Software Technology II
3 Credits
A continuation of topics from ICT 352 that are directed toward more advanced software development. Topics include problem analysis, object oriented, structured logic, and development concepts using JAVA.
Prerequisite(s): ICT 352.

ICT 364. Windows Server Administration
3 Credits
Configuration and maintenance of programs in Windows Server and Server Installation, Active Directory, Storage, Server Maintenance, Troubleshooting Methodology, SQL Server, Web Server, Authentication Procedures, Mail Servers. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): ICT 339. Prerequisite(s): ICT 362.
ICT 377. Computer Networking I
3 Credits
Topics presented from the point of view of the network administrator include computer network design and applications from LAN to WAN to the Internet, office LANs, cable certification, switches, routers, Windows server, TCP/IP networks, network protocols, network diagnostics, campus network and Internet routing, the OSI layers from physical to transport. 
Prerequisite(s): junior standing.

ICT 435. Senior Project
3 Credits
Advanced ICT Project. Normally taken during last semester of the program. May be repeated up to 3 credits. Restricted to: ICT majors.
Prerequisite(s): ICT 377 and ICT 458 and ICT 460.

ICT 450. Ethical Hacking
3 Credits
Ethical Hacking and Penetration testing techniques. May be repeated up to 3 credits.
Prerequisite(s): ICT 339.

ICT 457. Introduction to Information Security Technology
3 Credits
This course provides an overview of security challenges and strategies of countermeasure in the information systems environment. Topics include definition of terms, concepts, elements, and goals incorporating industry standards and practices with a focus on availability, vulnerability, integrity and confidentiality aspects of information systems. May be repeated up to 3 credits.

ICT 458. Database Design and Applications
3 Credits
MySQL and PHP. Data conversion using PHP, mysql and Python. Methods of transferring data from electronic boards and data feeds, into databases. Use of SQL in java programming. Remote programming of computers for running database systems in a mixed OS environment. Generation of web pages directly from Database queries. May be repeated up to 3 credits.
Prerequisite(s): ICT 362.

ICT 460. Web Technologies and Multimedia
3 Credits
Addresses the latest multimedia technology advances and how they apply to the information and communication technology fields. May be repeated up to 3 credits.
Prerequisite(s): ICT 360.

ICT 462. Remote Access Operating Systems with Linux
3 Credits
Operating systems applications and interfacing with an introduction to systems administration. C Programming, System Backups, Setup and Maintenance Linux Servers. Webserver with virtual domains, CGI programming and interface with MySQL databases. May be repeated up to 3 credits.

ICT 463. Computer Systems Administration
3 Credits
Advance topics in computer systems administration from ICT 462. Use of Python to solve numerous engineering problems including video and audio. Image manipulation. Using PostScript for image and typesetting development. Integration of C programming with Python. May be repeated up to 3 credits.
Prerequisite(s): ICT 362 and ICT 462.

ICT 477. Computer Networking II
3 Credits
Advanced concepts in computer network design and applications including managing the campus networks, virtual LANs (VLAN), network security, wireless networks, and LAN to WAN to internet.
Prerequisite(s): ICT 377 or E T 377.

INMT - INDUSTRIAL MAINTENANCE (INMT)

INMT 133. Process Technology and Systems
4 Credits
Provides instruction in the use of common process equipment. Students will use appropriate terminology and identify process equipment components such as piping and tubing, valves, pumps, compressors, turbines, motors, engines, heat exchangers, heaters, furnaces, boilers, filters dryers and other miscellaneous vessels. Included are the basic functions, scientific principles and symbols. Students will identify components on typical Process Flow Diagrams and Process and Instrument Diagrams. Restricted to Carlsbad campus only.

INMT 134. Maintenance Principles
4 Credits
The course is an introduction to the maintenance of equipment utilizing mechanical, electrical and instrumentation concepts. Topics include: hand tools, bearing fundamentals, equipment lubrication, material handling, electrical safety, battery systems, diagrams, electrical production and distribution, transformers, breakers, switches, AC and DC motors, motor controllers and operations, and introduction to automation and instrumentation control. Restricted to Carlsbad campus only.

INMT 165. Equipment Processes
4 Credits
This course introduces power transmission equipment and machinery components, including belt/chain driven equipment, speed reducers, variable speed drives, couplings, clutches, and conveying equipment. Students will learn the operation, maintenance, and troubleshooting for these types of equipment. The course also includes Overhead Crane Certification and Safety. Restricted to Carlsbad campus only.

INMT 205. Programmable Logic Controllers and Applications
4 Credits
Students learn about programmable logic controllers; architecture; programming, interfacing, and applications. Hands-on experience on modern commercial PLC units is the main component. Restricted to Carlsbad campus only.
Prerequisite(s): Computer Literacy (CS 110).

INMT 223. Electrical Repairs
4 Credits
This course outlines for students the types of problems that occur in electrical machinery and systems. The course covers trouble-shooting and diagnosis, preventative maintenance, and how to make necessary repairs. Restricted to Carlsbad campus only.
INMT 235. Mechanical Drives I
4 Credits
This course teaches the fundamentals of mechanical transmission systems used in industrial, agricultural, and mobile applications. Students will learn industrial relevant skills including how to: operate, install and analyze performance, and design basic transmission systems using chains, feed-belts, spur gears, bearings, and couplings. Vibration analysis will be used to determine when to perform maintenance of power transmission components. The course also covers power transmission safety, and introduction to belt and chain drives (applications, installations, and tensioning), and introduction to gear drives, coupling, and bearing, basic troubleshooting, blueprint and print reading, learning the basics of electrical drives and PDM and PM. Restricted to Carlsbad campus only.

INMT 236. Lubrication Process
3 Credits
This course teaches the technical skills needed to operate, install, tune, maintain and troubleshoot automatic lubrication systems. Lubrication concepts, setup and tuning, pneumatic pumps, series-progressive valve systems and microprocessor based lubrication controllers will be covered. The course covers the principles of and importance of lubrication, oils and grease types and applications, lube management (storage, handling, and purity), and PDM and PM. Restricted to Carlsbad campus only.

INMT 237. Hydraulics I
2 Credits
This course teaches fundamentals of hydraulic systems used in industry mobile application. Students learn the basic theory of application of hydraulic and electricity as it applies to hydraulics. Covered in the course are basic systems, principles of flow, pressure, viscosity, filtration, and colling. Also covered are basic components such as motor, pumps, cylinders, piping and control and relief valves. Troubleshooting strategies are discussed, along with blueprint and print reading, and PDM and PM. Industry, relevant skills including how to operate, install, analyze performance, and design basic hydraulic systems, reviewing intermediate hydraulic components and system applications. Restricted to Carlsbad campus only.

INMT 261. Pump Operations I
4 Credits
This course teaches how to select, operate, install, maintain and repair the many types of pumps used by industry. Students learn the theory and practical application of all types of processed pumps and pipe systems. It covers types, components, and systems operation. It also covers troubleshooting for flow loss and cavitation. Students learn how to select, operate, install, maintain and repair the many types of pumps used by industry. Other topics covered include: Net Positive Suction Head, pump flow/head measurement, pressure head conversion, pressure flow characteristics, cavitation, series/parallel pump operation, mechanical seal/stuffing box maintenance, multi stage operation and construction, positive displacement pumps, turbine, diaphragm, peristaltic, piston, gear, and magnetic pump systems. Restricted to Carlsbad campus only.

INMT 262. Piping Systems
2 Credits
This course teaches students how to install, maintain and troubleshoot fluid systems such as how to select, size, identify, install a variety of types of piping, fittings, and valves. Measurement techniques from basic to precision measurement, gauging, including the fundamentals of demonising and tolerancing will be taught. Restricted to Carlsbad campus only.

INMT 263. Mechanical Drives II
4 Credits
This course teaches the bearings and gears used in heavy duty mechanical transmission systems. This course will emphasize linear access drives, clutches, and brakes. In addition, this course teaches how to set up, operate and apply laser shaft alignment to a variety of industrial applications. This course is a study of the basic concepts and procedures for the maintenance and operations of pumps, turbines, seals, bearings, and compressors. The course will provide the student with the knowledge and skills necessary to perform proper maintenance, repair, replacement and selection of pumps, turbines, seals, bearings and compressors. Also covered are advanced gearbox, coupling and bearings, precision alignment (shaft, flange, and sheave), as well as basic vibration analysis and thermography as troubleshooting and RCA aids. Restricted to Carlsbad campus only.

INMT 264. Rigging
2 Credits
This course teaches how to safely move loads of different shapes and sizes using a variety of different methods. Students will lift loads and demonstrate how to move it. Students will use hoists, slings, ropes and fittings to learn how to safely lift a wide variety of loads. Included are weight estimation, lifting rules, load ratings (slings, wire, ropes and hoists). Restricted to Carlsbad campus only.

INMT 265. Hydraulics II
2 Credits
This course teaches advanced hydraulics systems. The student will learn operation of advanced hydraulic systems applications, equipment installation, performance analysis of motors and pumps, accumulators, control, relief and check valve, equipment maintenance, and system design. The course covers accumulators, sequence valves, pilot circuits and unloader valves. Students learn more troubleshooting, hydraulic drives and other applications. Restricted to Carlsbad campus only.

INMT 267. Pump Operations II
2 Credits
This course teaches the student the disassembly, inspection and reassembly of centrifugal and positive displacement pumps. This course allows the student to identify and replace worn or broken components of pumps, and learn predictive and preventive maintenance principles. Lockout of the pump will be performed in addition to measurements and alignment. Restricted to Carlsbad campus only.

INTEGRATED NATURAL SCIENCES (NSC)

NSC 131. General Sciences
3 Credits (2+2P)
Designed for Allied Health students to explore the fundamentals of physical and life sciences.

JOUR-JOURNALISM (JOUR)

JOUR 102. Grammar for Journalists
2 Credits
Instruction of basic grammar, spelling and punctuation. Required for all journalism students with an ACT English score below 25, SAT Verbal below 570, or students who have not taken ACT/SAT tests. Restricted to Las Cruces campus only.
JOUR 105G. Media and Society
3 Credits
Functions and organization of the mass media system in the United States; power of the mass media to affect knowledge, opinions, and social values; and the impact of new technologies.

JOUR 110. Introduction to Mass Media Writing
3 Credits (2+2P)
Preparation of copy for broadcasting, print, advertising, and public relations. Introduction to Web applications. Restricted to Las Cruces campus only.
Prerequisite(s): JOUR 102 or ACT score of 25 and above or SAT score of 570 and above.

JOUR 201. Introduction to Multimedia
3 Credits
Provide students with the basic skills to produce multimedia packages using text, photos, audio and video, as well as social media for professional purposes. Intensive hands-on class using editing software such as Adobe Premiere, Adobe Audition and Photoshop. May be repeated up to 3 credits.
Prerequisite(s): JOUR 110 or Consent.

JOUR 210. Newswriting for Print and Internet
3 Credits (2+2P)
Intensive laboratory practice in writing for print media as well as Internet news sites. Restricted to Las Cruces campus only.
Prerequisite(s): JOUR 102 or ACT score of 25 and above or SAT score of 570 and above and JOUR 110.

JOUR 300. Introduction to Advertising
3 Credits
Role of IMC (integrated marketing communications) in marketing of goods, services, and organizations. Creative process, strategic planning media, message design, consumer behavior, and social issues of IMC.

JOUR 302. Video Production
3 Credits
Classroom instruction on basic studio and single camera video productions, with focus on practical aspects of news production. Lab experience in camera basics, studio functions and digital video editing includes practical experience through crew assignments on the live student-produced newscast, News22, which airs on KRWG-TV, a PBS affiliate station. May be repeated up to 3 credits.

JOUR 306. Feature Writing for magazines and Newspapers
3 Credits
The preparation of feature stories for newspapers and magazines. How to develop a variety of stories, research topics, interview sources, polish writing and market work. May be repeated for a maximum of 6 credits.
Prerequisite(s): JOUR 210 or consent of instructor.

JOUR 310. Intermediate Print Reporting
3 Credits
News writing and field reporting for print and Web applications. Instruction in community coverage, reporter responsibility, ethics and news values.
Prerequisite(s): JOUR 210.

JOUR 312. Advertising/Copywriting
3 Credits
Creative process, strategic thinking, and principles of advertising in execution of copy, storyboards, and layouts for clients.
Prerequisite(s): JOUR 110 or consent.

JOUR 314. Broadcast Reporting
3 Credits
Writing, editing, producing, announcing and reporting of television and radio news. May be repeated up to 3 credits.
Prerequisite(s): JOUR 210 or Consent of Instructor.

JOUR 315. News 22
1-3 Credits (1-3)
Write, report, produce, anchor, shoot and edit video for live student television newscast airing on KRWG, public television for Southern New Mexico sports, weather, and news.
Prerequisite(s): JOUR 314 or JOUR 330 or instructor consent.

JOUR 317. News Editing
3 Credits
Extensive, directed practice in various aspects of computer editing for printed publication. Headline writing, copy editing, design, and layout.
Prerequisite(s): JOUR 210.

JOUR 319. Intro Photography
3 Credits
Introduction to photography emphasizing composition, basic camera technique, language of photography and storytelling. Photojournalism emphasis. Basic camera and processing techniques and skills. May be repeated up to 3 credits.

JOUR 320. Photojournalism
3 Credits
Communication photography for magazine, news, advertising/public relations and other communication needs. Digital Photography, lighting techniques, photo-editing software, and web site skills. Students provide camera and flash. May be repeated up to 3 credits.
Prerequisite(s): JOUR 319 or Consent of instructor.

JOUR 321. Media Graphic Design
3 Credits
Concepts and design skills useful for all aspects of journalism-print media and newsletters, basics of Photoshop and introduction to Web design. May be repeated up to 3 credits.

JOUR 330. Electronic News Gathering
3 Credits (2+4P)
Overview of technical and aesthetic skills and journalism basics needed for shooting and editing on-location news productions. Single camera videography and nonlinear/digital editing.
Prerequisite(s): JOUR 302 or permission of instructor.

JOUR 350. History of Mass Media
3 Credits
Historical overview of mass media with emphasis on roots of journalism, technological developments, and American role in international media.

JOUR 374. Principles of Public Relations
3 Credits
Introduction to public relations as a communication process that builds relationships between organizations and their publics. Explores basic techniques, strategies, and tactics used in businesses, nonprofits, and in government.
Prerequisite(s): JOUR 110.

JOUR 377V. Mass Media Ethics
3 Credits
Philosophical and moral examination of problems relating to mass media. Use of case study method to analyze media situations; development of framework for media professionalism.
JOUR 380. Women and the Mass Media
3 Credits
Portrayal and participation of women in mass media from colonial to contemporary times. Same as W S 450.

JOUR 399. New Mexico Law
3 Credits
Same as C J 399, GOVT 399, HIST 399, and SOC 399.

JOUR 407. Media Internship
3 Credits
Paid supervised work with a mass communications organization. Students who take JOUR 407 may not take JOUR 408. 
Prerequisite: consent of internship coordinator.

JOUR 408. Media Practicum
1-3 Credits
Unpaid supervised work with a mass communications organization. May be repeated for a maximum of 3 credits.
Prerequisite: consent of internship coordinator.

JOUR 412. Documentary Photojournalism
3 Credits
Production of documentary photography for web, print, books and exhibition emphasizing storytelling techniques. Multimedia and Web site techniques. Field Trips to produce material for the Small Village New Mexico project (SVNM ). Produce Term projectbook. May be repeated up to 3 credits.
Prerequisite(s): JOUR 319.

JOUR 414. RTV Scriptwriting/Performance
3 Credits
Writing and delivery of news scripts for radio and television. Focus on anchoring announcing, voice technique and performance.
Prerequisite(s): JOUR 314 or consent of instructor.

JOUR 423. Advanced Digital Reporting
3 Credits
Advanced in-depth news reporting techniques utilizing multimedia and reliable sources. Internet publishing of professional quality journalism. Preparation of professional resumes and news clippings. May be repeated up to 3 credits.
Prerequisite(s): JOUR 310 or 306 or consent of instructor.

JOUR 425. Media Planning and Buying
3 Credits
Covers the principles of media planning for an IMC campaign and procedures for purchasing ad time or space.
Prerequisite(s): JOUR 300 or consent of instructor.

JOUR 427. Multimedia Publishing
3 Credits
Writing-based course stresses the online telling of a story in many ways: text, photography, slide shows, audio and video news gathering, editing and posting.
Prerequisite(s): JOUR 201.

JOUR 460. Public Relations Promotion in Sports
3 Credits
Examination of sports as a business and how public relations promotion is executed in professional sports franchises.

JOUR 476. Public Relations Campaigns
3 Credits
Utilizing the principles and techniques of public relations to research and develop a comprehensive plan for a long-term national, regional, or local campaign. May be repeated up to 3 credits. Restricted to: Restricted to Journalism majors.
Prerequisite(s): JOUR 210, JOUR 374.

JOUR 484. Public Opinion
3 Credits
Seminar on forces which help form public opinion; individual projects in attitude measurement; measuring effectiveness of mass communication.

JOUR 489. Mass Media Research
3 Credits
Examination of the role of empirical research in solving mass communication problems. Survey techniques, field studies, content analysis, data analysis.

JOUR 490. Advertising Campaigns
3 Credits
Capstone course utilizing all previous instruction to create and develop plans for a long-term national or local IMC (Integrated Marketing Communications) campaign. Consent of instructor required.
Prerequisite(s): JOUR 300 and 312 or consent of instructor.

JOUR 493. Mass Communications Law
3 Credits
Examination of legal issues relating to mass media in the United States. Invasion of privacy, libel, sedition, copyright, and advertising regulation. Same as COMM 493, GOVT 493.

JOUR 494. Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes.

JOUR 495. Mass Communication Theory
3 Credits
Theoretical approaches to mass communications. Examination of media effects, audiences, media socialization.

JOUR 499. Independent Study in Mass Communications
1-3 Credits
Individual study directed by consenting instructor with prior approval of department head. May be repeated for a maximum of 6 credits.
Prerequisites: 2.5 GPA and consent of instructor.

JPNS-JAPANESE (JPNS)

JPNS 111. Elementary Japanese I
4 Credits
Japanese language for beginners.

JPNS 112. Elementary Japanese II
4 Credits
Japanese language for beginners.
Prerequisite: grade of C or better in JPNS 111 or consent of instructor.

JPNS 211. Intermediate Japanese I
3 Credits
Speaking, reading and writing the Japanese language.
Prerequisite: grade of C or better in JPNS 112 or consent of instructor.

JPNS 212. Intermediate Japanese II
3 Credits
Speaking, reading and writing the Japanese language.
Prerequisite: grade of C or better in JPNS 211 or consent of instructor.
L SC-LIBRARY SCIENCE (L SC)

L SC 100. Introduction to Libraries
3 Credits
Overview of libraries, including history and development, responsibilities of library personnel, types of libraries and services, and technology and trends. Restricted to Dona Ana campus only.

L SC 110. Reference and Information Resources I
3 Credits
Overview of reference services. Introduction to, and evaluation of, basic types of information resources (both print and electronic) and their application in libraries.

L SC 111. Introduction to Information Literacy in an Electronic Environment
3 Credits
Introduction to the basics of the research process; the organization, location and evaluation of information using print, non-print and electronic resources. Restricted to Community Colleges only.

L SC 112. Introduction to Consumer Health Information Literacy in an Electronic Environment
3 Credits
Introduction to consumer health information literacy; the process and organization, location, and evaluation of online information. Restricted to Community Colleges only.

L SC 120. Cataloging Basics I: Descriptive Cataloging
3 Credits
Introduction to descriptive cataloging. Restricted to Dona Ana campus only.

L SC 125. Cataloging Basics II: Classification and MARC Cataloging
3 Credits
Continuation of descriptive cataloging basics. Introduction to subject analysis, classification and MARC coding. Restricted to Dona Ana campus only.

L SC 130. Introduction to Technical Services in Libraries
3 Credits
Introduction to technical services in libraries, including acquisitions, bindery, cataloging, gifts, and serials. Restricted to Dona Ana campus only.

L SC 140. Multimedia Materials and Presentations in Libraries
3 Credits
Overview of media formats and equipment. Introduction to desktop publishing, presentations, and web-page creation applications in libraries. Restricted to Community Colleges only.

L SC 150. Library Services for Children and Young Adults
3 Credits
Library services for children and young adults with an overview of materials, programs, and services for this population. Restricted to Dona Ana campus only.

L SC 153. Picture Books and Young Children
1 Credit
If children are to enjoy reading they need to be exposed to books at an early age. This course will provide information to help guide librarians, preschool teachers, parents, and care givers in choosing appropriate books for those younger than six, and how to use books with this age group. Restricted to Dona Ana campus only.

L SC 154. State Children's Book Awards
1 Credit
Students will explore the state book award offered by their state. Students will read some of the books and plan library programs to promote the award. Restricted to Dona Ana campus only.

L SC 155. Award Winning Books for Children
1 Credit
A review of book awards and how to integrate award winning books into school curriculum or public school programming. Restricted to Community Colleges only.

L SC 156. Boys and Books
1 Credit
This course looks at why, in general, boys are less interested in books than girls. Students will discover ways libraries can encourage boys to read and develop activities and programs which entice them to do so. Students will also be reading some books recommended for boy readers. Restricted to Dona Ana campus only.

L SC 160. Introduction to Public Services in Libraries
3 Credits
Introduction to public services in libraries, including circulation, inter-library loan, reference, media services, special collections, and government documents. Restricted to Community Colleges only.

L SC 175. Civic Involvement in Library Science
1-3 Credits
Involvement in an organized community service project or group with a library or information technology component. Promotes awareness of volunteer and community service opportunities. May be repeated for a maximum of 6 credits. Graded: S/U. Restricted to Dona Ana campus only.

L SC 191. Children's Books and their Movie Adaptations
1 Credit
For almost as long as there have been popular books for children in the United States, there have been dramatic adaptations of them. What is gained, and lost, when children's books are adapted for the big screen? What is the relationship—or what should the connection be—between works of children's literature and their seemingly inevitable film adaptations? Students will be expected to read several children's books and view the movies based on them and make comparisons. Restricted to Community Colleges only.

L SC 192. Myths and Legends in Children's Literature
1 Credit
The student will explore myths and legends from diverse cultures; from European and Asian to those who have their roots in Africa and the Americas. Myths which are similar across several cultures will be compared.
L SC 193. Poetry for Children
1 Credit
This course will explore the genre of poetry for children. In this class, participants will focus on reading and reviewing poetry for kids, exploring poetry on the Web, and trying interactive approaches for sharing poetry with children. Topics include: study and analysis of poetry, ways to use poetry in the classroom, writing poetry with children. Restricted to: Community Colleges only.

L SC 194. The Art of Picture Books
1 Credit
Students will develop an understanding and appreciation of the processes of the creation of the visual aspects of children's books, including the development process from preliminary sketches and/or storyboard to the published book; various media and techniques; case studies of individual artists and works. Restricted to: Community Colleges only.

L SC 195. Mysteries for Children
1 Credit
In this course the student will become familiar with a wide variety of mysteries for children. Ways to use mysteries in the classroom and school library will also be covered. Restricted to Community Colleges only.

L SC 196. Historical Fiction for Children
1 Credit
This course looks at historical fiction as a genre. Topics include: fiction vs. history, American history in children's literature, world history in children's literature, activities for using historical fiction in a school setting. Restricted to: Community Colleges only.

L SC 197. Fantasy and Speculative Fiction
1 Credit
This course offers professionals serving school students the opportunity to increase your appreciation and knowledge of fantasy and speculative fiction through intense reading and discussion of representative works. The course will also investigate and consider options using fantasy and speculative fiction in a school setting. Restricted to: Community Colleges only.

L SC 200. Collection Management and Development in Libraries
3 Credits
Principles of identifying, selecting, acquiring, managing, and evaluating resources for libraries. Restricted to Dona Ana campus only.

L SC 201. Public Libraries
3 Credits
A study of the American public library and its place in communities. Topics may include history, philosophy, and standards, operations and procedures, governance, funding, personnel materials, user services, outreach and advocacy. Restricted to: Dona Ana campus only.

L SC 202. Academic Libraries
3 Credits
An examination of the functions of the library within the higher education environment. Topics may include history, philosophy, and organization, operations and procedures, governance, funding, personnel, materials, outreach, and user services. Restricted to: Dona Ana campus only.

L SC 203. School Library Media Specialist
3 Credits
Principles and practice of managing the school library media center, with an emphasis on its specific educational mission. Topics may include collection development, classes and lesson plans, public relations, administrative procedures, and use of technology. Restricted to Dona Ana campus only.

L SC 210. Technology Planning in Libraries
3 Credits
Overview of computer applications in libraries. Topics may include automated systems and electronic resources, introduction to evaluation of technology, and writing a technology plan. Restricted to Dona Ana campus only.

L SC 220. Innovative Technology Applications for Libraries
3 Credits
A look at uses for innovative technologies in libraries. Topics may include blogs, wikis, podcasting and virtual reality libraries. Restricted to Dona Ana campus only.

L SC 221. Experiential Learning I
1-3 Credits
Student is employed (paid or non-paid) in an approved work site and evaluated by their supervisor. Each credit requires a specified number of hours of on-the-job work experience. Consent of Instructor required. S/U Grading (S/U, Audit). Restricted to Dona Ana campus only.
Prerequisite(s): Consent of instructor.

L SC 222. Experiential Learning II
1-3 Credits
Continuation of L SC 221. Each credit requires specified number of hours of on-the-job work experience. Consent of Instructor required. S/U Grading (S/U, Audit). Restricted to Dona Ana campus only.
Prerequisite(s): L SC 221 and consent of instructor.

L SC 230. Issues and Ethics in Libraries
3 Credits
Discussions of current and continuing challenges to effective library service. Topics may include copyright, censorship, intellectual freedom, Internet filtering, problem patrons, security, or other current issues. Restricted to Dona Ana campus only.

L SC 234. Intellectual Freedom in Libraries
1 Credit
Philosophical and practical information related to library policies about access to library materials. Restricted to: Dona Ana campus only.

L SC 235. Library Security and Safety
1 Credit
Strategies for safety and security planning in libraries. Restricted to: Dona Ana campus only.

L SC 236. Banned Books
1 Credit
Banned books, selection policies, and responding to challenges. Restricted to: Dona Ana campus only.

L SC 240. Internet Resources and Research Strategies
3 Credits
Introduction to retrieving and evaluating information found on the Internet and in selected Internet-accessible databases. Restricted to: Dona Ana campus only.
L SC 250. Reference and Information Resources II
3 Credits
Evaluation and use of specialized information resources to offer reference services. Emphasis is on virtual reference and other innovative techniques. Restricted to: Dona Ana campus only.

L SC 255. Special Topics
1-3 Credits
Special topics to be announced in Schedule of Classes. May be repeated for a maximum of 12 credits. Restricted to: Dona Ana campus only.

L SC 260. Cataloging Non-Book Formats
3 Credits
Introduction to cataloging of various non-book formats and MARC coding. Restricted to: Dona Ana campus only.

L SC 270. Library Science Capstone
3 Credits
A culmination of all technical courses that are required to receive an Associate of Applied Science from the program centering around the completion of a library related project. Discussions on the role of paraprofessionals in libraries. Restricted to: Dona Ana campus only.

L SC 275. Fundamentals of Library Supervision
3 Credits
An introduction to supervision of library employees, including student assistants, to create a productive workplace. Restricted to: Dona Ana campus only.

L SC 281. Grant Writing for Libraries
1 Credit
Introduction to grant writing for libraries. Restricted to: Dona Ana campus only.

L SC 286. Children's Literature and the Primary Curriculum
3 Credits
The student will research the use of picture books and other children's literature across the curriculum with students in kindergarten through second grade. Topics include: using literature to teach science, using literature to teach math, using literature to teach social studies. Restricted to: Community Colleges only.

L SC 287. Children's Literature and the Intermediate Curriculum
3 Credits
The student will research the use of picture books and other children's literature across the curriculum with students in grades three through five. Topics include: using literature to teach writing, using literature to teach science, using literature to teach math, using literature to teach social studies. Restricted to: Community Colleges only.

L SC 288. Children's Literature and the Middle School Curriculum
3 Credits
The student will research the use of picture books and other children's literature across the curriculum in grades six through eight. Topics include: using literature to teach writing, using literature to teach science, using literature to teach math, using literature to teach social studies. Restricted to: Community Colleges only.

L SC 290. Introduction to Children's Literature for Libraries
3 Credits
This course will introduce current and potential library personnel to a wide variety of literature written for children. The course explores the history of children's literature and the path it has taken. Students will read many books from a variety of genre, explore the literary elements found in those books, and develop some evaluation criteria and ways for children to respond to the literature they read. Restricted to Dona Ana campus only.

L SC 291. Southwestern Children's Literature
1 Credit
This course will introduce students to books which can teach the children visiting your library more about the people and places of the southwest. Restricted to: Dona Ana campus only.

L SC 292. Native American Children's Literature
1 Credit
This course will introduce students to some children's and young adult books written by and about Native Americans. Restricted to: Dona Ana campus only.

L SC 295. Introduction to Young Adult Literature
3 Credits
The course will expose students to quality adolescent literature available for reading and study in middle and high school classes. It provides a broad survey of young adult literature and focuses on building an appreciation of literature, encouraging student reading, developing lifelong readers, and developing activities for critical thinking. Restricted to: Community Colleges only.

L SC 296. Multicultural Books for Children and Youth
3 Credits
This course explores a wide range of multicultural children's literature including: African American, Native American, Latino, Asian, Jewish, and Middle Eastern. Topics covered include: nonfiction of the cultures, historical fiction of the cultures, and contemporary literature of the cultures. Restricted to: Community Colleges only.

L SC 298. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with prior approval of department chair. May be repeated for a maximum of 12 credits. Restricted to: Dona Ana campus only.

LANG-LANGUAGE (LANG)

LANG 111. Beginning Language I
4 Credits
Developing language skills through study abroad for languages not offered at NMSU main campus. Specific languages to be identified with course subtitles. Main campus only.

Prerequisite: Language placement exam or consent of the instructor.

LANG 112. Beginning Language II
4 Credits
Developing language skills through study abroad for languages not offered at NMSU main campus. Specific languages to be identified with course subtitles. Main campus only.

Prerequisite: Language placement exam or consent of instructor.

LANG 211. Intermediate Language I
3 Credits
Developing language skills through study abroad for languages not offered at NMSU main campus. Specific languages to be identified with course subtitles.

LANG 212. Intermediate Language II
3 Credits
Developing language skills through study abroad for languages not offered at NMSU main campus. Specific languages to be identified with course subtitles.

Prerequisite: Language placement exam or consent of instructor.
LANG 451. Special Topics
1-3 Credits
Selected topics relating to cultures or literatures of a specific country. Credit can be applied only towards fulfilling second language requirement. Credit is not accepted towards any graduate level major or minor. May be repeated for a maximum of 12 credits. Consent of instructor required.

LANG 453. Independent Studies
1-3 Credits
Individualized, self-paced projects for advanced students. May be repeated under different subtitles for a maximum of 6 credits. Prerequisite: consent of instructor.

LATIN (LAT)

LAT 112. Elementary Latin II
4 Credits
Latin for beginners. Restricted to: Main campus only. Prerequisite(s): C or better in LAT 111.

LAWE-LAW ENFORCEMENT (LAWE)

LAWE 201. Introduction to Juvenile Delinquency
3 Credits
An introductory overview of the juvenile justice system of due process, custody, detention and release. Note: course does not meet upper division requirements towards completion of Bachelor of Science in Criminal Justice. Restricted to: Community Colleges Only.

LAWE 202. Police Patrol Procedures
3 Credits
A critical review of police procedures and the influences on police behavior; policy development, including the police role; discretion; police community interaction and arrest, search and seizure. Restricted to: Community Colleges only.

LAWE 203. Introduction to Police Supervision
3 Credits
An introductory overview of police supervision and concerns as it applies to law enforcement. (Note: Course does not meet upper division requirements toward completion of Bachelor of Science in Criminal Justice.) Restricted to: Community Colleges only.

LAWE 204. Introduction to Homeland Security
3 Credits
A historical perspective of international and domestic terrorist threats and the need to develop cohesive response policies and practices in the interest of National Security. [Course does not meet requirements towards completion of Bachelor of Science in Criminal Justice.] Restricted to: Community Colleges only. Prerequisite(s): C J 101.

LAWE 205. Practical Field Investigations
4 Credits (3+3P)
Incorporates the current methods and techniques for the management of the crime scene, includes documentation, collection and preservation of evidence and case presentations. [Course does not meet requirements towards completion of Bachelor of Science in Criminal Justice.] Restricted to Community Colleges campuses only. Prerequisite(s): C J 101 and C J 221.

LAWE 206. Traffic Enforcement and Crash Investigations
3 Credits
History and development of traffic laws and regulations, including basic elements of traffic violations, detection, apprehension, impaired drivers and guidelines and procedures for effective crash investigations and reporting. Restricted to: Community Colleges only.

LAWE 207. Legal Aspects of Law Enforcement
3 Credits
An evaluation of police authority including responsibilities, civil liability, liability implications, legal obligations, legal restraints, laws of arrest, and search and seizure. Restricted to: Community Colleges only.

LAWE 210. Introduction to Law Enforcement
3 Credits
An introduction to Criminal Justice System in our democratic society with emphasis on Law Enforcement, Criminal Justice Administration and application. (This is a Law Enforcement Academy Certification Course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. Corequisite(s): LAWE 211, 212, 213, 214, 215, 216, 217, 218, 219, 222 & OEEM 155.

LAWE 211. Policing in America
3 Credits
The study of Law Enforcement concepts in an American society with emphasis on law and order at the federal, state and local agencies. (This is a Law Enforcement Academy Certification course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. Corequisite(s): LAWE 210, 212, 213, 214, 215, 216, 217, 218, 219, 222 & OEEM 155.

LAWE 212. Patrol Procedures
3 Credits
Basic patrol concepts with emphasis on police patrol activities including the practices and procedures necessary to perform the patrol functions and report writing. (This is a Law Enforcement Academy Certification course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. Corequisite(s): LAWE 210, 211, 213, 214, 215, 216, 217, 218, 219, 222 & OEEM 155.

LAWE 213. Criminal Investigations
3 Credits
Fundamentals of criminal investigations including scene security, evidence collection, traffic accidents, case preparation and report writing. (This is a Law Enforcement Academy Certification course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. Corequisite(s): LAWE 210, 211, 212, 214, 215, 216, 217, 218, 219, 222 & OEEM 155.

LAWE 214. Criminal Law & Court Procedures
3 Credits
Concepts on the rule of law, substantive and procedural law including liability, crimes against persons and property. (This is a Law Enforcement Academy Certification course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. Corequisite(s): LAWE 210, 211, 212, 213, 215, 216, 217, 218, 219, 222 & OEEM 155.
LAWE 215. Emergency Vehicle Operations  
1 Credit  
Instruction on operating a patrol vehicle, procedures for emergency driving including legal issues related to emergency vehicle operations. (This is a Law Enforcement Academy Certification course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. 
Corequisite(s): LAWE 210, 211, 212, 213, 214, 216, 217, 218, 219, 222 & OEEM 155.

LAWE 216. Traffic Law and Procedures  
3 Credits (2+3P)  
Instruction on law of motor vehicles including traffic enforcement operations and law enforcement officer's role in report writing, hazardous materials incidents and accident investigations. (This is a Law Enforcement Academy Certification course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. 
Corequisite(s): LAWE 210, 211, 212, 213, 214, 215, 217, 218, 219, 222 & OEEM 155.

LAWE 217. Custody and Defensive Tactics  
3 Credits  
Instruction on the mechanics of arrest, custodial procedures, use of force, transporting prisoners and defensive tactics for officer protection. (This is a Law Enforcement Academy Certification course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. 
Corequisite(s): LAWE 210, 211, 212, 213, 214, 215, 216, 218, 219, 222 & OEEM 155.

LAWE 218. Basic Firearms  
3 Credits (1+6P)  
Familiarization on the operation and maintenance of firearms, safety, use of deadly force, body armor and marksmanship. (This is a Law Enforcement Academy Certification course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. 
Corequisite(s): LAWE 210 211, 212, 213, 214, 215, 216, 217, 219, 222 & OEEM 155.

LAWE 219. Law Enforcement Report Writing  
4 Credits  
Covers police, corrections, security and pre-sentence reports, including writing and use of forms. (This is a Law Enforcement Academy Certification course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. 
Corequisite(s): LAWE 210 211, 212, 213, 214, 215, 216, 217, 219, 222 & OEEM 155.

LAWE 220. Law Enforcement Internship  
3 Credits  
Application of knowledge, skills and abilities, in an agency as an intern and integrated member of a law enforcement affiliated agency. 
Prerequisite: consent of instructor.

LAWE 222. Law Enforcement Physical Fitness  
2 Credits  
Instruction on health and physical fitness concepts, flexibility, strength, body composition and cardiovascular endurance. (This is a Law Enforcement Academy Certification course.) Consent of instructor required. Restricted to: Dona Ana campus only. Restricted to LAWE majors. 
Corequisite(s): LAWE 210, 211, 212, 213, 214, 215, 216, 217, 218, 219 & OEEM 155.

LAWE 233. Practical Approach to Terrorism  
3 Credits  
Gives responders an overall safety approach in recognizing and responding to incidents involving terrorism. Presents and overview in types of harm, explosive weapons, chemical weapons, biological weapons and radiological weapons. [Course does not meet requirements towards completion of Bachelor of Science in Criminal Justice.] 
Restricted to: Dona Ana campus only. Crosslisted with: FIRE 233

LIB-LIBRARY SCIENCE (LIB)

LIB 101. Introduction to Research  
1 Credit  
A practical, hands-on, step-by-step introduction to the basics of university-level library research. Topics include the academic method, plagiarism, selection and use of information resources. (Eight-week course.)

LIB 111. Introduction to Information Literacy in an Electronic Environment  
3 Credits  
Introduction to the basics of the research process; the organization, location and evaluation of information using print, non-print and electronic resources; and techniques of effective personal information management in a computerized setting. Uses a combination of active and hands-on learning methods as well as lectures.

LIB 307. History of the Book: From Scroll to Scrolling  
3 Credits  
Describes the production and distribution of written works from papyrus scrolls through codex manuscripts and printed books to digital texts. Looks at how technology has influenced the transmission and presentation of texts and the way these factors affect how people perceive the texts. Studies the physical evidence books provide about their own histories.

LING-LINGUISTICS (LING)

LING 200G. Introduction to Language  
3 Credits  
Traditional fields of language study (sound, grammar, meaning) and newer ones (language as social behavior, language and cognition, language variation, animal communication).

LING 301. Introduction to Psycholinguistics  
3 Credits  
Same as PSY 301.

LING 302V. Language and Society  
3 Credits  
Study of how social identity including such factors as ethnicity, age, sex, education, power and socio-economic class is expressed in language systems and how misunderstandings arise between groups. Research skills are emphasized.
LING 303. Exploring Language Systems
3 Credits
Forms of linguistic semantic, syntactic and phonological organization.
Prerequisite(s): LING 200G.

LING 405. Topics in Linguistics
3 Credits
Selected linguistics topics subtitled in the Schedule of Classes. May be repeated for a maximum of 6 credits under different subtitles.
Prerequisite: consent of instructor.

LING 425. Language and the Mind: Introduction to Psycholinguistics
3 Credits
This course is an introduction to psycholinguistics; the study of how humans learn, represent, comprehend and produce language. Throughout this course, we address a variety of questions on the psychology of language most of which are still being answered. These include: What does it mean to know a language? What are the cognitive processes involved in language use? How do we produce and recognize speech? How can we improve texts and make them easier to read? How can we control speech in special situations to avoid errors?
Prerequisite(s): LING 200G or consent of instructor.

LING 451. Independent Studies in Linguistics
1-3 Credits
Individual or group study of selected topics to be identified by subtitle. May be repeated for a maximum of 6 credits.
Prerequisites: LING 200G and prior arrangement with faculty supervisor.

LING 455. Research in Linguistics
3 Credits
This course will provide a capstone experience for students who have progressed through the program in linguistics and provide the foundation for further study at the post-graduate level in a linguistics-related field. Students will apply their foundation of knowledge and skills in linguistics through the realization of an individualized, inquiry-based project. Consent of instructor may enroll student only in case of elective credit shortfall with concurrent enrollment.
Prerequisite(s): LING 200G, LING 301, LING 302V, LING 303, plus 9 credit hours of related electives.

LING 500. Introduction to Linguistics
3 Credits
Survey of the main branches of linguistics: phonology, morphology, syntax, semantics, language acquisition, sociolinguistics, historical linguistics and some of the theoretical issues in the field.

LING 501. Introduction to Psycholinguistics
3 Credits
Students will be responsible for all requirements of LING 301 and will undertake independent, directed research. Same as PSY 501.
Prerequisite: PSY 201G.

LING 502. Graduate Study in Sociolinguistics
3 Credits
Study of how social identity including factors such as ethnicity, age, gender education and socio-economic class is expressed in language systems.
Prerequisites: LING 200G or LING 500 recommended.

LING 503. Exploring Language Systems- Grad
3 Credits
Students will be responsible for all requirements of LING 303 and will undertake independent, directed research.
Prerequisite(s): LING 200 or LING 500.

LING 505. Selected Topics
3 Credits
Studies, varying from year to year, in linguistics.

M E - MECHANICAL ENGINEERING (M E)

M E 102. Mechanical Engineering Orientation
1 Credit
Emphasis on tours of M E labs and NMSU facilities that illustrate possible career paths for mechanical engineers. Students are introduced to department faculty, student organizations, and support services at NMSU. Topics include role of good communication skills, using modern technology, team building, and intellectual property. Students are advised in planning balance of their academic program. Restricted to majors.

M E 159. Graphical Communication and Design
2 Credits (1+3P)
Sketching and orthographic projection. Covers detail and assembly working drawings, dimensioning, tolerance specification, and design projects. Pre/ Corequisite(s): MATH 190G.

M E 201. Supplemental Instruction to Dynamics
1 Credit
Optional workshop for students in M E 237. The workshop focuses on problem solving skills associated with M E 237. Course does not count toward departmental degree requirements. May be repeated up to 1 credits. Restricted to Las Cruces campus only.
Corequisite(s): M E 237.

M E 202. Supplemental Instruction to Thermodynamics
1 Credit
Optional workshop for students in ME 240. The workshop focuses on problem solving skills associated with ME240. Course does not count toward departmental degree requirements. Restricted to Las Cruces campus only.
Corequisite(s): M E 240.

M E 210. Electronics and System Engineering
3 Credits (2+3P)
Introduction to microcontrollers, measurement systems, motion actuators, sensors, electric circuits, and electronic devices and interfacing. Students required to work individually and in teams to design and test simple electromechanical systems. Restricted to Las Cruces campus only.
Prerequisite(s): MATH 192.

M E 222. Introduction to Product Development
3 Credits (2+3P)
Introduction to modern methods used in the realization of products. Traditional manufacturing processes, such as metal stamping, turning, milling, and casting are reviewed. Modern methods of rapid prototyping and model making are discussed in context of computer-aided design. Techniques for joining metals, plastics, and composites are discussed. Role of quality control is introduced.
Prerequisite: M E 159.
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<td>Engineering Analysis I</td>
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<td>Mechanical Design</td>
<td>3</td>
<td>MATH 291G. Prerequisite(s): M E 236 or M E 237 and C E 301.</td>
</tr>
<tr>
<td>M E 328</td>
<td>Engineering Analysis II</td>
<td>3</td>
<td>MATH 291G. Prerequisite(s): M E 228 or MATH 392.</td>
</tr>
<tr>
<td>M E 330</td>
<td>Environmental Management Seminar I</td>
<td>1</td>
<td>MATH 291G. Prerequisite(s): C E 301 and M E 328 or MATH 392.</td>
</tr>
<tr>
<td>M E 332</td>
<td>Vibrations</td>
<td>3</td>
<td>MATH 392. Prerequisite(s): M E 328 or M E 237 and M E 261.</td>
</tr>
<tr>
<td>M E 333</td>
<td>Intermediate Dynamics</td>
<td>3</td>
<td>MATH 392. Prerequisite(s): M E 328 or M E 237 and M E 228 or MATH 392.</td>
</tr>
<tr>
<td>M E 338</td>
<td>Fluid Mechanics</td>
<td>3</td>
<td>MATH 392. Prerequisite(s): M E 328 or M E 237 and M E 228 or MATH 392.</td>
</tr>
<tr>
<td>M E 340</td>
<td>Applied Thermodynamics</td>
<td>3</td>
<td>MATH 392. Prerequisite(s): M E 328 or M E 237 and M E 228 or MATH 392.</td>
</tr>
<tr>
<td>M E 341</td>
<td>Heat Transfer</td>
<td>3</td>
<td>MATH 392. Prerequisite(s): M E 328 or M E 237 and M E 228 or MATH 392.</td>
</tr>
<tr>
<td>M E 345</td>
<td>Experimental Methods I</td>
<td>3</td>
<td>MATH 392. Prerequisite(s): M E 328 or M E 237 and M E 228 or MATH 392.</td>
</tr>
</tbody>
</table>
M E 400. Undergraduate Research
1-3 Credits
Performed with the direction of a department faculty member. May be repeated for a maximum of 6 credits.
Prerequisite: consent of faculty member.

M E 401. Heating/Air-Conditioning System
3 Credits
HVAC system design including heating and cooling load calculations, psychometrics, piping, duct layout, and system control. May be repeated up to 3 credits.
Prerequisite(s): M E 340 and M E 341.

M E 405. Special Topics
3 Credits
Topics of modern interest to be offered by the departmental staff. May be repeated up to 12 credits.
Prerequisite(s): Senior standing.

M E 425. Design of Machine Elements
3 Credits
Design of machine elements through the application of mechanics. Fatigue and theories of failure. Design projects assigned.
Prerequisite(s): M E 326.

M E 426. Design Project Laboratory I
3 Credits
Students address a design problem in which innovation and attention to detail are emphasized. Solution of the problem entails applications of mechanics and/or the thermal sciences.
Prerequisite(s)/Corequisite(s): M E 425.

M E 427. Design Project Laboratory II
3 Credits
Continuation of M E 426.
Prerequisite: M E 426.

M E 445. Experimental Methods II
3 Credits (2+3P)
Emphasis on experimental techniques, instrumentation and data acquisition in fluid mechanics, heat transfer, and thermodynamics. Laboratory results will be presented in written and verbal formats.
Prerequisite(s): (M E 338 or A E 339), M E 340, M E 341, and M E 345.

M E 449. Mechanical Engineering Senior Seminar
1 Credit
Senior seminar course covering topics relevant to graduating mechanical engineering seniors (job placement, interviewing techniques, resume preparation).
Prerequisite: senior standing.

M E 452. Introduction to Automation and Control System Design
3 Credits (2+3P)
Control system design and implementation. Emphasis on practical applications of traditional control algorithms to mechanical engineering applications in thermofluid systems and mechanical systems. Design of feedback analog and digital control systems. Introduction to robots and automation. Lab assignments include programming industrial robotic and automation systems. May be repeated up to 3 credits.
Prerequisite(s): M E 328 and M E 234 or M E 237, or consent of instructor.

M E 456. Experimental Modal Analysis
3 Credits
Emphasis on hands-on techniques for structural vibration tests for practical applications. Interpretation of experimental results by means of advanced signal processing tools, basic system identification methodology, and reduced-order modeling procedures. May be repeated up to 3 credits.
Prerequisite(s): M E 332, M E 228 or MATH 392, and M E 261, or consent of instructor.

M E 460. Applied Finite Elements
3 Credits
Introduction to the practical aspects of structural finite element modeling. Course focuses on providing a working knowledge of how to effectively incorporate finite element techniques into the design process. May be repeated up to 3 credits.
Prerequisite(s): M E 425.

M E 481. Alternative and Renewable Energy
3 Credits
Current and future energy needs of the United States and the world will be considered primarily from the standpoint of renewable energy sources such as solar, wind, ocean, and biomass. Technical, economic, and environmental aspects of each technology will be addressed.
Prerequisite(s): M E 341, and (M E 338 or A E 339).

M E 483. Introduction to Combustion
3 Credits
Combustion is one of the most fundamental phenomena related to human activities, such as obtaining thermal energies. Fundamental phenomena and physics related to combustion will be discussed, including thermodynamics, chemical reactions; combustion kinetics, premixed and diffuse flames, and examples. May be repeated up to 3 credits.
Prerequisite(s): CHEM 112G, M E 228 or MATH 392, and M E 340.

M E 487. Mechatronics
3 Credits (2+3P)
Introduction to the analysis and design of computer-controlled electromechanical systems, including data acquisition and conversion, force and motion sensors, actuators, mechanisms, feedback control, and robotic devices. Students required to work in teams to construct and test simple robotic systems. May be repeated up to 3 credits.
Prerequisite(s): M E 210 or E E 201 and M E 345.

M E 502. Elasticity I
3 Credits
Introduction to stress tensor, strain tensor, constitutive law, energy theorems, plane stress and plane strain. Also covers torsion of shafts and propagation of stress waves in elastic solids.

M E 503. Thermodynamics
3 Credits
A comprehensive study of the first and second laws of thermodynamics, nonequilibrium processes, equations of state, and statistical thermodynamics.

M E 504. Continuum Mechanics
3 Credits
Basic introduction to the Mechanics of Continuous Media. Its aim is to prepare the student for more advanced courses in Solid and Fluid Mechanics. The topics to be covered include: introduction to Cartesian tensors, tensor algebra and calculus; Lagrangian and Eulerian kinematics; Cauchy and Piola-Kirchhoff stresses; general principles of conservation; constitutive theory for ideal fluids, Newtonian and non-Newtonian fluids, finite and linear elasticity.
M E 505. Fundamentals of the Theory of Plasticity
3 Credits
Basic concepts in continuum mechanics, equations of the plastic state, equations of elastic-plastic equilibrium, criteria for yielding, initial and subsequent yield surfaces, two-dimensional and axi-symmetric plasticity problems, dynamic problems.
Prerequisite(s): M E 502.

M E 509. Individualized Study
3 Credits
Individualized study covering specialized topics in mechanical and aerospace engineering. Consent of instructor required.

M E 510. Special Topics
1-6 Credits
Topics in mechanical engineering. May be repeated for a maximum of 6 credits.
Prerequisite: consent of the department head.

M E 511. Dynamics
3 Credits
An advanced study of the dynamical behavior of systems of particles and rigid bodies, with emphasis on the theoretical background of dynamics.

M E 512. Vibrations
3 Credits
Free and forced vibrations for discrete and continuous systems with single or multiple degrees of freedom. Introduction to nonlinear and random vibration and solution techniques for such systems.

M E 514. Advanced Composite Materials
3 Credits
Study on the anisotropic elasticity, strength of anisotropic materials and micromechanics. Topics from micromechanics and macromechanics through lamination theory and examples of plate bending, buckling and vibration problems. Course taught on an as-needed basis.

M E 517. Nonlinear Dynamics and Chaos
3 Credits
Singular points, periodic solutions, stability, and local bifurcations for ODEs and maps; phase space methods, invariant manifolds, and Poincare maps; nonsmooth, periodic, time-delay, and Hamiltonian systems; perturbation, averaging, and harmonic balance methods; center manifold reduction and normal forms; strange attractors, Liapunov exponents, attractor dimension; dissipative and Hamiltonian chaos

M E 518. Finite Element Analysis
3 Credits
Introduction to finite element method. Topics include mathematical modeling, variational formulation, shape functions, truss, beam, solid, and shell elements. Includes static, dynamic, and nonlinear analysis.

M E 520. Micromechanics
3 Credits
The course covers fundamentals of micromechanics: point force solution, Eshelby’s problem, various approximate methods to calculate effective material properties of inhomogeneous materials, variational principles of the mechanics of composites. The history of micromechanics is discussed from Navier and Cauchy to current state of the art.
Prerequisite(s): M E 502.

M E 527. Control of Mechanical Systems
3 Credits
Rigorous introduction to the control of dynamical systems, with a focus on mechanical systems. Includes basic systems theory, controllability, feedback and stabilization, observers and dynamic feedback, and applications of methods to systems of importance in mechanical engineering. Consent of Instructor required. Crosslisted with: A E 527.
Prerequisite(s): M E 452 or equivalent, or consent of instructor.

M E 529. Nonlinear and Optimal Control
3 Credits
Introduction to optimal control theory, Pontryagin’s Maximum Principle, control of simple mechanical systems, Lagrangian and Hamiltonian methods, introduction to geometric control-Lie algebras, distributions, controllability and observability

M E 530. Intermediate Fluid Mechanics
3 Credits
Application of exact and empirical solutions to fundamental flow problems, including viscous and inviscid behavior. These applications establish a theoretical basis for the origin and physical role of common terms in the governing equations.

M E 533. Computational and Theoretical Fluid Mechanics
3 Credits
Application of fluid mechanics theory and computational approaches to advanced flow problems, including viscous/inviscid and laminar/turbulent behavior. Complex flow problems addressed through development of a theoretical formulation, followed by application of computational fluid dynamic (CFD) tools, and finally presentation and validation of solution data.
Prerequisite: M E 530 or consent of instructor.

M E 534. Advance Computational Fluid Dynamics
3 Credits
Advanced techniques for large-scale numerical simulations of fluid flows: spectral numerical methods, including Fourier and other expansions, Galerkin and collocation projections, computational methods to solve incompressible and compressible Navier-Stokes equations, high-resolution methods for hyperbolic equations with discontinuous solutions, and issues related to implementation on supercomputers.
Prerequisite(s): M E 533.

M E 536. Hydrodynamic Stability and Turbulence
3 Credits
Introduction to fundamentals of hydrodynamic stability, classical linear stability analysis of parallel shear flows and rotating flows, nonlinear stability, basic concepts in turbulence theory
Prerequisite(s): M E 533.

M E 540. Intermediate Heat Transfer
3 Credits
Fundamentals of conduction, convection, and radiation heat transfer. Emphasis on the application of combined heat transfer to the solution of problems not accessible at the undergraduate level.

M E 570. Engineering Analysis I
3 Credits
Introduction to engineering analysis with emphasis on engineering applications. Topics include linear algebra, linear ordinary differential equations, and linear partial differential equations with focus on analytical methods.
M E 580. Engineering Analysis II  
3 Credits  
Engineering analysis with emphasis on engineering applications. Topics include analytical and numerical methods in linear and nonlinear ordinary and partial differential equations.  
Prerequisite: M E 570 or consent of instructor.

M E 598. Special Research Programs  
1-3 Credits  
Individual investigations, either analytical or experimental. May be repeated for a maximum of 6 credits.

M E 599. Master's Thesis  
15 Credits  
Thesis.

M E 600. Doctoral Research  
1-15 Credits  
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination.

M E 698. Special Research Programs  
1-3 Credits  
May be repeated for a maximum of 6 credits.

M E 700. Doctoral Dissertation  
15 Credits  
Dissertation.

**M SC-MILITARY SCIENCE (M SC)**

M SC 110. Introduction to Military Science  
2 Credits (2+1P)  
Concepts of leadership, including basic drill, fitness sessions, rappelling, first aid, map reading, and basic marksmanship. Optional physical fitness sessions and weekend exercises.

M SC 111. Introduction to Leadership  
2 Credits (2+1P)  
Learning and application of leadership, as well as relating organizational ethics to effective leadership using communication skills to improve individual performance. Optional physical fitness sessions and weekend exercises.

M SC 210. Self/Team Development  
3 Credits (3+1P)  
Learning and application of leadership skills to building effective teams, using oral/written skills, planning, and coordination of group efforts. Include advanced first aid, land navigation, and basic military tactics. Leadership Lab and three physical fitness sessions per week required.

M SC 211. Leadership in Action and Team Building  
3 Credits (3+1P)  
Individual and team aspects of military tactics in small unit operations. Use of radio, movement, planning for safety/security and pre-execution checks. Continued leadership development and techniques for training others. Leadership Lab and three physical fitness sessions per week required.

M SC 225. Directed Studies  
1-3 Credits  
Individual directed studies under supervision of designated faculty. May be repeated for a maximum of 12 credits. No S/U option.  
Prerequisite: GPA 2.5 or better.

M SC 310. Leading Small Organizations I  
3 Credits  
Practical opportunities to lead small groups in situations of graduated complexity. Use of small unit defensive tactics and opportunities to conduct training for lower division students. Leadership Lab M SC 310L, three physical fitness sessions per week, and weekend exercises required.  
Prerequisite: must meet Basic Course of Military Science requirements.  
Corequisite: M SC 310L.

M SC 310 L. Advanced Course Leadership Laboratories  
1 Credit  
Planning, coordination, execution and evaluation of training and activities with basic course students and ROTC program. Students develop and refine leadership skills in positions of responsibility. Open only to students taking M SC 310.  
Corequisite: M SC 310.

M SC 320. Leading Small Organizations II  
3 Credits  
Delegation and supervision based on leadership case studies that require planning and adaptation to the unexpected in organizations under stress. Use of ethical decision making to enhance team performance. Leadership Lab M SC 310L, three physical fitness sessions per week, and weekend exercises required.  
Prerequisite: M SC 310 or consent of instructor.  
Corequisite: M SC 320L.

M SC 320 L. Leading Small Organization Lab  
1 Credit  
Practice and refinement of leadership skills. Different roles assigned for students at different levels in the program. Planning, coordination, execution and evaluation of training and activities with basic course students and ROTC program. Open to students taking M SC 320.  
Corequisite: M SC 320.

M SC 325. Advanced Directed Studies  
1-3 Credits  
Directed individual study of advanced subjects. May be repeated for a maximum of 12 credits. No S/U option.  
Prerequisite: GPA 2.5 or better.

M SC 350. Leadership Internship II  
1-6 Credits (1-6)  
Six-week paid internship conducted at an Army installation. Leadership-course environment is highly structured and demanding. Stresses leadership at small-unit levels under varying conditions. Evaluations during this required internship weigh heavily in type of commission and branch assignment offered.  
Prerequisite(s): M SC 310, M SC 310L, M SC 320, and M SC 320L.

M SC 401. Leadership Challenges and Goal Setting  
3 Credits  
Planning, conducting and evaluating activities of the ROTC cadet organization, including the articulation of goals, and actuation of plans to attain them. Assessment of organizational skills and development of strategies to improve group cohesion through learning and application of Army policies and programs. M SC 401L, three physical fitness sessions per week, and weekend exercises required.  
Prerequisite: M SC 320 or consent of instructor.  
Corequisite: M SC 401L.
M SC 401 L. Advanced Course Leadership Laboratories
1 Credit
Different roles assigned for students at different levels in the program. Practice and refinement of leadership skills. Planning coordination, execution and evaluation of training and activities with basic course students and ROTC program. Open only to students taking M SC 401.
Corequisite: M SC 401.

M SC 402. Transition to Lieutenant
3 Credits
Continues methodology from M SC 401. Identification and resolution of ethical dilemmas along with counseling and motivation techniques. Examination of tradition and law as these issues relate to the Army officer and prepare the student to be a successful Army lieutenant. Leadership Lab M SC 402L, three physical fitness sessions per week and weekend exercises required.
Prerequisite: M SC 401 or consent of instructor.
Corequisite: M SC 402L.

M SC 402 L. Transition to Lieutenant Lab
1 Credit
Different roles assigned for students at different levels in the program. Practice and refinement of leadership skills. Planning, coordination, execution, and evaluation of training and activities with basic course students and ROTC program. Open only to students taking M SC 402.
Corequisite: M SC 402.

M SC 425. Practicum
1-4 Credits
Independent projects conducted under the direction of designated faculty, and concerned with analysis of selected leadership or management problems. May be repeated for a maximum of 16 credits. No S/U option.

M SC 465. Leading Small Organization - Graduate Level
3 Credits
Practical opportunities to lead small groups in situations of graduated complexity. Use of small unit defensive tactics and opportunities to conduct training for graduate students. Leader Lab M SC 465L, three physical fitness sessions per week and weekend exercises required. Research paper required. No S/U option.
Prerequisite: consent of PMS.
Corequisite: M SC 465L.

M SC 465 L. Advanced Course Leadership Lab - Graduate Level
1 Credit
Planning, coordination, execution and evaluation of training and activities with basic course students and ROTC program. Students develop and refine leadership skills in positions of responsibility. Open only to students taking M SC 465.
Prerequisite: consent of PMS.
Corequisite: M SC 465.

M SC 501. Leadership Challenges and Goal Setting
3 Credits (3+1P)
Planning, conducting, and evaluating activities of ROTC cadet organization. Articulation of goals and plans to attain them. Assessment of organizational skills and development of strategies to improve group cohesion. Leadership lab, three physical fitness sessions per week, weekend exercise, and research paper required. Consent of instructor required.
Prerequisite(s): Consent of PMS.
Corequisite(s): M SC 401L.

M SC 502. Transition to Lieutenant
3 Credits (3+1P)
Continuation of M SC 501. Identification and resolution of ethical dilemmas. Counseling and motivation techniques. Examination of tradition and law for officers. Leadership lab, three physical fitness sessions per week, weekend exercises, and research paper required. Consent of instructor required.
Prerequisite(s): Consent of PMS.
Corequisite(s): M SC 402L.

MAT-AUTOMATION & MANUFACTURING (MAT)

MAT 102. Print Reading for Industry
3 Credits (2+2P)
Reading, interpretation, and revisions of industrial technical drawings common to manufacturing, Aerospace, machine parts, electrical, hydraulic, and Pneumatic drawings. Interpretation of engineering drawings and related shop calculations. Introduction Crosslisted with: AERT 113. Restricted to: Community Colleges only.

MAT 105. Introduction to Manufacturing
3 Credits
Introduction to manufacturing evolution from basic assembly process to modern automated processes. Covers history, employability, soft skills, quality measurements, teamwork concept, production requirements, and considerations in plan layout and design. Minimum math proficiency of CCDM 114 required or math placement into MATH 120 or higher. Restricted to: Community Colleges only.

MAT 106. Applied Manufacturing Practices
3 Credits (2+2P)
Course will illustrate how various products are manufactured along with associated process. Mechanical behavior such as bending, cold worked, strained, work hardened, and heat transfer will be emphasized as well. In lab, students will learn how to make selected products starting from prints to complete projects including quality control. Crosslisted with: AERT 114. Restricted to: Community Colleges only.

MAT 107. Computer Integrated Manufacturing PLTW
3 Credits (2+2P)
Applies principles of robotics and automation to Computer Aided Design (CAD) design. The course builds on computer solid modeling skills developed in Introduction to Engineering Design, and Design and Drawing Production. Students use Computer Numerical Control (CNC) equipment to produce actual models of their three-dimensional designs. Fundamental concepts of robotics used in automated manufacturing, and design analysis are included. Restricted to: Community Colleges only.

MAT 108. Metrology, Safety and Quality Control for Manufacturing
3 Credits (2+2P)
Use of measuring tools in manufacturing process and quality control. These tools include: vernier and digital micrometers, calipers, height gauges, hole gauges, pin gauges, electrical pressure/flow, temperature measuring, stress/strain measurements, and non-destructive testing (eddy currents, magnetic particle, ultrasonic, bubble emission, x-ray, Gamma ray, radiography, visual inspection, ring test, taping & Zygo). Instruction to use of coordinate machine while covering the safety issues that pertains to these types of tools and equipment. Restricted to: Community Colleges only.
MAT 110. Machine Operation and Safety  
3 Credits (2+2P)  
Introduction to the operation and safety aspects of various types of machinery and equipment, including both mechanical and electrical machines, Rigid Tubing, and Flexible Lines. Maintenance and safety operation of industrial equipment will also be covered. Restricted to: Community Colleges only. Crosslisted with: AERT 115

MAT 130. Applied Industrial Electricity I  
4 Credits (3+2P)  
Electrical safety, AC and DC circuits, use and care of common measuring instrumentation, schematic and wiring diagrams, electromagnetism, National Electric Code branch circuits. Restricted to: Community Colleges only.  
Prerequisite(s): MATH 120 or ELT 120 or OETS 118.

MAT 135. Applied Industrial Electricity II  
4 Credits (3+2P)  
Relationship between motor power, speed, and torque, basic application of relay circuits, motor control circuits, inductance and capacitance factors, transformers, solid state devices circuits and applications. Restricted to: Community Colleges only.  
Prerequisite(s): MAT 130.

MAT 145. Electromechanical Systems for Non-Majors  
4 Credits (3+3P)  
Electromechanical system interfacing. Principles and applications of preventive and corrective maintenance procedures on automated industrial production machines using system technical and maintenance manuals to develop troubleshooting procedures using systems block and schematic diagrams.  
Prerequisite: consent of instructor.

MAT 149. Industrial Mechanical Elements  
3 Credits (2+2P)  
Introduction to mechanical systems, theory, characteristics and uses for the different types of mechanical power transmission systems used in the industry, and related industrial safety practices. Topics include: safety, drives, shafts, maintenance and lubrication. Restricted to: Community Colleges only.

MAT 151. Introduction to Metalworking I  
3 Credits (2+2P)  
Measuring instruments, including steel rules, combination and transfer tools, micrometers, vernier instruments, bevel instruments, and indicators. Shop safety and first aid, introduction to cutting fluids, saws and sawing, and drill presses. Restricted to: Community Colleges only.

MAT 205. Statistical Controls for Manufacturing Technicians  
3 Credits (2+2P)  
Use of hardware and software for quality assurance to include the design of experiments, sampling techniques, SPC, control chart application and development, and process reliability. Restricted to: Community Colleges only.  
Prerequisite(s): ELT 120 or MATH 120.

MAT 221. Cooperative Experience I  
1-6 Credits  
Supervised cooperative work program. Student is employed in an approved occupation and rated by employer and instructor. Student meets in a weekly class. Graded S/U.  
Prerequisite: consent of instructor.

MAT 234. Industrial Electricity Maintenance  
4 Credits (3+3P)  
Introduction into electrical systems, theory and uses for the different types of motors used in the industry and related industrial safety practices. DC, AC stepper and servo motors, motor speed and torque, motor performance, and efficiency, motor control fundamentals using variable frequency drives, vector controls, servo and stepper drives. Restricted to: Community Colleges only.

MAT 235. Programmable Logic Controllers Pneumatics  
2 Credits (1+2P)  
Introduction to theory and application of pneumatic power transfer and control. Programmable logic controllers (PLC s) introduced as controlling elements for electropneumatic systems. Restricted to: Community Colleges only.

MAT 240. Electromechanical Devices  
4 Credits (2+4P)  
Theory and application of electromechanical devices and digital control circuits. Includes AD and DA converters, pneumatics, hydraulics, programmable logic controllers, DC, AC, and stepper motors, and servomechanisms. Crosslisted with: AERT 211  
Prerequisite(s): MAT 160 and (MAT 105 or (MAT 110 & MAT 135)). Restricted to: Community Colleges only.

MAT 245. Electromechanical Systems  
3 Credits (2+2P)  
Electromechanical system interfacing. Principles and applications of preventive and corrective maintenance procedures on industrial production machines using system technical and maintenance manuals to develop troubleshooting procedures using systems block and schematic diagrams. Crosslisted with: AERT222.  
Prerequisite(s)/Corequisite(s): AERT 211 or MAT 240. Prerequisite(s): ELT 135 and ELT 160. Restricted to: Community Colleges only.

MAT 265. Special Topics  
1-6 Credits  
Course subtitled in the Schedule of Classes. May be repeated for a maximum of 12 credits.  
Prerequisite: consent of instructor.

MATH-MATHEMATICS (MATH)  

MATH 101. General Supplemental Instruction I  
1 Credit  
Corequisite(s): MATH 120.

MATH 102. General Supplemental Instruction II  
1 Credit  
Corequisite(s): MATH 121G.

MATH 107. Topics in Mathematics  
1-3 Credits  
Topics to be announced in the Schedule of Classes. Maximum of 3 credits per semester. Total credit not to exceed 6 credits. Community Colleges only.  
Prerequisite: consent of instructor.
MATH 111. Fundamentals of Elementary Mathematics I

3 Credits

Numbers and the four operations of arithmetic. Understanding and comparing multiple representations of numbers and operations, in particular how these representations build from whole numbers to integers to fractions and decimals. Applying properties of numbers and operations in contextual situations. Reasoning, communicating, and problem solving with numbers and operations. Applications to ratio, and connections with algebra. Taught primarily through student activities and investigations. Restricted to: EDUC,EPAR,E ED,ECED majors.

Prerequisite(s): ENGL 111G and grade of C or better in MATH 120.

MATH 112G. Fundamentals of Elementary Math II

3 Credits

Geometry and measurement. Multiple approaches to solving problems and understanding concepts in geometry. Analyzing and constructing two- and three-dimensional shapes. Measurable attributes, including angle, length, area, and volume. Understanding and applying units and unit conversions. Transformations, congruence, and symmetry. Scale factor and similarity. Coordinate geometry and connections with algebra. Reasoning and communicating about geometric concepts. Taught primarily through student activities and investigations.

Prerequisite(s): C or better in MATH 111.

MATH 120. Intermediate Algebra

3 Credits

Linear and algebraic functions as they arise in real world problems. Exponential and logarithmic functions. Equations and inequalities and their solutions considered symbolically, graphically and numerically.

Prerequisite: adequate score on the Mathematics Placement Examination (see note above)

MATH 121G. College Algebra

3 Credits

Fundamental concepts of functions, including algebraic and graphical properties. Fitting functions to data. Finding zeroes and extreme values. Solving systems of equations.

Prerequisites: Adequate math placement score or C or better in MATH 120.

MATH 142G. Calculus for the Biological and Management Sciences

3 Credits (2+2P)

Review of functions. Derivatives, exponential and logarithmic functions, antiderivatives and indefinite integrals, basic ordinary differential equations and growth models, with an emphasis on applications. Includes a significant writing component.

Prerequisite(s): C or better in MATH 121G.

MATH 190G. Trigonometry and Precalculus

4 Credits (3+2P)

Elementary functions used in the sciences with emphasis on trigonometric functions and their inverses. Polar coordinates. Complex numbers and Euler’s formula. Analytic geometry and vectors.

Prerequisite: adequate score on Mathematics placement exam or a C or better in MATH 121G (see note at beginning of this section).

MATH 191G. Calculus and Analytic Geometry I

4 Credits

Limits and continuity, theory and computation of derivatives, applications of derivatives, extreme values, critical points, derivative tests, L’Hopital’s Rule.

Prerequisite(s): C or better in MATH 190G.

MATH 192G. Calculus and Analytic Geometry II

4 Credits

Riemann sums, the definite integral, antiderivatives, fundamental theorems, techniques of integration, applications of integrals, improper integrals, Taylor polynomials, sequences and series, power series and Taylor series.

Prerequisite(s): C or better in MATH 191G.

MATH 192GH. Calculus and Analytic Geometry II Honors

4 Credits (3+1P)

A more advanced treatment of the material of MATH 192G with additional topics. Consent of Instructor required. Restricted to Las Cruces campus only.

Prerequisite(s): Consent of Department.

MATH 200. Directed Study

1-3 Credits

May be repeated for a maximum of 6 credits. Graded S/U.

Prerequisite: consent of the instructor.

MATH 210G. Mathematics Appreciation

3 Credits

Mathematics and its role in the development and maintenance of civilization.

Prerequisites: High school algebra, and an adequate score on the Mathematics Placement Examination.

MATH 215. Fundamentals of Elementary Mathematics III

3 Credits

Probability, statistics, ratios, and proportional relationships. Experimental and theoretical probability. Collecting, analyzing, and displaying data, including measurement data. Multiple approaches to solving problems involving proportional relationships, with connections to number and operation, geometry and measurement, and algebra. Understanding data in professional contexts of teaching. Taught primarily through student activities and investigations.

Prerequisite(s): C or better in MATH 112.

MATH 235. Calculus for the Technical Student I

3 Credits

Intuitive differential and integral calculus with applications to engineering.

Prerequisite: C or better in MATH 190G.

MATH 236. Calculus for the Technical Student II

3 Credits

A continuation and extension of the material in MATH 235.

Prerequisites: C or better in MATH 235 or in MATH 192G.

MATH 242. Calculus for the Biological and Management Sciences II

3 Credits

Calculus of functions of several variables, techniques of integration, differential equations, infinite series. Applications.

Prerequisite: C or better in MATH 142G.

MATH 275G. Spirit and Evolution of Mathematics

3 Credits

Same as HON 275G.

MATH 279. Introduction to Higher Mathematics

3 Credits

Logic; sets, relations, and functions; introduction to mathematical proofs.

Prerequisite(s): C or better in MATH 192.
MATH 280. Introduction to Linear Algebra
3 Credits
Systems of equations, matrices, vector spaces and linear transformations. Applications to computer science.
Prerequisite(s): Grade of C- or better in MATH 192G.

MATH 291G. Calculus and Analytic Geometry III
3 Credits
Vector algebra, directional derivatives, approximation, max-min problems, multiple integrals, applications, cylindrical and spherical coordinates, change of variables.
Prerequisite: grade of C or better in MATH 192G.

MATH 292. Calculus and Analytic Geometry IV
3 Credits
Vector calculus, linear algebra, selected topics. Community Colleges only.
Prerequisite: grade of C or better in MATH 291G or equivalent.

MATH 300. Readings
1-3 Credits
A selection of readings and reports in the mathematical sciences, the breadth and depth of which is deemed to fit the needs of the student. Graded S/U.
Prerequisite: consent of instructor.

MATH 313. Fundamentals of Algebra and Geometry I
3 Credits (3+1P)
Covers algebra combined with geometry based on measurements of distance (metric geometry). Secondary mathematics education majors may take course as a math elective. MATH 313 does not substitute for other required math courses. Does not fulfill requirements for major in mathematics.
Prerequisites: MATH 111 and MATH 112G.

MATH 316. Calculus with Hands-on Applications
3 Credits
This course, primarily for prospective teachers, is taught in an interactive laboratory format. Students design and construct physical objects for which the planning stage requires calculus techniques. All numerical computations are carried out on graphing calculators. Meets simultaneously with MATH 516, primarily for practicing teachers. Secondary math education majors may take course as a math elective. MATH 316 does not fulfill requirements for majors in mathematics. Consent of instructor required.

MATH 331. Introduction to Modern Algebra
3 Credits
Elements of abstract algebra, including groups, rings and fields.
Prerequisite: C or better in MATH 279 and MATH 280.

MATH 332. Introduction to Analysis
3 Credits
Development of the real numbers, a rigorous treatment of sequences, limits, continuity, differentiation, and integration.
Prerequisite: C or better in MATH 192G and MATH 279.

MATH 377. Introduction to Numerical Methods
3 Credits
Basic numerical methods for interpolation, approximation, locating zeros of functions, integration, and solution of linear equations. Computer-oriented methods will be emphasized.
Prerequisites: grade of C or better in MATH 192G and some programming experience.

MATH 391. Vector Analysis
3 Credits
Calculus of vector valued functions, Green’s and Stokes’ theorems and applications.
Prerequisite: grade of C or better in MATH 291G.

MATH 392. Introduction to Ordinary Differential Equations
3 Credits
Introduction to differential equations and dynamical systems with emphasis on modeling and applications. Basic analytic, qualitative and numerical methods. Equilibria and bifurcations. Linear systems with matrix methods, real and complex solutions.
Prerequisite: C or better in MATH 192G or B or better in MATH 236.

MATH 400. Undergraduate Research
1-3 Credits
May be repeated for a maximum of 6 credits. Graded S/U.
Prerequisite: consent of faculty member.

MATH 401. Special Topics
1-3 Credits (1-3)
Specific subjects to be announced in the Schedule of Classes. May be used to fulfill a course requirement for the mathematics major.
Prerequisite: An upper division MATH or STAT course, and consent of instructor.

MATH 411V. Great Theorems: The Art of Mathematics
3 Credits
Adopts the view of mathematics as art, using original sources displaying the creation of mathematical masterpieces from antiquity to the modern era. Original sources are supplemented by cultural, biographical, and mathematical history placing mathematics in a broad human context. Same as HON 411G.
Prerequisites: Grades of B or better in MATH 192G and any upper division MATH/STAT course, with overall GPA of 3.2 or better, or consent of instructor.

MATH 421. Financial Mathematics I
3 Credits
Types of derivatives, forwards and futures, options, returns and payoffs, Arrow-Debre, complete and incomplete markets, the one period model, the binomial option pricing model, binomial trees, martingales and sub martingales, Brownian motion, stochastic integrals, the Ito integral, Ito’s dilemma, the Black-Scholes model, the Black-Scholes formula, European options, American options, free boundary problems, variational inequalities. This course is offered simultaneously with MATH 521.
Prerequisite(s): Consent of instructor.

MATH 422. Financial Mathematics II
3 Credits
Bonds, swaps, exotic options, barrier options, Asian options, look back options, options with transaction costs, Fokker Plank theory, computing expectations, the Heath-Jarrow- Morton theorem, the Ho-Lee model, stochastic volatility models, exponential-affine models, numerical methods. This course is offered simultaneously with MATH 522.
Prerequisite: C or better in MATH 421 or consent of instructor.
MATH 423. Numerical Optimization and Applications to Financial Mathematics
3 Credits
Dynamic optimization of a monopolist, trading off inflation and unemployment, the optimal adjustment of labor demand, infinite planning horizon, the optimal investment path of a firm, the optimal social saving behavior, phase-diagram analysis, optimal control theory, the political business cycle, the dynamics of a revenue-maximizing firm, economic examples of state-space constraints. This course is offered simultaneously with MATH 523.
Prerequisite(s): C- or better in MATH 421.

MATH 430. Combinatorial Mathematics
3 Credits
Methods for solving combinatorial construction and enumeration problems. Topics include Ramsey theory, generating functions, matchings, and block designs.
Prerequisite(s): C- or better in MATH 330 or C- or better in MATH 331 or C- or better in MATH 332.

MATH 451. Introduction to Differential Geometry
3 Credits
Applies calculus to curves and surfaces in three dimensional Euclidean space.
Prerequisite(s): C- or better in each of MATH 280 and MATH 391, or consent of instructor.

MATH 452. Foundations of Geometry
3 Credits
Topics in projective, axiomatic Euclidean or non-Euclidean geometries. Restricted to: Main campus only.
Prerequisite(s): C or better in MATH 331 or MATH 332.

MATH 453. Introduction to Topology
3 Credits
Introduction to topological spaces and metric spaces, with connections to analysis, geometry, and the classification of surfaces.
Prerequisite(s): C- or better in MATH 332 or consent of instructor.

MATH 454. Mathematical Logic
3 Credits
Propositional calculus and the first order predicate calculus, including Godel's completeness theorem for the latter, and additional topics at the option of the instructor.
Prerequisite(s): C or better in MATH 331 or MATH 332, or consent of instructor.

MATH 455. Elementary Number Theory
3 Credits
Covers primes, congruences and related topics.
Prerequisite: grade of C or better in MATH 331 or consent of instructor.

MATH 457. Applications of Modern Algebra
3 Credits
Topics may include coding theory, cryptography, graph theory, or symmetry groups. May be repeated up to 9 credits.
Prerequisite(s): C or better in Math 331 or consent of instructor.

MATH 459. Survey of Geometry
3 Credits
Basic concepts of Euclidean geometry, ruler and compass constructions. May include topics in non-Euclidean geometry. For non-math majors. Restricted to: Main campus only.
Prerequisite(s): C or better in MATH 331 or MATH 332.

MATH 466. Lattice Theory
3 Credits
Introduction to partially ordered sets, distributive, modular, and Boolean lattices.
Prerequisite(s): C- or better in MATH 330 or C- or better in MATH 331 or C- or better in MATH 332 or consent of instructor.

MATH 471. Complex Variables
3 Credits
A first course in complex function theory, with emphasis on applications.
Prerequisite(s): C- or better in MATH 391 or C- or better in both MATH 392 and MATH 291.

MATH 472. Fourier Series and Boundary Value Problems
3 Credits
Fourier series and methods of solution of the boundary value problems of applied mathematics.
Prerequisite(s): C- or better in MATH 392.

MATH 473. Calculus of Variations and Optimal Control
3 Credits
Euler's equations, conditions for extrema, direct methods, dynamic programming, and the Pontryagin maximal principle.
Prerequisite(s): C- or better in MATH 392.

MATH 480. Matrix Theory and Applied Linear Algebra
3 Credits
An application driven course, whose topics include rectangular systems, matrix algebra, vector spaces and linear transformations, inner products, and eigenvalues and eigenvectors. Applications may include LU factorization, least squares, data compression, QR factorization, singular value decomposition, and search engines.
Prerequisite(s): C or better in any 300-level course with a MATH or STAT prefix.

MATH 481. Advanced Linear Algebra
3 Credits
Rigorous treatment of vector spaces and linear transformations including canonical forms, spectral theory, inner product spaces and related topics.
Prerequisite: grade of C or better in MATH 331.

MATH 491. Introduction to Real Analysis I
3 Credits
Rigorous discussion of the topics introduced in calculus. Sequences, series, limits, continuity, differentiation.
Prerequisite: grade of C or better in MATH 332 or consent of instructor.

MATH 492. Introduction to Real Analysis II
3 Credits
Continuation of MATH 491. Integration, metric spaces and selected topics.
Prerequisite(s): C or better in MATH 491 or consent of instructor.

MATH 498. Directed Reading
1-6 Credits
May be repeated for a maximum of 6 credits. Graded S/U.

MATH 501. Introduction to Differential Geometry
3 Credits
Same as MATH 451 with additional work for graduate students.

MATH 502. Foundations of Geometry
3 Credits
Same as MATH 452 with additional assignments for graduate students.

MATH 503. Introduction to Topology
3 Credits
Same as MATH 453 with additional work for graduate students.
MATH 504. Mathematical Logic  
3 Credits  
Same as MATH 454 with additional assignments for graduate students.

MATH 505. Elementary Number Theory  
3 Credits  
Same as MATH 455 with additional assignments for graduate students.

MATH 506. Lattice Theory  
3 Credits  
Same as MATH 466 with additional assignments for graduate students.

MATH 507. Applications of Modern Algebra  
3 Credits  
Taught with MATH 457 with additional work for graduate students. May be repeated up to 9 credits.  
Prerequisite(s): C or better in MATH 331 or consent of instructor.

MATH 508. Mathematics  
3 Credits  
This class is a study of Shannon’s measure of information and discusses mutual information, entropy, and channel capacity, the noiseless source coding theorem, the noisy channel coding theorem, channel coding and random coding bounds, rate-distortion theory, and data compression.  
Prerequisite(s): E E 571 or STAT 515.

MATH 511. Fundamentals of Elementary Mathematics I  
3 Credits (3+1P)  
Topics from real numbers, geometry, measurement, and algorithms, incorporating calculator technology. Intended for K-8 teachers. As part of course students mentor MATH 111 undergraduates. Does not fulfill degree requirements for M.S. in mathematics.

MATH 512. Fundamentals of Elementary Mathematics II  
3 Credits (3+1P)  
Real numbers, geometry, and statistics, incorporating calculator technology. Intended for K-8 teachers. Students serve as mentors to MATH 112 undergraduates. Does not fulfill degree requirements for M.S. in mathematics.

MATH 513. Fundamentals of Algebra and Geometry I  
3 Credits (3+1P)  
Algebra and metric geometry, incorporating appropriate calculator technology. Intended for K-8 teachers. Students serve as mentors to MATH 313 undergraduates. Does not fulfill degree requirements for M.S. in mathematics.

MATH 514. Calculus with Hands-on Application  
3 Credits  
This course, primarily for in-service teachers, is taught in an interactive laboratory format. Students design and construct physical objects for which the planning stage requires calculus techniques. All numerical computations are carried out on graphing calculators. Meets simultaneously with Math 316, primarily for prospective teachers. Does not fulfill degree requirements for M.S. in Mathematics.  
Prerequisite(s): MATH 511 and MATH 512 or consent of instructor.

MATH 517. Complex Variables  
3 Credits  
Same as MATH 471 with additional work for graduate students.

MATH 518. Fourier Series and Boundary Value Problems  
3 Credits  
Same as MATH 472 with additional work for graduate students.

MATH 519. Calculus of Variations and Optimal Control  
3 Credits  
Same as MATH 473 with additional work for graduate students.

MATH 521. Financial Mathematics I: Portfolio Optimization  
3 Credits  
Complete and incomplete markets, optimal investment paths, dynamic optimization, the Black-Scholes model, European options, American options.  
Prerequisite: STAT 515 and either MATH 280 or MATH 480.

MATH 522. Financial Mathematics II  
3 Credits  
Prerequisite: MATH 521.

MATH 525. Advanced Linear Algebra  
3 Credits  
Same as MATH 481 with additional work for graduate students.  
Prerequisite: grade of C or better in MATH 331.

MATH 526. Introduction to Real Analysis I  
3 Credits  
Same as MATH 491 with additional work for graduate students.

MATH 527. Introduction to Real Analysis II  
3 Credits  
Same as MATH 492 with additional work for graduate students.

MATH 528. Ordinary Differential Equations  
3 Credits  
Prerequisite: MATH 518 or consent of instructor.
MATH 534. Nonlinear Programming
3 Credits
Theoretical and computational methods to solve optimization problems in engineering, statistics, economics, and operations research. Topics include convexity, optimality conditions, Newton's method, Lagrange multipliers, search algorithms for unconstrained and constrained problems, as well as barrier and penalty methods.

MATH 540. Directed Reading
1-6 Credits
May be repeated for a maximum of 6 credits. Consent of instructor required. Graded: S/U.

MATH 541. Topology I
3 Credits
Connectedness and compactness of topological spaces, introduction to the quotient topology, elementary homotopy theory, the fundamental group, the Seifert-van Kampen theorem
Prerequisite(s): MATH 525 and MATH 528, or consent of instructor.

MATH 542. Topology II
3 Credits
Covering spaces and their classification, singular homology, degree theory, Brouwer’s fixed point theorem, CW-complexes and cellular homology, and other applications.
Prerequisite(s): MATH 541 or consent of instructor.

MATH 555. Differentiable Manifolds
3 Credits
Differentiable structures, tangent bundles, vector fields and differential equations. Additional topics may include differential forms, De Rham cohomology, Riemannian geometry, and topics chosen by the instructor. May be repeated for a maximum of 9 credits. Consent of instructor required.
Prerequisite(s): MATH 525 and MATH 528, or consent of instructor.

MATH 557. Axiomatic Set Theory
3 Credits
A detailed study of Zermelo-Fraenkel and Bernays set theories.
Prerequisite: MATH 504 or equivalent.

MATH 562. History and Theories of Mathematics Education
3 Credits
A study of the history of the mathematics taught in American schools, including an examination of authentic original textbooks and the changes in their content and the approach to the subject over time, together with writings of people who have influenced the development and changes of mathematics education. Theories of learning mathematics, and current issues in mathematics education.
Prerequisite(s): Restricted to graduate students.

MATH 564. From Number to Algebra
3 Credits
The progression from Number to Algebra in the K-12 curriculum as a concrete-to-abstract progression. Key concepts considered across the grade levels include the different uses of variables, equivalence in different contexts, patterns, and ratios. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.

MATH 566. Data Analysis with Applications
3 Credits
Statistical concepts and terminology in professional uses of data by teachers, such as standardized test score reports and educational research; visual displays of data; measures of variation and central tendency; consideration of how K-12 topics in Data Analysis are developed from one grade level to the next. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.

MATH 567. From Measurement to Geometry
3 Credits
The progression from Measurement to Geometry in the K-12 curriculum as a concrete-to abstract progression. Important concepts such as angle, length, and area progress from concrete, measurable situations to more abstract problems which require reasoning and proof. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.

MATH 568. Using Number Throughout the Curriculum
3 Credits
Understand number concepts more deeply by seeing many examples of those concepts applied in other content strands. Develop mathematical knowledge and understanding to build a repertoire of ways for students to practice and review basic number skills and concepts as part of later, more advanced courses. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.

MATH 569. Geometry with Connections
3 Credits
Connections between Geometry and other K-12 curriculum strands, especially Geometry and Probability / Data Analysis. Address key attributes of geometric concepts by considering their connections within and across grade levels. Does not fulfill requirements for degrees in mathematics. Consent of instructor required.
Prerequisite(s): Admittance into the MC2-LIFT program.

MATH 581. Algebra 1
3 Credits
Examines groups, commutative rings, solvability of polynomials, Galois theory, ruler and compass constructions.
Prerequisite/corequisite: MATH 525.

MATH 582. Algebra II
3 Credits
Group actions, fundamental theorem of finite Abelian groups, Sylow theorems, solvable groups, noncommutative rings, Noetherian rings, unique factorization domains, modules, tensor products.
Prerequisite: MATH 581.
MATH 583. Introduction to Commutative Algebra and Algebraic Geometry  
3 Credits  
Introduction to the basic notions and techniques of modern algebraic geometry, including the necessary commutative algebra foundation. Topics likely to include algebraic and projective varieties, Nullstellensatz, morphisms, rational and regular functions, local properties. Other topics may include Noether normalization, dimension theory, singularities, sheaves, schemes, Grobner bases. May be repeated up to 9 credits.  
Prerequisite(s): MATH 581 or consent of instructor.

MATH 584. Representation Theory  
3 Credits  
Topics from representation theory of finite or infinite groups. May be repeated for a maximum of 9 credits.  
Prerequisite: consent of instructor.

MATH 585. Universal Algebra  
3 Credits  
Universal algebra and category theory. Theorems of Birkhoff and Tarski relating equational classes, free algebras and their construction through homomorphisms, subalgebras and products. Topics from model theory, sheaf theory and representation by subdirect products. May be repeated for a maximum of 6 credits.  
Prerequisite: consent of instructor.

MATH 586. Nonlinear Dynamics I  
3 Credits  
Introduction to nonlinear dynamics and deterministic chaos. Core topics include stability and bifurcations; chaos in one dimensional maps; universality and re-normalization group. Further topics include symbolic dynamics, fractals, sensitive dependence on initial data, self-organization and complexity and cellular automata. Knowledge of differential equations and linear algebra is desired. May be repeated up to 6 credits.

MATH 591. Complex Analysis I  
3 Credits  
Rigorous treatment of complex differentiation and integration, properties of analytic functions, series and Cauchy's integral representations.  
Prerequisites: MATH 517 and MATH 528, or consent of instructor.

MATH 592. Complex Analysis II  
3 Credits  
Harmonic functions, product representations, conformal mappings, Riemann's mapping theorem, Riemann surfaces, and selected other topics.  
Prerequisite: MATH 591 or consent of instructor.

MATH 593. Measure and Integration  
3 Credits  
Measure spaces, measurable functions, extension and decomposition theorems for measures, integration on measure spaces, absolute continuity, iterated integrals.  
Prerequisite: MATH 528 or consent of instructor.

MATH 594. Real Analysis  
3 Credits  
Differentiation, $L^p$ spaces, Banach spaces, measure and topology, other selected topics.  
Prerequisite: MATH 593.

MATH 599. Master's Thesis  
15 Credits  
Thesis.

MATH 600. Doctoral Research  
1-15 Credits  
Research.

MATH 643. Topology III  
3 Credits  
Topics may include higher homotopy groups, fibrations, cohomology operations and obstruction theory, spectral sequences, or others chosen by instructor. May be repeated for a maximum of 9 credits.

Prerequisite: MATH 542 or consent of instructor.

MATH 655. Topics in Differential Geometry  
3 Credits  
Representation theory of Lie groups, Riemannian geometry, or another topic chosen by instructor. Content varies. May be repeated for a maximum of 9 credits.  
Prerequisite: MATH 555 or consent of instructor.

MATH 683. Homological Algebra  
3 Credits  
Basic topics in homological algebra and category theory. May be repeated for a maximum of 9 credits.  
Prerequisite: MATH 542 or MATH 582 or consent of instructor.

MATH 695. Introduction to Functional Analysis I  
3 Credits  
Banach spaces. The three basic principles: uniform boundedness principle, closed graph/open mapping theorems, Hahn-Banach theorem.  
Prerequisites: MATH 541 and MATH 594, or consent of instructor.

MATH 696. Introduction to Functional Analysis II  
3 Credits  
Continuation of MATH 695. Topics selected from topological vector spaces, Hilbert space, spectral theory, Banach algebras, and distribution theory.  
Prerequisite: MATH 695 or consent of instructor.

MATH 698. Selected Topics  
1-15 Credits  
Selected topics.

MATH 700. Doctoral Dissertation  
1-15 Credits  
Dissertation.

MGT-MANAGEMENT (MGT)

MGT 201. Introduction to Management  
3 Credits  
Covers the functioning and administration of different types of complex organizations. Concepts and theories of management and organizational behavior.

MGT 309. Human Behavior in Organizations  
3 Credits  
Interpersonal and organizational behavior, motivation, communication, team building, leadership, diversity management, legal and ethical issues, and politics in organizations. Credit may not be earned for both MGT 309 and MGT 315V.
MGT 315V. Human Relations in Organizations
3 Credits
Interactions among people and groups in societies where organizations abound. Focus on the behavior of people in organizational situations and approaches for understanding that behavior. Explores motivation, communication, leadership and team processes. Restricted to nonbusiness majors. Credit may not be earned for both MGT 309 and MGT 315V.

MGT 332. Human Resources Management
3 Credits
Survey course in human resources management. Includes recruitment, selection, equal employment opportunity, performance appraisal, training, compensation, safety, and union-management relations.

MGT 333. Training and Development
3 Credits
Training and development of human resources, including training needs assessment, training approaches and techniques, and evaluation of training effectiveness.

MGT 335V. Business and Government
3 Credits
Crosslisted with: ECON 335G

MGT 336. Management Communication
3 Credits
Communication models with emphasis on application to management problems. Management communication systems and techniques in organizations.

MGT 344. Production and Operations Management
3 Credits
Management of physical and human resources; management information systems in operations; applications in various organizations.
Prequisite: STAT 251G or A ST 251G or A ST 311; and BCIS 338 or BCIS 350.

MGT 345V. Quality and Competitiveness: An International Perspective
3 Credits
Quality management and competitiveness are studied in manufacturing, services, and the public sector with an international perspective. Topics include: global history of quality, foreign competition and its impact on quality and productivity, quality management and continuous improvement, international operations management, quality assessment, and a review of the emergence of quality and competitiveness in government, education and health care.

MGT 347. Management Functions and Processes
3 Credits
Planning, organizing, directing, and controlling operating units in an organization. Applications to a variety of types of organizations.

MGT 351. Supply Chain Management
3 Credits
Acquisition and control and delivery of materials, parts, equipment, and services for end use in the organization. Applications to service and manufacturing industries, nonprofit, and governmental institutions.

MGT 359. The Management of Diversity
3 Credits
Management of diversity in the workplace. Includes concepts of appreciation and management of workforce diversity, a review of research on diversity and organizational performance, individual and group-level factors in understanding diversity, and organizational context factors in managing diversity.

MGT 360V. Negotiation and Business Conflict Resolution: Theory and Practice
3 Credits
Covers the basics of negotiation theory and practice including the use of quantitative methods and their realistic application in resolving disputes. Application of conflict resolution skills.

MGT 361. Managing a Startup
3 Credits
Exploration of the tensions and experiences of starting and growing a new company. The course will provide students with the knowledge and experience to increase the likelihood of success whether as a principal in a new company or an investor representative.

MGT 375V. Global Environmental Assessment and Management
3 Credits
Examines the principles of environmental assessment and management. Topics include global environmental concerns, industrial environmental management, life cycle assessment, system analysis, process improvement, and sustainable development, among others.

MGT 388V. Leadership and Society
3 Credits
Exploration of the multifaceted nature of leadership in modern society through readings and seminar discussion.

MGT 391. Management Internship and Cooperative Education I
1-3 Credits
Application of management skills to the work environment. Open only to students majoring or minoring in management. The amount of academic credit (1-3 cr.) will be determined by the academic experience and not by the work experience. May be repeated for a maximum of 3 credits. Restricted to majors and minors.
Prerequisites: MGT 309 and consent of instructor.

MGT 448. Business Consulting
3 Credits
Study, analysis, and presentation of recommendations for solving significant problems confronting businesses.

MGT 449. Strategic Management
3 Credits
Integrative approach to envisioning the future and shaping strategies for business success.
Prequisite(s): BCIS 338 or 350; BLAW 316; FIN 341; MGT 309; MKTG 303; and one of the following: MGT 344 or MGT 470 or BCIS 485.

MGT 451. Selection, Placement, and Performance Evaluation
3 Credits
Staffing processes for organizations and the evaluation of employee performance. Use of selection methods and measurement of work behavior.

MGT 453. Leadership and Motivation
3 Credits
Theories of leadership and motivation. Motivational programs for complex organizations. Relationships between organizational power, authority, and management styles. Crosslisted with: I E 453

MGT 454. Work Teams in Organizations
3 Credits
Theories of small groups and their application to the work situation. Why and how groups form, grow, communicate, and maintain themselves.
Prerequisites: senior or above standing.
MGT 458. Comparative International Management
3 Credits
Cultural influences on management are examined in a global business
environment with a particular emphasis on human behavior in
multinational organizations and the management of human resources.
Same as IB 458.

MGT 460. Compensation Management
3 Credits
An overview of wage and salary administration, including job evaluation,
wage and salary surveys, program administration, legal aspects of pay
systems, and benefits administration.
Prerequisite(s): MGT 332 or consent of instructor.

MGT 461. New Venture Creation
3 Credits
Via problem-based learning, teams define new business ventures to meet
current market needs, develop business plans, and prepare to present to
investors. SAME AS MKTG 461

MGT 465. Contemporary Issues in Human Resources Management
3 Credits
Integrative course in human resources management, emphasizing the
application of advanced concepts to complex personnel cases.
Prerequisite: MGT 332.

MGT 466. Managing Electronic Commerce: A Business Models
Perspective
3 Credits
Surveys the emerging Internet technology involving business to business,
business to consumer, and consumer to consumer forms of trade. Covers
quantitative decision and negotiation analysis techniques as well as
auction and market trade mechanisms.

MGT 470. Project Management in Organizations
3 Credits
Roles, responsibilities, and techniques of project managers in managing
projects effectively. Preparation for professional certification.

MGT 490. Selected Topics
1-18 Credits (1-18)
Seminars in selected current topics in the various areas of management
and administration. Prerequisites vary according to the seminar being
offered.

MGT 491. Management Internship and Cooperative Education II
1-3 Credits
Covers the application of management skills to the work environment.
The amount of academic credit (1-3 cr.) will be determined by the
academic experience and not the work experience. May be repeated
for a maximum of 3 credits. Restricted to majors and minors.
Prerequisite: MGT 309 and consent of instructor.

MGT 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval
of the department head. A maximum of 3 credits may be earned.
Prerequisites: junior or above standing and consent of instructor.

MGT 502. Operations Management
3 Credits
Systems and specialized models applied to the management of
production facilities and service operations, including physical and
human resources.
Prerequisite(s): Graduate students only.

MGT 503. Organizational Behavior and Management Processes
3 Credits
Covers the theory and practice related to the successful management
of human resources in organizations operating within a dynamic global
environment. Course goals include developing alternative frameworks for
analyzing issues related to human behavior, management science, and
organizational structure and theory.
Prerequisite: graduate students only.

MGT 512. Quantitative Analysis for Business Decisions
3 Credits
Identification, collection, and analysis of an organization's data both
internal and external, and use of the resultant information in managerial
decision making.
Prerequisite: graduate students only.

MGT 527. Negotiation and Business Dispute Resolution
3 Credits
Same as BLAW 527.

MGT 545. Seminar in Human Resources Management
3 Credits
Systems, theories, and methods of managing human resources for
optimum productivity.

MGT 548. Business Consulting
3 Credits
Study, analysis, and presentation of recommendations for solving
significant problems confronting businesses. Same as MGT 448 with
differentiated assignments for graduate students.

MGT 590. Strategic Management
3 Credits
Covers the integration of functional, human, technological, and
environmental aspects of business within the framework of management
policy and strategy formulation. Formulate, implement, evaluate and
control the various functions of the organization from a systems
perspective. Understand the external environment and its impact on the
organization. Restricted to majors.
Prerequisite: M.B.A. student in his or her final semester.

MGT 591. New Venture Creation
3 Credits
Via problem-based learning, teams define new business ventures to meet
current market needs, develop business plans, and prepare to present
sessions as MGT 448 with differentiated assignments for
graduate students. Crosslisted with: MKTG 591.

MGT 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. A maximum of
6 credits may be earned.
Prerequisite: consent of instructor.

MGT 600. Doctoral Research
1-15 Credits
This course number is used for assigning credit for research performed
prior to successful completion of the doctoral qualifying examination.
Restricted to management majors.
MGT 601. Research in Management
1 Credit
Ph.D. course provides opportunities for significant interaction between Management faculty and Management Ph.D. students. The course also provides opportunities for development of professional scholarly standards, ethics, and critiques, as well as insight into current research areas and topics supported by the Management Department and other relevant disciplinary areas. May be repeated for a maximum of 6 credits. Restricted to Ph.D. students. Graded S/U.

MGT 640. Instructional Development for Teaching Business
3 Credits
Pedagogical issues and techniques in collegiate business education. Includes course and curriculum development, outcomes assessment, class management, and teaching techniques. Practical issues faced in college instruction. Restricted to doctoral students.

MGT 645. Seminar in Human Resources Management
3 Credits
Seminar will address current issues in human resources management. Focus on research related to the selection, development, and effective use of human resources. Restricted to doctoral students.

MGT 650. Seminar in Organizational Behavior
3 Credits
Seminar will include specific organizational behavior topics; motivation, leadership, group and inter-group relations, and attitude theory. Focus on current research and theory. Restricted to doctoral students.

MGT 655. Seminar in Organizational Systems and Theory
3 Credits
Analysis of organizations from a macro perspective. Topics include organizational theory, organizational design, organizational environment, and sociotechnical systems. Restricted to doctoral students.

MGT 660. Research Design and Methodology
3 Credits
Topics will include philosophy of science, theory building, and research methods applicable to the study of organizational behavior. Restricted to doctoral students.

MGT 661. Qualitative Research Methods
3 Credits
In-depth coverage of selected topics in research methodology, including theory and logic of scientific investigation, grounded theory, action research, and ethnemethodology. Restricted to doctoral students.

MGT 675. Seminar in Strategic Management
3 Credits
Survey of current and classical readings in strategy. Introduces the doctoral level student to strategic issues, strategic topics for research, and publication venues. Restricted to doctoral students.

MGT 685. Story Consulting to Organizations
3 Credits
Apply various qualitative story and narrative research methods (plot analysis, script analysis, life history, and restoring) to action research consulting project. Students will conduct story assessment and (propose or enact) intervention with a local consenting organization. Restricted to doctoral students.

MGT 690. Special Topics
3 Credits
Seminars in selected current topics in the various areas of management. May be repeated for unlimited credit. Restricted to doctoral students. 
Prerequisite(s): Vary according to seminar being offered.

MGT 698. Special Topics
1-3 Credits
Prerequisite: consent of instructor.

MGT 700. Doctoral Dissertation
15 Credits
Prerequisite: advancement to candidacy.

MKTG-MARKETING (MKTG)

MKTG 180. PGA Golf Management Freshman Orientation
3 Credits
Introduction to the Policies and Procedures of the PGA Golf Mgt. Program and the PGA of America Students will also be introduced to the Qualifying Level of the PGA’s Educational Program, Rules of Golf, PGA Constitution and the History of the PGA. Additional course fee required. Consent of Instructor required. Restricted to: PGA Golf Management Students. MKTG/PGM majors.

MKTG 181. Level 1, PGA’s PGM Education Program (Part 1)
3 Credits
Introduction of Level 1 of the PGA’s Educational Program. This class will focus on Business Planning and Operations, Customer Relations, and the corresponding PGA Work Experience Activities. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 203. Introduction to Marketing
3 Credits
Covers processes, functions and principles in the current marketing system. Includes role of marketing in the economy, types of markets, product development, distribution channels, pricing and promotion strategies, market research and management of the processes. Community Colleges only.

MKTG 280. Level 1, PGA’s PGM Education Program (Part 2)
3 Credits
Continuation of Level 1 of the PGA’s PGM Education Program. This class will focus on Tournament Operations, Golf Car Fleet Management and the corresponding PGA Work Experience Activities. Students will also be required to provide an internship evaluation report. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 281. Level 1, PGA’s PGM Education Program (Part 3)
1.5 Credits
Completion of Level 1 of the PGA’s PGM Education Program. This class will focus on Introduction to Teaching and Golf Club Performance and the corresponding PGA Work Experience Activities. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 303. Principles of Marketing
3 Credits
Process, functions, and principles in the current marketing system.

MKTG 305. Marketing Food and Agricultural Products
3 Credits
Same as AG E 305. Crosslisted with: AG E 305.

MKTG 310. Marketing Research
3 Credits
Design, collection analysis, and presentation of research data. 
Prerequisites: A ST/STAT 251G or consent of instructor.
MKTG 311V. Consumer Behavior
3 Credits
The different aspects of consumer behavior and the variables affecting consumer decisions. Analysis of current concepts and models.

MKTG 312. Personal Selling
3 Credits
Implementation of the promotion process through interpersonal communications between salesperson and prospects. Serving customers by sales representatives.

MKTG 313. Retail Management
3 Credits
Investigates retail business operations and focuses on the strategic profit model, store location, layout, display, merchandising, operations, and personnel.

MKTG 314. Advertising Strategy
3 Credits
Utilization of advertising as a business administration function: communication with consumers as a means of attaining marketing goals.

MKTG 317. International Marketing
3 Credits
Focuses on decisions relating to entering markets, market segmentation, marketing strategies, and tactics in the international arena. Same as IB 317.

MKTG 324. Product/Service Development
3 Credits
Covers product innovation, development, commercialization and resource recovery, price determination and administration strategies, and complementing planning processes.

MKTG 354. Sports Marketing
3 Credits
The application of marketing concepts to the sports industry. Topics include fans/customers, products, and promotions across a range of sports.

MKTG 357. Internet and Social Media Marketing
3 Credits
Focuses on the consumer psychology and marketing strategies at work in advertising and selling brands via the Internet and social media networks.

MKTG 380. Level 2, PGA's PGM Education Program (Part 1)
1.5 Credits
Introduction to Level 2 of the PGA’s PGM Education Program. This class will focus on Merchandising and Inventory Management, Golf Operations and the corresponding PGA Work Experience Activities. Students will also be required to provide an internship evaluation report. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 381. Level 2, PGA’s PGM Education Program (Part 2)
1.5 Credits
Completion of Level 2 of the PGA’s PGM Education Program. This class will focus on Turfgrass Management, Intermediate Teaching and Golf Club Alteration and corresponding PGA Work Experience Activities. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 400. Marketing Internship/Field Experience
3 Credits
Internship of field experience in application of marketing principles. The student must accept an internship before being allowed to enroll in the course. Consent of instructor required. Restricted to MKTG majors.

MKTG 404. Business-to-Business Marketing
3 Credits
Covers suppliers and buyers roles in industry; procurement, vendor selection, marketing research, selling techniques, sales force management; quality/quantity determination.

MKTG 414. Athletics Business Administration
3 Credits
This course examines the marketing and operations of sports programs with emphasis on Division I Collegiate Programs. Topics include event management, ticketing, marketing, trademark and licensing, NCAA compliance, development, finance, contracts, facility maintenance, television, and the roles and responsibilities of the coaches.

MKTG 449. Promotion Management
3 Credits
Covers concepts and problems in the use of advertising, internet marketing, social media marketing, personal selling, publicity, and other forms of promotion; planning, coordination, control, and evaluation of effectiveness.

MKTG 451. Food and Agribusiness Market Assessment and Research
3 Credits

MKTG 453. Sales Management
3 Credits
The nature of the sales management function in industry. Focuses on intra and interdepartmental sales management activities. Prerequisite(s): MKTG 312.

MKTG 461. New Venture Creation
3 Credits
Via problem-based learning, teams define new business ventures to meet current market needs, develop business plans and prepare to present to investors. Same as MGT 461.

MKTG 462. Advanced Sales
3 Credits
Advanced instruction and skill development in interpersonal communication skills to broaden understanding of the professional sales role (especially in team selling situation), career management, personal productivity, negotiation, and coordination with other functional areas. May be repeated up to 3 credits. Prerequisite(s): MKTG 312.

MKTG 480. Level 3, PGA’s PGM Education Program (Part 1)
1.5 Credits
Introduction to Level 3 of the PGA’s PGM Education Program. This class will focus on Human Resource Management/Supervising and Delegating, Food and Beverage and the corresponding PGA Work Experience Activities. Students will also be required to provide an internship evaluation report. Additional course fee required. Consent of Instructor required. Restricted to: MKTG/PGM majors.
MKTG 481. Level 2, PGA's PGM Education Program (Part 2)/ Final Experience
3 Credits
Completion of Level 3 of the PGA's PGM Education Program. This Class will focus on Advanced Teaching and Club fitting, Player Development/Teaching Business. The Final Experience and the corresponding PGA Work Experience Activities. Please note that the following are requirements for successful completion of this senior level PGA Golf Management capstone course: 16 months of internship, completion of the Qualifying Level, Level 1, Level 2, and Level 3 of the PGA’s PGM Education Program and successful completion of the PGA’s Playing Ability Test. Consent of Instructor required. Restricted to: MKTG/PGM majors.

MKTG 489. Strategy and Policy
3 Credits
Techniques and analysis of marketing strategy and policy planning and formulation.
Prerequisites: senior standing or consent of instructor.

MKTG 490. Selected Topics
1-18 Credits (1-18)
Covers materials and subjects not offered in regular Marketing courses. Students can take 18 credit hours of MKTG 490 if each class is a different sub-tile. A maximum of 18 credit hours can be earned through MKTG 490.

MKTG 498. Independent Study
1-3 Credits
Individual studies directed by consenting faculty with the prior approval of the department head. A maximum of 3 credits may be earned.
Prerequisites: junior or above standing and consent of instructor.

MKTG 500. Concepts in Marketing
1 Credit
An overview of fundamental principles of Marketing necessary for prospective MBA students who do not have an undergraduate background in Marketing. Includes: Terminology, basic functions and responsibilities associated with practice of marketing.
Prerequisite(s): Admitted to MBA program or consent of course department.

MKTG 503. Marketing Management
3 Credits
Analysis of marketing problems and the integration of organizational resources as well as behavioral and quantitative techniques into the development and implementation of solutions. Graduate students only.
Prerequisite(s): MKTG 303 or equivalent with a grade of B or better.

MKTG 591. New Venture Creation
3 Credits
Via problem-based learning, teams define new business ventures to meet current market needs, develop business plans and prepare to present to investors. Same as MKTG 461 with differentiated assignments for graduate students. Crosslisted with: MGT 591.

MKTG 601. Marketing Management
3 Credits
Covers the conceptual foundations of contemporary marketing management research, concepts, and literature. Fundamental to the understanding of contemporary marketing and the breadth of the field of marketing study.

MKTG 610. Marketing and the Scientific Method
3 Credits
Issues related to the evolution of research philosophies and methodologies. Critical to the development of appreciation for the value of research and experimentation.

MKTG 620. Research- Theory Interface
3 Credits
Theoretical and methodological issues involved in translating a theory into a research study. Prepares Ph.D. students to undertake dissertation research. Consent of instructor required.

MKTG 625. Consumer Behavior
3 Credits
Extensive reading of seminal and contemporary articles on consumer behavior and developing original research to explore cross-disciplinary issues relevant to the study of marketing.

MKTG 640. Measurement and Structural Equation Modeling
3 Credits
Explores theories of measurement that underlie all quantitative analysis, including the use of structural equation models. Contrasts classical test theory with item response theory and generalizability theory. Covers PRELIS and LISREL, and critiquing structural equation models by other researchers.
Prerequisite: MKTG 630 or equivalent.

MKTG 670. Marketing Theory
3 Credits
The evolution, development, construction, and evaluation of the major theoretical perspectives of marketing. Fundamental to the understanding of contemporary marketing and preparation for investigations into the nature and role of theory in marketing.

MKTG 690. Special Topics in Marketing
1-3 Credits (1-3)
A seminar on special topics in marketing. The topic of the course will vary according to the needs of the students in the program and the instructor. Ph.D. students may repeat this course up to three times for a maximum total of 9 credits.

MKTG 698. Selected Topics
1-9 Credits (1-9)
Materials and subjects not offered in regular marketing courses. May be repeated for a maximum of 18 credits under different subtitles.

MKTG 700. Doctoral Dissertation
15 Credits
Prerequisite: advancement to candidacy.

MOLB- MOLECULAR BIOLOGY (MOLB)

MOLB 448. Special Research Problems
1-3 Credits
Individual investigation, theoretical or experimental, under the supervision of a molecular biology faculty member. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

MOLB 520. Molecular Cell Biology
3 Credits
Same as BIOL 520.

MOLB 542. Biochemistry I
3 Credits
Same as BCHE 542. B or better required.
MOLB 545. Molecular and Biochemical Genetics
3 Credits
Same as BCHE 545 and BIOL 545.

MOLB 546. Biochemistry II
3 Credits
Same as BCHE 546.

MOLB 550. Topics in Molecular Biology
1-3 Credits
Selected topics of current interest in field of molecular biology for master’s level students.

MOLB 590. Discussions in Molecular Biology
1 Credit
Oral presentations of ongoing research and/or research proposal for the masters thesis. Must be repeated twice for masters and three times for doctoral students. Graded by 2 options: S/U or Letter Grade

MOLB 597. Laboratory Rotations/Research Discussions
1-3 Credits
All entering students are required to take at least one credit, during their first semester, in which they will circulate through at least three different labs working on assigned problems and discussing research programs. May be repeated for a maximum of 4 credits. Graded S/U.

MOLB 598. Special Research Programs
1-3 Credits
Individual investigation, experimental or theoretical, under the supervision of a molecular biology faculty member. Course may be repeated up to a total of 6 credits with committee approval.

MOLB 599. Master’s Thesis
15 Credits
Experimental and scholarly research leading to the preparation of a master’s thesis.

MOLB 600. Molecular Biology Research
1-15 Credits
Laboratory research efforts prior to successful completion of doctoral comprehensive exam.

MOLB 650. Advanced Topics in Molecular Biology
1-3 Credits
Discussions and lectures on topics of current interest in molecular biology for doctoral students.

MOLB 698. Advanced Research Projects
1-9 Credits
Individualized special research assignments for doctoral-level students. Up to 9 credits, with approval of committee. Graded S/U.

MOLB 700. Doctoral Dissertation Research
15 Credits
Research for doctoral students after completing comprehensive exams.

MPH-MASTER OF PUBLIC HEALTH
(MPH)

MPH 500. Orientation to Public Health
3 Credits
Introduction to the historical and contemporary perspectives of public health theory and practice. Includes an investigation of public health as a discipline, a profession, and the programmatic attempts to improve health status.

MPH 510. Community and Psychosocial Aspects of Public Health
3 Credits
Social, behavioral, and educational aspects of disease prevention and health promotion programs. Restricted to MPH majors.

MPH 515. Introduction to Gerontology
3 Credits
Social, psychological, and physiological aspects of aging with an interdisciplinary emphasis on health promotion. Demographic characteristics of the aging population.

MPH 520. Biostatistical Applications in Public Health
3 Credits
Quantitative methods for public health students including tabular, graphical, and numerical descriptive methods, random sampling, principles of statistical inference, confidence intervals, statistical tests of hypothesis through analysis of variance and regression. Restricted to MPH majors.

MPH 530. Epidemiological Approaches to Disease Control and Prevention
3 Credits
Basic epidemiological principles applicable to infectious and noninfectious disease. Descriptive techniques and analytic designs, and application of statistical and epidemiological investigation methods included. Restricted to MPH majors.

MPH 540. Health Services System: Administration and Organization
3 Credits
This course focuses on using a systems approach to identify and analyze factors and interrelationships that influence the operation of health services organizations. Specific attention is to administrative structures and operations, finance and quality among public health departments, hospitals, multi-institutional systems, integrated health systems and strategic alliances. May be repeated up to 3 credits. Restricted to: MPH majors.

MPH 541. Principles of Health Program Management
3 Credits
This course prepares the student to assume a supervisory role in the management of health and human services programs. The course will cover essential management functions such as leadership, organizational assessment, planning, decision-making, organizational structure, budgeting, marketing, and human resource management.

MPH 545. Health Services Organization and Delivery
3 Credits
This course includes the framework of the United States healthcare system; organization and administration of health services; alternate ways of organizing and financing health systems; the roles of the government and free market on health care services; and the barriers to health services delivery.

MPH 546. Public Health Finance and Budget Management
3 Credits
Introduces health care accounting and finance to non-financial students. Students are exposed to the financial structure of health care organizations and the environment within which they operate. Instruction also introduces the use of accounting and financial information in investor-owned and not-for-profit organizations in the health care industry. Topics include understanding the creation and interpretation of financial statements, financial accounting and reporting requirements, financial analysis, budgeting, and resource allocation.
MPH 547. Public Health Law and Ethics
3 Credits
This course examines major legal and ethical concepts and their impact on public health policy and practice. The course examines governmental authority, at various jurisdictional levels, to improve public health. This course will focus on public health law in the United States. May be repeated up to 3 credits.

MPH 550. Environmental Public Health Issues
3 Credits
Environmental health issues from a public health perspective. Restricted to MPH majors.

MPH 557. Health Promotion for the Older Adult
3 Credits
Common health concerns and lifestyle issues relevant to older adults. Facts about the content area, health behaviors, and practices to promote health and prevent disease; program development strategies applicable to a variety of settings.

MPH 558. Public Health Policy Analysis
3 Credits
Covers issues related to U.S. health policy and allocation of resources. Examination of local, state, and federal public health and health care funding. Assessment of impact of health policy on health education, medical practice, and the workplace.

MPH 559. Infectious and Noninfectious Disease Prevention
3 Credits

MPH 560. American Indian Health
3 Credits
Critical health issues facing American Indians in the contemporary world. May be repeated up to 3 credits. Crosslisted with: PHLS 460.

MPH 561. Health Disparities: Determinants and Interventions
3 Credits
Investigates: descriptions of health disparities and measurement issues; physical environmental factors, behavioral and emotional variables; impact of aging of the populations, increased racial and ethnic diversity, and technological developments; intervention strategies and evaluation results. May be repeated up to 3 credits. Crosslisted with: PHLS 461.

MPH 562. Hispanic Health Issues
3 Credits
Cultural differences that aid or hinder communication with Hispanic clients and the application of cross-cultural communication skills. Some field trips may be required. May be repeated up to 3 credits. Crosslisted with: PHLS 462.

MPH 564. Cross-Cultural Aspects of Health
3 Credits
An examination of health practices from a variety of cultural perspectives; communication, observation, research, and assimilation. Issues to be addressed will be examined from a number of viewpoints, such as individual, family, community, and professional roles. May be repeated up to 3 credits. Crosslisted with: PHLS 464.

MPH 565. International Health Problems
3 Credits
Comparison of domestic health programs and problems with those in other parts of the world; emphasis on political parameters and delivery processes. Additional attention is focused on the health issues of the U.S.-Mexico border. May be repeated up to 3 credits. Crosslisted with: PHLS 465.

MPH 566. International Health Practicum
1-3 Credits
Intensive examination of health practices and beliefs from a cultural perspective. Focus on health structure, index of diseases, morbidity, mortality and epidemiological approaches to planning. Required travel (personal travel, lodging, and related expenses are extra). May be repeated up to 3 credits. Crosslisted with: PHLS 466.

MPH 567. Rural Health Issues
3 Credits
Comprehensive overview of rural health services with southwestern United States and New Mexico focus. Crosslisted with: PHLS 467.

MPH 568. Coping with Loss and Grief: A Cross-Cultural Perspective
3 Credits
A cross-cultural perspective to death, loss and grief. Hospice philosophy of caring for the dying will be included. May be repeated up to 3 credits. Crosslisted with: PHLS 468.

MPH 569. U.S.-Mexico Border Health Issues
3 Credits
Interdisciplinary analysis of the impact of living conditions and health issues of communities along the U.S.-Mexico border and of the strategies and initiatives to address these issues. Problem-based learning, case analysis, lecture, guest speakers, computer based instruction, and field trips. May be repeated up to 3 credits. Crosslisted with: PHLS 469.

MPH 570. Foundations of Public Health Education
3 Credits
Social, behavioral, and educational aspects of disease prevention and health promotion. Includes history and theoretical basis of health education.

MPH 571. Health Informatics
3 Credits
The application of technology to engage communities and individuals in behavioral and environmental change processes. The course will focus on the use of technology to describe the magnitude of health problems and their sources; analyze risk factors; identify community strengths from which strategies may be defined and tools created to intervene, prevent problems, and promote health and well-being; and continuously evaluate, refine, and implement what works. May be repeated up to 3 credits. Crosslisted with: PHLS 471.

MPH 572. Techniques of Health Communication/Education
3 Credits
Application of a wide range of communication and education theories/methods, including program planning and evaluation, in public health programming. Restricted to: MPH majors. Prerequisite(s): MPH 510.

MPH 573. Community Organization in Public Health
3 Credits
Strategies for identifying and involving community leaders, community needs assessment, small area analysis and planning, and community-level development strategies. Restricted to: MPH majors. Prerequisite(s): MPH 510.

MPH 574. Health Program Planning
3 Credits
Covers process of successful public health education program planning and grant writing. Restricted to: MPH majors. Prerequisite(s): MPH 510.
MPH 575. Methods of Community Health Education  
3 Credits  
Responsibilities of health educators, analysis of social forces affecting health needs, application of wide range of health education methods and instructional media, and program implementation skills. Crosslisted with: PHLS 475.  
Prerequisite(s): MPH 510.  

MPH 576. Theoretically-Based Interventions  
3 Credits  
Identifying and developing interventions to problematic health-related behaviors. May be repeated up to 3 credits. Crosslisted with: PHLS 476.  
Prerequisite(s): MPH 510.  

MPH 578. Evaluative Approaches in Public Health  
3 Credits  
Survey and analyses of health testing and evaluation procedures, uses and limitations of knowledge and attitude tests, behavioral inventories, check lists, questionnaires, interviews, and other techniques. Restricted to: MPH majors.  
Prerequisite(s): MPH 520.  

MPH 579. Research and Resources in Community Health  
3 Credits  
Exploration of available public health research studies, data, results and implications. Restricted to MPH majors.  
Prerequisite(s): MPH 520.  

MPH 586. Special Topics  
3 Credits  
Specific subjects to be announced in the Schedule of Classes. May be repeated up to 12 credits. Restricted to: MPH majors.  

MPH 590. Independent Study  
1-6 Credits  
Individual studies with prior approval of department head. May be repeated for a maximum of 6 credits.  

MPH 593. Adulthood and Aging  
3 Credits  
Normal transitions in later life; those occurring from 40 years of age to the end of life are discussed. Changes in interpersonal relationships and adaptations commonly made by individuals and meeting those alterations are presented through research findings, case studies, and autobiographies.  

MPH 596. Field Experience  
1-4 Credits  
Student will work in a public health setting under the supervision of an experienced public health professional and will use acquired knowledge and skills to conduct a project which addresses a specific public health problem or program need. Projects are agreed upon by the student and faculty. May be repeated for a maximum of 4 credits. Restricted to MPH majors.  
Prerequisite: consent of department head.  

MPH 597. Graduate Public Health Seminar  
1 Credit  
Capstone seminar for advanced-standing MPH students. Restricted to MPH majors. May be repeated for a maximum of 2 credits.  
Prerequisite: MPH 570.  

MPH 599. Master’s Thesis  
1-6 Credits  
Minimum of 4 credits required but may be repeated for a maximum of 6 credits. Restricted to MPH majors. PR grading.  

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MSW-SOCIAL WORK (MASTERS)  
(MSW)  

MSW 500. Social Problems and Social Welfare Policy  
3 Credits  
An overview of social and economic problems in the United States and the historical and current social welfare policies aimed at alleviating these problems. Emphasis on developing an awareness and ability to change policies that impact vulnerable populations. May be repeated up to 3 credits.  

MSW 503. Policy Analysis and Change  
3 Credits  
This course will emphasize policy practice focusing on policy analysis and creating and implementing policy change. Restricted to MSW majors.  
Prerequisite(s): MSW 500.  

MSW 509. Sociocultural Concepts and Populations of the Southwest  
3 Credits  
Theoretical and sociohistorical perspectives on racism, sexism, ageism, heterosexism, classism, ableism, and other forms of discrimination and oppression. Cultural diversity, strengths, and Southwest and border issues are emphasized.  

MSW 510. Human Behavior and the Social Environment I  
3 Credits  
The major theories of human behavior and the life span from conception to adolescence. Focuses both on the areas of concern and risk for client systems and on the opportunities and strengths in the social environment. Required. May be repeated up to 3 credits. Restricted to: MSW majors.  
Prerequisite(s): Majors or consent of instructor.  

MSW 514. Human Behavior & the Social Environment II  
1-3 Credits (1-3)  
The major theories of human behavior from young adulthood to old age. This course will focus on both areas of concern and risk for client systems and on the opportunities and strengths in the social environment. Consent of Instructor required. Restricted to: MSW majors.  
Prerequisite(s): MSW 510.  

MSW 520. Social Work Practice I  
3 Credits  
This is the first course of a two-course sequence. An introduction to the generalist crosscultural, social work practice perspective with individuals and families, focusing on social work as a profession, social work knowledge base, professional development, relationship building and assessment with individuals and families within a framework of social work values and ethics. May be repeated up to 3 credits.  
Corequisite(s): MSW 549 or MSW 551.  
Prerequisite(s)/Corequisite(s): MSW 510. Restricted to: MSW majors.
MSW 521. Social Work Practice II
3 Credits
This is the second course of a two-course sequence. A continuation of the generalist crosscultural, social work practice perspective with individuals and families, focusing on goal setting, contracting, implementation, and outcome assessment. The course also applies the generalist practice perspective and methods to larger systems: groups, organizations, and communities and includes relationship building, assessment, goal setting, contracting, implementation, and outcome assessment within a framework of social work values and ethics. May be repeated up to 3 credits. Restricted to: MSW majors.
Prerequisite(s): MSW 520.
Corequisite(s): MSW 550 or MSW 552.

MSW 524. Practice III: Advanced Practice with Individuals
3 Credits
This class builds on Foundation Year Practice courses (MSW 520, 521) by integrating theory and practice, and advancing skills in selecting, applying and evaluating practice interventions in a culturally sensitive manner with individuals. May be repeated up to 3 credits. Restricted to: MSW majors.
Prerequisite(s): MSW 520, MSW 521.
Corequisite(s): MSW 554 or MSW 556.

MSW 525. Practice IV: Advanced Generalist Practice with Groups
3 Credits
This course will address the knowledge, values and skills needed to work effectively with diverse populations in group settings. The course will build on Foundation Year courses (MSW 520 and 521) by integrating theory and practice, and advancing skills in selecting, applying and evaluating practice interventions in a culturally sensitive manner with social work groups. May be repeated up to 3 credits. Restricted to: MSW majors.
Prerequisite(s): MSW 520, MSW 521, MSW 551 or MSW 549, MSW 552 or MSW 550.
Corequisite(s): MSW 554 or MSW 556.

MSW 526. Practice V: Advanced Practice with Families
3 Credits
This class builds on Foundation Year Practice courses (MSW 520 and 521) by integrating theory and practice, and advancing skills in selecting, applying, and evaluating practice interventions in a culturally sensitive manner with families. May be repeated up to 3 credits. Restricted to: S WK, MSW majors.
Prerequisite(s): MSW 520, MSW 521, MSW 552 or MSW 550.
Corequisite(s): MSW 555 or MSW 557.

MSW 527. Practice VI: Advanced Practice with Organizations and Communities
3 Credits
This class builds on Foundation Year Practice courses (MSW 520, 521) by integrating theory and practice, and advancing skills in selecting, applying, and evaluating practice interventions in a culturally sensitive manner with organizations and communities. May be repeated up to 3 credits. Restricted to: MSW majors.
Prerequisite(s): MSW 520, MSW 521, MSW 524, MSW 525.
Corequisite(s): MSW 526, MSW 555 or MSW 557.

MSW 547. Social Work Mental Health Practice
3 Credits
This course is designed to add to the practice sequence for Masters Level students in Social Work. It addresses social work assessment of major mental health issues across the life span with an emphasis on resiliency and coping skills. Culturally responsive practices are applied to the major issues of mental health. Basic psychopharmacology, neurobiology and the ways in which Social Workers interact with clients to aid education and effective treatment of medical interventions will be a prominent part of this course. Evidence-based practices useful for work in various disorders will be incorporated. Restricted to: MSW majors.

MSW 549. Generalist Field Practicum A
3 Credits
Supervised professional practice in a community social service agency, providing experiential instruction and learning; seminar required. Evaluation criteria for this course will include upholding social work practice standards for interpersonal and ethical conduct. Total of 225 hours in the field each semester is required. 3 credits each semester. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MSW 509, MSW 510, MSW 520. Restricted to: MSW majors. S/U Grading (S/U, Audit).

MSW 550. Generalist Field Practicum B
3 Credits
Supervised professional practice in a community social service agency, providing experiential instruction and learning; seminar required. Evaluation criteria for this course will include upholding social work practice standards for interpersonal and ethical conduct. Total of 225 hours in the field each semester is required. Letter grade, 3 credits each semester. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MSW 500, MSW 521, MSW 560. Restricted to: MSW majors. S/U Grading (S/U, Audit).

MSW 551. Generalist Field Practicum I
6 Credits

MSW 552. Generalist Field Practicum II
6 Credits

MSW 554. Advanced Generalist Field Experience I
6 Credits
Prerequisite(s): MSW 552 or MSW 550.
Corequisite(s): MSW 524, MSW 525.
MSW 555. Advanced Generalist Field Experience II
6 Credits
Prerequisite(s): MSW 554 or MSW 556.
Corequisite(s): MSW 526, MSW 527.

MSW 556. Advanced Generalist Field Practicum A
3 Credits
Supervised professional practice in a community social service agency, providing experiential instruction and learning in advanced generalist practice: seminar required. Total of 250 hours in the field each semester is required. Letter grade, 3 credits each semester. May be repeated up to 3 credits. Restricted to: MSW majors. S/U Grading (S/U, Audit).
Prerequisite(s): MSW 550 or MSW 552.
Corequisite(s): MSW 524, MSW 525.

MSW 557. Advanced Generalist Field Practicum B
3 Credits
Supervised professional practice in a community social service agency, providing experiential instruction and learning in advanced generalist practice: seminar required. Total of 250 hours in the field each semester is required. Letter grade, 3 credits each semester. May be repeated up to 3 credits. Restricted to: MSW majors. S/U Grading (S/U, Audit).
Prerequisite(s): MSW 554 or MSW 556.
Corequisite(s): MSW 526, MSW 527.

MSW 559. Social Work Practice & Research for Advanced Standing
4 Credits
This course is required for all advanced standing students and targets provision of the conceptual orientation for the concentration year of the MSW program. The goal of this course is to enhance social work practice theory, knowledge and application skills as well as knowledge in preparation for concentration year courses in advanced generalist social work practice. The key themes and concepts presented, explored and analyzed in this course include: the fit between Social Work code of ethics and personal values and belief systems; analysis of theory, ethics, and conceptual frameworks for concentration year advanced evidenced based Social work practice courses in diverse settings. Restricted to: MSW Advanced Standing majors.

MSW 560. Social Work Research I
3 Credits
Introduction to analytical skills used in social work research: problem formulation, research designs, measurement, instrumentation, data collection and analysis, use of human participants in research, and application of research knowledge and professional ethics to social work practice. May be repeated up to 3 credits. Restricted to: MSW majors.

MSW 562. Social Work Research II
3 Credits
Focused on advanced generalist practice research in multicultural settings. Advanced skills to evaluate practice with individuals, families, groups, organizations, and communities in multicultural settings. Needs assessment as well as program and practice evaluation are emphasized. Restricted to: MSW majors.
Corequisite(s): MSW 560.

MSW 566. Generalist Field Seminar I
3 Credits
The field seminar assists the student in fortifying a relationship between classroom knowledge and the field experience. In addition, it assists the student in the integration of social work practice processes in service planning and delivery. May be repeated up to 3 credits.
Prerequisite(s): MSW 551 or MSW 549, MSW 509, MSW 510, MSW 520. Restricted to: MSW majors. S/U Grading (S/U, Audit).

MSW 567. Generalist Field Seminar II
3 Credits
The field seminar assists the student in fortifying a relationship between classroom knowledge and the field experience. In addition, it assists the student in the integration of social work practice processes in service planning and delivery. May be repeated up to 3 credits.
Prerequisite(s): MSW 552 or MSW 550, MSW 521, MSW 560. Restricted to: MSW majors. S/U Grading (S/U, Audit).

MSW 568. Advanced Generalist Field Seminar I
3 Credits
The field seminar assists the student in fortifying a relationship between classroom knowledge and the field experience. In addition, it assists the student in the integration of social work practice processes in service planning and delivery. Restricted to: MSW majors. S/U Grading (S/U, Audit).
Prerequisite(s): MSW 567 and 552.
Corequisite(s): MSW 554 or MSW 556, MSW 524 and MSW 525.

MSW 569. Advanced Generalist Field Seminar II
3 Credits
The field seminar assists the student in fortifying a relationship between classroom knowledge and the field experience. In addition, it assists the student in the integration of social work practice processes in service planning and delivery. Restricted to: MSW majors. S/U Grading (S/U, Audit).
Prerequisite(s): MSW 568 and 554.
Corequisite(s): MSW 555 or MSW 557, MSW 526 and MSW 527.

MSW 590. Family and Child Welfare Policy
3 Credits
This course will enhance students’ ability to offer child welfare services that respect cultural differences, reflect current policy knowledge concerning child maltreatment, build on the advocacy and protective capacities of individuals, families and communities and encourage permanency for children and preservation of families. Required basic knowledge of child welfare and assessment skills. Outside majors require instructor permission. May be repeated up to 3 credits.

MSW 591. Systemic Integration of Alcohol and Drug Issues
3 Credits
Capstone course for the alcohol and drug minor. Covers community, agency, and systemic facilitation of prevention and intervention services for substance-affected families.
Prerequisite(s): acceptance into minor or Instructor permission.

MSW 595. Independent Study
1-3 Credits
Individual study to augment depth of knowledge in area related to course of study. May be repeated for maximum of 6 credits.
Prerequisite: consent of instructor.
MSW 597. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. Open to graduate students in related disciplines and to community professionals in related disciplines and to community professionals in related fields. May be repeated for unlimited credit under different subtitles.
Prerequisite: consent of instructor.

MSW 599. Graduate Thesis
6 Credits
Required for thesis option. May be repeated for a maximum of 6 credits. Restricted to MSW students.
Prerequisite: consent of instructor.

MUS - MUSCICAL (MUS)

MUS 101G. An Introduction to Music
3 Credits
An introduction to music for the non-music major to encourage the enjoyment of listening to and understanding the world's great music from the past to the present.

MUS 102. Fundamentals of Music
3 Credits
Introduction to music notation, meter and rhythm, scales, intervals, triads, seventh chords, fundamentals of harmonic progression, and aural skills. For students with little or no music theory background. Traditional Grading with RR.

MUS 103. Ear Training I
1 Credit
To develop the ability to accurately hear, identify, sing and notate musical elements including rhythm, melody, intervals and harmony. Traditional Grading with RR. Restricted to Las Cruces campus only.
Prerequisite(s): Passing the Theory Placement exam or making a grade of C or better in MUS 102.

MUS 104. Ear Training II
1 Credit
To develop the ability to accurately hear, identify, sing and notate musical elements including rhythm, melody, intervals and harmony. Restricted to Las Cruces campus only.
Prerequisite(s): Grade of C or better in MUS 103.

MUS 105. Music Theory I
3 Credits
Introduction to vocabulary and syntax of 4-voice 18th c. chorale music through study and harmonic analysis.
Prerequisite(s): Passing the Theory Placement exam or making a grade of C or better in MUS 102.

MUS 106. Music Theory II
3 Credits
Expansion of vocabulary and syntax of 4-voice 18th c. chorale music through study, harmonic analysis, and part writing.
Prerequisite(s): Grade of C or better in MUS 105.

MUS 117. Jazz Improvisation
2 Credits
Techniques for extemporaneous playing; jazz harmonic practice. Traditional Grading with RR. Restricted to Las Cruces campus only.
Prerequisite(s): A grade of C or better in MUS 103 and MUS 105.

MUS 121. Concert and Recital Laboratory
0.5 Credits
Serves as a resource and performance lab for all applied areas of musical study. Music majors are expected to perform during the weekly student recital and must attend a designated number of musical performances during the semester. May be repeated up to 4 credits. Restricted to Music and Music Education majors. S/U Grading with RR. Restricted to Las Cruces campus only.

MUS 130. Applied Music
1-2 Credits
Private or group instruction for non-music majors, secondary instruments, and music majors preparing for 200-level applied music. May be taken for unlimited credit.

MUS 141. Class Voice I
1 Credit
Group instruction in voice and vocal pedagogy for instrumental Music Education majors, offering basic principles of healthy vocal production with particular attention to diction, development of vocal range, and the ability to impart that knowledge to elementary, junior and/or high school age students. Restricted to: Music Education majors. Traditional Grading with RR. Restricted to Las Cruces campus only.

MUS 145. Functional Piano I
2 Credits
Scales, chords, memorization. Harmonization of simple melodies with the ability to play simple melodies and rhythms. May be taken for unlimited credit. Restricted to music majors. No S/U option.

MUS 146. Functional Piano II
2 Credits
Scales, chords, memorization. Harmonization of simple melodies with the ability to play simple melodies and rhythms. May be taken for unlimited credit. Restricted to music majors. No S/U option.
Prerequisite: MUS 145 or consent of instructor.

MUS 147. Functional Piano III
2 Credits
For music majors preparing for the Piano Proficiency Examination. May be taken for unlimited credit. Restricted to music majors. No S/U option.
Prerequisite: MUS 146 or consent of instructor.

MUS 150. Orchestra
1 Credit
Participation in the Las Cruces Symphony at NMSU. This is a full symphony orchestra concentrating on masterworks of the literature. May be taken for unlimited credit.

MUS 151. Philharmonic Orchestra
1 Credit
The University Philharmonic Orchestra is open to all students and performs a wide variety of standard orchestral literature. The orchestra performs each semester and the objectives include refining technique, stylistic characteristics, intonation, balance, bowing, color, rhythmic integrity and dynamics. May be repeated up to 10 credits. Restricted to Las Cruces campus only.
Prerequisite(s): by audition only.

MUS 160. University Singers
1 Credit
Select concert and touring choir of undergraduate and graduate students performing a cappella and accompanied choral literature. May be repeated up to 10 credits. Restricted to Las Cruces campus only.
Prerequisite(s): By audition only.
MUS 161. Concert Choir
1 Credit
Campus choir composed of both music and non-music majors. Emphasis on vocal techniques, sight-singing, and basics of choral musicianship. May be taken for unlimited credit.

MUS 162. Master Works Chorus
1 Credit
Combination campus and community chorus. This group will perform the major chorale compositions for orchestra and/or wind ensemble. May be taken for unlimited credit.

MUS 163. Jazz Ensembles
1 Credit
Performance ensemble that explore repertoire written for big band, including (but not limited) to dance band, swing, and contemporary compositions. May be repeated up to 10 credits. Restricted to Las Cruces campus only.
Prerequisite(s): By audition only.

MUS 164. Chamber Ensembles
1 Credit
Small groups of singers and/or instrumentalists that perform chamber music. May be repeated up to 16 credits. Restricted to Las Cruces campus only.
Prerequisite(s): By audition only.

MUS 170. Wind Symphony
1 Credit
This elite ensemble of 50 highly qualified graduate and undergraduate students performs a varied repertoire of the highest quality literature for winds. Members will also perform concerts of chamber winds literature each semester. This ensemble is dedicated to professional level performance while fostering the musical growth of its members. Conducted by the Director of Bands, this group serves as the flagship for the entire university bands program. May be repeated up to 10 credits. Restricted to Las Cruces campus only.
Prerequisite(s): By audition only.

MUS 171. Roadrunner Revue Pep Band
1 Credit
For both music and nonmusic majors. Opportunity to perform a variety of music in a showband setting. May be taken for unlimited credit.
Prerequisite: by audition only; contact band office for date and time.

MUS 172. Marching Band
1 Credit
For both music and nonmusic majors. Opportunity to perform all varieties of music in a contemporary styled marching unit. May be taken for unlimited credit.

MUS 174. Percussion Ensemble
1 Credit
Study and performance of contemporary percussion ensemble literature. May be repeated up to 5 credits. Restricted to Las Cruces campus only.
Prerequisite(s): By audition only.

MUS 175. Symphonic Band
1 Credit
This is a select large ensemble, chosen by audition. It provides a challenging musical environment for skilled performers by programming repertoire that ranges from works for chamber winds, to standards of the wind band literature, to cutting edge literature. Conducted by the Associate Director of Bands, this ensemble is comprised of music majors and non-music majors alike and provides the less experienced student an opportunity to hone and refine performance skills. May be repeated up to 10 credits. Restricted to Las Cruces campus only.
Prerequisite(s): By audition only.

MUS 176. Campus Band
1 Credit
This is a non-auditioned ensemble designed to meet the needs of students from all majors across campus. Music majors are encouraged to enroll while performing on a secondary instrument. Marching band members are also encouraged to take the course to build skills and leadership. This ensemble provides an educational experience and serves as an outlet for students who wish to remain musically active in a less intense setting. May be repeated up to 10 credits. Restricted to Las Cruces campus only.

MUS 180. Symphonic Band
1 Credit
This is a select large ensemble, chosen by audition. It provides a challenging musical environment for skilled performers by programming repertoire that ranges from works for chamber winds, to standards of the wind band literature, to cutting edge literature. Conducted by the Associate Director of Bands, this ensemble is comprised of music majors and non-music majors alike and provides the less experienced student an opportunity to hone and refine performance skills. May be repeated up to 10 credits. Restricted to Las Cruces campus only.
Prerequisite(s): By audition only.

MUS 181. Campus Band
1 Credit
This is a non-auditioned ensemble designed to meet the needs of students from all majors across campus. Music majors are encouraged to enroll while performing on a secondary instrument. Marching band members are also encouraged to take the course to build skills and leadership. This ensemble provides an educational experience and serves as an outlet for students who wish to remain musically active in a less intense setting. May be repeated up to 10 credits. Restricted to Las Cruces campus only.

MUS 201G. History of Jazz in Popular Music: A Blending of Cultures
3 Credits
Jazz in popular music as it relates to music history and the development of world cultures.

MUS 202. An Introduction to World Music, Jazz and Music Research
3 Credits
Introduces world music and jazz within a historical and cultural context, considering significant musical figures, forms, genres, styles, and representative works. A major component will be the development of effective research and scholarly writing skills for the music major or minor. May be repeated up to 3 credits. Restricted to: Music majors and minors. majors. Restricted to Las Cruces campus only.

MUS 203. Ear Training III
1 Credit
Continuation of MUS 104, advanced sight singing, dictation. Restricted to Las Cruces campus only.
Prerequisite(s): Grade of C- or better in MUS 104.

MUS 204. Ear Training IV
1 Credit
Continuation of MUS 203, advanced sight singing, dictation. Restricted to Las Cruces campus only.
Prerequisite(s): Grade of C or better in MUS 203 and MUS 205.

MUS 205. Music Theory III
3 Credits
Analysis of Baroque and Classical Music. Vocabulary and syntax of 18th and 19th c. Western art music through study, chordal/formal analysis, and composition. Restricted to Las Cruces campus only.
Prerequisite(s): Grade of C or better in MUS 106.

MUS 206. Music Theory IV
3 Credits
Analysis of Romantic, Post-Romantic, Impressionist, and Twelve-Tone Music. Vocabulary and syntax of late 19th and early 20th c. Western art music through study, micro/macro analysis, and composition. Restricted to Las Cruces campus only.
Prerequisite(s): Grade of C or better in MUS 205.
MUS 207. Music History and Literature: Antiquity through Baroque
3 Credits
Surveys Western art music within a historical and cultural context, considering significant musical figures, forms, genres, styles, and representative works from antiquity through the end of the Baroque era. An additional emphasis will be given to effective research and scholarly writing skills. Restricted to: MUS Majors. Prerequisite(s): A grade of C- or better in MUS 103, 105, and 202.

MUS 230. Applied Music I
1-4 Credits
Individual instruction to develop technique, musicianship, performance and improvisational skills, as well as knowledge of significant repertoire. May be repeated up to 16 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR. Restricted to Las Cruces campus only. Prerequisite(s): MUS 105.

MUS 250. Introduction to Music Education
2 Credits
Overview of the basic principals and practices of the music education profession in K-12 settings, emphasizing philosophy and history of music education, methodologies commonly utilized in school curricula, music in special education, classroom/rehearsal management and lesson planning. Explores many aspects of public school teaching through class discussions and directed observations. Restricted to Las Cruces campus only.

MUS 251. Opera Workshop
1 Credit
Study, translation, analysis, rehearsal and performance of opera. May be repeated up to 10 credits. Restricted to Las Cruces campus only. Prerequisite(s): Audition.

MUS 260. Special Topics I
1-3 Credits
Emphasis on special areas of music; designed for highly motivated students. May be taken for unlimited credit.

MUS 261. Functional Piano IV
2 Credits
For music majors preparing for Piano Proficiency Examination. May be taken for unlimited credit. Restricted to music majors. No S/U option. Prerequisite: MUS 147 or consent of instructor.

MUS 262. Diction I
2 Credits
Introduction to the international phonetic alphabet, and its application to English, Italian, Spanish, and Latin song literature. Main campus only. Restricted to Las Cruces campus only.

MUS 263. Diction II
2 Credits
Advanced grammar and detailed study of Italian, German and French diction and song literature for vocal students. Restricted to music majors. Main campus only. Prerequisite: MUS 262 or consent of instructor.

MUS 273. Introduction to Music Technology
1 Credit
Introduction to uses of technology in musical settings. Practical applications in digital music notation, MIDI sequencing, and digital audio recording. Restricted to: MUS, M ED Majors. Traditional Grading with RR. Restricted to Las Cruces campus only. Prerequisite(s): MUS 105.

MUS 250. Introduction to Music Education
2 Credits
Overview of the basic principals and practices of the music education profession in K-12 settings, emphasizing philosophy and history of music education, methodologies commonly utilized in school curricula, music in special education, classroom/rehearsal management and lesson planning. Explores many aspects of public school teaching through class discussions and directed observations. Restricted to Las Cruces campus only.

MUS 251. Opera Workshop
1 Credit
Study, translation, analysis, rehearsal and performance of opera. May be repeated up to 10 credits. Restricted to Las Cruces campus only. Prerequisite(s): Audition.

MUS 260. Special Topics I
1-3 Credits
Emphasis on special areas of music; designed for highly motivated students. May be taken for unlimited credit.

MUS 261. Functional Piano IV
2 Credits
For music majors preparing for Piano Proficiency Examination. May be taken for unlimited credit. Restricted to music majors. No S/U option. Prerequisite: MUS 147 or consent of instructor.

MUS 262. Diction I
2 Credits
Introduction to the international phonetic alphabet, and its application to English, Italian, Spanish, and Latin song literature. Main campus only. Restricted to Las Cruces campus only.

MUS 263. Diction II
2 Credits
Advanced grammar and detailed study of Italian, German and French diction and song literature for vocal students. Restricted to music majors. Main campus only. Prerequisite: MUS 262 or consent of instructor.

MUS 273. Introduction to Music Technology
1 Credit
Introduction to uses of technology in musical settings. Practical applications in digital music notation, MIDI sequencing, and digital audio recording. Restricted to: MUS, M ED Majors. Traditional Grading with RR. Restricted to Las Cruces campus only. Prerequisite(s): MUS 105.
MUS 322. Guitar Methods
1 Credit
Methods and techniques of teaching guitar, for Music Education majors. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 323. Percussion Technique I
1 Credit
Methods and techniques of teaching percussion instruments with a focus on snare drum, timpani and accessory. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 324. Percussion Technique II
1 Credit
Methods and techniques of teaching percussion instruments with a focus on keyboard percussion, marching percussion and drum set. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 325. Beginning Conducting
1 Credit
A study of the fundamentals of conducting and rehearsal strategies with an emphasis on beginning technique applicable to all ensembles. Reading of musical scores with application via laboratory ensemble experience is included. Restricted to: Music and Music Education majors. Traditional Grading with RR.
Prerequisite(s): A grade of C or better in MUS 204 and 206.

MUS 326. Instrumental Conducting
3 Credits
Will continue from MUS 325 in the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques as it relates to the instrumental ensemble. The class will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. May be repeated up to 3 credits. Restricted to: MUS ED majors. Traditional Grading with RR.
Prerequisite(s): A grade of C- or better in MUS 325.

MUS 327. Choral Conducting
3 Credits
Continuation of conducting study with emphasis on choral rehearsal techniques, ensemble management, and literature. Restricted to: Music and Music Education majors. Traditional Grading with RR.
Prerequisite(s): A grade of C or better in MUS 325.

MUS 330. Applied Music II
1-4 Credits
Continuation from MUS 230. Individual instruction to develop technique, musicianship, performance and improvisational skills, as well as knowledge of significant repertoire. May be repeated up to 16 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.
Prerequisite(s): A grade of C or better in MUS 230 plus a juried audition.

MUS 339. Survey of Music Business
3 Credits
Survey of career options and exploration of current events/trends within the Music Industry. Non-Music Business majors may be admitted with instructor's approval.

MUS 340. Junior Recital
1 Credit
Public solo performance under the supervision of the appropriate applied instructor. 30 minutes of musical performance is required. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.
Corequisite(s): MUS 330.

MUS 346. Elementary Music Methods
2 Credits
Lesson planning, curriculum, teaching methodology, materials, and procedures for teaching music in an elementary school. Emphasis on methodology of Koday and Orff, teaching in a multicultural setting, and developing reflective practitioners. This course requires field experience in the public schools. Restricted to: Music Education majors.
Prerequisite(s): A grade of C or better in MUS 250 and passing the TEP exam.

MUS 350. Chamber Music
1 Credit
Small performing ensembles that may include strings, woodwinds, brass, pianos, percussion, and voices. May be repeated up to 16 credits.
Prerequisite(s): by audition only.

MUS 351. Opera Workshop
1 Credit
Study, translation analysis, rehearsal and performance of opera. May be repeated up to 10 credits.
Prerequisite(s): by audition only.

MUS 360. Special Topics II
1-3 Credits
Emphasis on special areas of music; designed for highly motivated students. May be taken for unlimited credit.

MUS 361. Concert Choir II
1 Credit
Composed of both music and nonmusic majors. Emphasis on vocal techniques, sight-singing, and basics of choral musicianship. Students must assume leadership role. May be repeated up to 88 credits.
Prerequisite(s): by audition only.

MUS 362. Philharmonic Orchestra II
1 Credit
The University Philharmonic Orchestra is open to all students and performs a wide variety of standard orchestral literature. The orchestra performs each semester and the objectives include refining technique, stylistic characteristics, intonation, balance, bowings, color, rhythmic integrity and dynamics. May be repeated up to 10 credits.
Prerequisite(s): by audition only.

MUS 363. Jazz Ensembles II
1 Credit
Performance ensemble that explore repertoire written for big band, including (but not limited to) dance band, swing, and contemporary compositions. May be repeated up to 10 credits.
Prerequisite(s): by audition only.
MUS 365. Composition I
2 Credits
Significant forms for various media. Emphasis on structural aspects of original composition. Restricted to: M ED,MUS majors.
Prerequisite(s): A grade of B or better in MUS 105.

MUS 366. Composition II
2 Credits
Applied larger forms. Emphasis on larger vocal and instrumental works.
Prerequisite(s): B or better in MUS 365.

MUS 368. University Singers II
1 Credit
Select concert and touring choir of undergraduate and graduate students performing a cappella and accompanied choral literature. May be repeated up to 10 credits. Consent of Instructor required.
Prerequisite(s): by audition only.

MUS 370. Wind Symphony II
1 Credit
This elite ensemble of 50 highly qualified graduate and undergraduate students performs a varied repertoire of the highest quality literature for winds. Members will also perform concerts of chamber winds literature each semester. This ensemble is dedicated to professional level performance while fostering the musical growth of its members. Conducted by the Director of Bands, this group serves as the flagship for the entire university bands program. May be repeated up to 10 credits.
Prerequisite(s): by audition only.

MUS 372. Marching Band II
1 Credit
Composed of both majors and nonmajors. Opportunity to perform all varieties of music in a contemporary style marching unit. May be repeated up to 5 credits. Consent of Instructor required. Traditional Grading with RR.

MUS 374. Percussion Ensembles II
1 Credit
Study and performance of contemporary percussion ensemble literature. Students must assume a leadership role. May be repeated up to 5 credits.
Prerequisite(s): by audition only.

MUS 380. Symphonic Band II
1 Credit
This is a select large ensemble, chosen by audition. It provides a challenging musical environment for skilled performers by programming repertoire that ranges from works for chamber winds, to standards of the wind band literature, to cutting edge literature. Conducted by the Associate Director of Bands, this ensemble is comprised of music majors and non-music majors alike and provides the less experienced student an opportunity to hone and refine performance skills. May be repeated up to 10 credits.
Prerequisite(s): by audition only.

MUS 381. Campus Band II
1 Credit
This is a non-auditioned ensemble designed to meet the needs of students from all majors across campus. Music majors are encouraged to enroll while performing on a secondary instrument. Marching band members are also encouraged to take the course to build skills and leadership. This ensemble provides an educational experience and serves as an outlet for students who wish to remain musically active in a less intense setting. May be repeated up to 10 credits.

MUS 386. Applied Music Pedagogy and Literature I
2 Credits
Methods, materials, problems, literature, and techniques in teaching individual lessons. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 390. Survey of Wind Literature
2 Credits
An examination of beginning to advanced literature for wind bands with an emphasis on the needs of middle and high school ensembles. It will include a means to determine the quality of a piece as well as the standardized level of difficulty (grading). Restricted to: Music and Music Education majors.
Prerequisite(s): A grade of C- or better in MUS 204 and 206.

MUS 391. Survey of Orchestral Literature
2 Credits
An examination of beginning to advanced literature for both string orchestra and symphony orchestra with an emphasis on the needs of middle and high school ensembles. A means to determine the quality of a piece as well as the standardized level of difficulty (grading) will be included. Restricted to: Music and Music Education majors.
Prerequisite(s): A grade of C- or better in MUS 204 and 206.

MUS 392. Survey of Choral Literature
2 Credits
An examination of beginning to advanced literature for choir with an emphasis on the needs of middle and high school ensembles. A means to determine the quality of a piece as well as the standardized level of difficulty (grading) will be included. Restricted to: Music and Music Education majors.
Prerequisite(s): A grade of C- or better in MUS 204 and 206.

MUS 413. Form and Analysis
3 Credits
Forms in tonal music and basic analytic techniques including music from diverse cultures and media.
Prerequisite(s): A grade of C- or better in MUS 204 and MUS 206.

MUS 415. Orchestration
3 Credits
Scoring for full orchestra and various instrumental combinations with consideration of instrument timbres, strengths, weaknesses and ranges. Restricted to: Music and Music Education majors.
Prerequisite(s): A grade of C or better in MUS 204 and 206.

MUS 417. Studio Accompanying
2 Credits
Practical application of collaborative piano skills in a studio setting for Piano Performance majors. May be repeated up to 8 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 420. Music of the Middle Ages and Renaissance
3 Credits
An overview of the music of the Middle Ages and Renaissance eras with an emphasis on history and literature.
Prerequisite(s): MUS 303.

MUS 421. Music of the Baroque Era
3 Credits
An overview of the music of the Baroque era with an emphasis on history and literature.
Prerequisite(s): MUS 303.
MUS 422. Music of the Classic Era  
3 Credits  
An overview of the music of the Classic era with an emphasis on history and literature.  
Prerequisite(s): MUS 303.

MUS 423. Music of the Romantic Era  
3 Credits  
An overview of the music of the Romantic era with an emphasis on history and literature.  
Prerequisite(s): MUS 303.

MUS 424. Music of the Twentieth Century  
3 Credits  
An overview of the music of the Twentieth Century with an emphasis on history and literature. Consent of Instructor required.  
Prerequisite(s): MUS 303.

MUS 429. Opera and Music Drama  
3 Credits  
Lyrical drama of the Greeks through works of Wagner and Verdi to contemporary opera.  
Prerequisite: MUS 303 or consent of instructor.

MUS 430. Applied Music III  
1-4 Credits  
Continuation from MUS 330. Individual instruction to develop technique, musicianship, performance and improvisational skills, as well as knowledge of significant repertoire. May be repeated up to 16 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.  
Prerequisite(s): A grade of C or better in MUS 330 plus a juried audition.

MUS 440. Senior Recital  
1-2 Credits (1-2)  
Public solo performance under the supervision of the appropriate applied instructor. 60 minutes of musical performance is required for enrollment of 2 hours credit. 30 minutes of musical performance is required for enrollment of 1 hour credit. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.  
Corequisite(s): MUS 430.

MUS 441. Supervised Studio Teaching  
2 Credits  
Teaching of private lessons under supervision. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: Music and Music Education majors. Traditional Grading with RR.

MUS 450. Research Methods  
3 Credits  
Introduction to methodology of music research. Emphasis on important scholarly resources and academic writing. Restricted to majors. Main campus only. No S/U option.  
Prerequisite: consent of instructor.

MUS 451. Orchestra II  
1 Credit  
Las Cruces Symphony at NMSU, a full symphony orchestra concentrating on masterworks of the literature. Students must assume a leadership role. May be repeated up to 88 credits.  
Prerequisite(s): by audition only.

MUS 455. Music Business Internship  
3 Credits  
Capstone course for the Music Business degree. Working with the music business coordinator, students must have been accepted as an intern in a music business setting before enrolling. Credit given for the internship based on criteria developed for each placement. Restricted to majors. S/U only.  
Prerequisites: MUS 330 and piano proficiency.

MUS 465. Composition III  
2 Credits  
Emphasis on extended compositional techniques, serialization, and modern counterpoint. Consent of Instructor required. Restricted to: Music majors. Traditional Grading with RR.

MUS 466. Composition IV  
2 Credits  
New music notation and techniques. Open forms, aleatory concepts. Consent of Instructor required. Restricted to: Music majors. Traditional Grading with RR.  
Prerequisite(s): MUS 465.

MUS 470. Special Topics III  
1-3 Credits  
Designed for highly motivated students. Independent study and individual guidance. May be taken for unlimited credit.

MUS 471. Graduate Theory Review  
3 Credits  
Comprehensive and accelerated study of modes, diatonic harmony, and classical form of the common practice period. Restricted to: Music majors. Traditional Grading with RR.

MUS 475. Intermediate Conducting  
3 Credits  
Serves as a bridge from undergraduate conducting study to the graduate level. Advanced undergraduate students may enroll to learn how the graduate program in conducting functions. The course also serves as the introductory experience for newly admitted graduate conducting majors. After successful completion of this course, students will be able to: Study musical scores from a conducting perspective; Demonstrate effective predetermined gestures and movements; Lead an ensemble; Research and give presentations related to composers and their music; Demonstrate advanced knowledge of conducting practices.  
Prerequisite(s): A grade of C- or better in MUS 326 or 327.

MUS 476. Music Cultures of the World: History and Criticism  
3 Credits  
Listening, criticism, and analysis of musical cultures around the world. Emphasis on non-Western musical traditions and folk music of the world. Open to all majors.

MUS 477. Graduate Music History Review  
3 Credits  
Comprehensive and accelerated study of music history from antiquity to the present Restricted to: Music majors. Traditional Grading with RR.

MUS 486. Applied Music Pedagogy and Literature II  
2 Credits  
Methods, materials, problems, literature, and techniques in teaching individual lessons. Consent of Instructor required. Restricted to: Music majors. Traditional Grading with RR.
MUS 498. Independent Study
1-3 Credits
For students with a strong musical background wishing to explore content beyond the traditional curriculum. Restricted to majors. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

MUS 511. Survey of Traditional Harmony
3 Credits
Tonal harmony in common practice and theory of the late 17th, 18th, and early 19th centuries. Restricted to: Music majors. Traditional Grading with RR.
Prerequisite(s): A grade of B or better in MUS 471.

MUS 513. Twentieth Century Art Music
3 Credits
Analytical techniques, structural design and compositional materials from Debussy to the Minimalist school in historical context. Restricted to: Music majors.
Prerequisite(s): A grade of B or better in MUS 471.

MUS 514. Advanced Composition
3 Credits
Original composition in 20th century idioms.
Prerequisite: MUS 466.

MUS 518. Seminar in Music Theory
3 Credits
Varying topics in Music Theory, providing a more specific and in-depth study of the particular topic. May be repeated up to 6 credits. Restricted to: Music majors. Traditional Grading with RR.
Prerequisite(s): A grade of B or better in MUS 471.

MUS 519. Seminar in Music History
3 Credits
Varying topics in Music History, providing a more specific and in-depth study of the particular topic. May be repeated up to 6 credits. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 471.

MUS 520. Music of the Middle Ages and Renaissance: History and Literature
3 Credits
An overview of the music of the Middle Ages and Renaissance with an emphasis on history and literature. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 477.

MUS 521. Music of the Baroque Era: History and Literature
3 Credits
An overview of the music of the Baroque Era with an emphasis on history and literature.

MUS 522. Music of the Classical Era: History and Literature
3 Credits
An overview of the music of the Classical era with an emphasis on history and literature. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 477.

MUS 523. Music of the Romantic Era: History and Literature
3 Credits
An overview of Romantic era music, with an emphasis on history and literature. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 477.

MUS 524. Advanced Choral Conducting I
3 Credits
This course will continue the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques. Lessons will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 475.

MUS 527. History and Analysis of the Symphony
3 Credits
Historical background and development of the symphony from its inception (ca. 1740s) to mid-twentieth century. Analysis of major works by significant composers with emphasis on Sonata form. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 471 and 477.

MUS 528. The Symphony in Historical Context
3 Credits
Considers the historical development of the symphony, as a musical genre, from its inception to the 20th century. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 477.

MUS 529. Opera and Music Drama
3 Credits
Lyric drama of the Greeks through works of Wagner and Verdi to contemporary opera. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 477.

MUS 530. Seminar in Music Education
3 Credits
Varying topics in Music Education, providing a more specific and in-depth study of the particular topic. Restricted to: MUS majors.

MUS 531. Music in Elementary Schools
3 Credits
This course is designed to provide experiences which will help the student gain skills to appropriately enhance the musical growth of children in K–6 classrooms. The course participants personal skill and understanding of musical concepts will be developed; musical needs and capabilities of young children will be investigated; methods of teaching music to young children will be explored. Restricted to: MUS (Music Ed track only) majors.

MUS 535. Current Issues in Music Education
3 Credits
This course examines the rich and challenging complexities of music teaching and learning from a variety of perspectives. Educational theory to pedagogical inquiry of current educational practice will be examined, calling students to critically reflect on such professional activities as lesson planning, curriculum design, repertoire choice, program assessment, advocacy in the arts, and student evaluation. Restricted to: MUS (Music Ed track only) majors.

MUS 540. Graduate Recital/Analytical Paper
4 Credits
This course is for students completing a Master of Music with a Performance emphasis. A public recital will be given and an accompanying research paper will be submitted. Restricted to: MUS majors.
MUS 575. Advanced Choral Conducting II
3 Credits
This is the final course in preparation for the student’s graduate conducting concert. It will continue the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques. Lessons will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 574.

MUS 576. Advanced Instrumental Conducting I
3 Credits
The role of the conductor is to lead, react to, alter, and reinforce the performance of the ensemble. This course will continue in the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques. Lessons will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 575.

MUS 577. Advanced Instrumental Conducting II
3 Credits
The role of the conductor is to lead, react to, alter, and reinforce the performance of the ensemble. This course will continue in the training for competent musicianship with a focus on conducting gestures and movements, score study, and rehearsal techniques. Lessons will focus primarily on the development of a non-verbal vocabulary that will allow each student to clearly and artistically communicate with the members of an ensemble to solicit a predetermined musical result. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 576.

MUS 578. Advanced Choral Literature
2 Credits
An examination of significant choral works from 1200 to the present, including composers, genres, and historical context. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 475.

MUS 579. ADV INSTR LIT
2 Credits
An examination of significant instrumental works from the Baroque period to the present, including composers, genres, and historical context. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 475.

MUS 580. Ensemble Performance
1 Credit
Performance in university ensembles. May be repeated up to 99 credits.
Prerequisite(s): by audition only.

MUS 582. Applied Music
2-4 Credits
For music majors, individual instruction, including improvisation skills and techniques. Students may enroll for 2 or 4 credits. May be repeated for a maximum of 16 credits.
Prerequisites: audition and consent of instructor.

MUS 586. Applied Music Pedagogy and Literature III
2 Credits
Methods, materials, problems, literature, and techniques in teaching individual lessons. Restricted to: MUS majors.
Prerequisite(s): A grade of B or better in MUS 486.

MUS 590. Supervised Studio Teaching
2 Credits
Teaching of private lessons under supervision.

MUS 598. Special Research Programs
1-4 Credits
May be taken for unlimited credit.

MUS 599. Master’s Thesis
15 Credits
Thesis.

NA - NURSING ASSISTANT (NA)

NA 101. Nursing Assistant Theory and Lab
6 Credits (5+3P)
Nurse aide skills with emphasis on a bio-psychosocial-cultural approach to client care. Practice of these skills is provided in the laboratory as well as at a clinical site. Successful completion of the course prepares and qualifies the student to take the NACES certification examination. May be repeated up to 6 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): (CCDR 110N with C or better OR appropriate placement score) and (CCDE 110N with C or better OR appropriate placement score) and (CCDM 103N with C or better OR appropriate placement score).

NA 103. Introduction to Health Care Services
3 Credits
Introduction to health care services, functions and responsibilities of a nurse aide, ethical and legal considerations, communication and medical terminology.

NA 104. Nursing Assistant Fundamentals
3 Credits
This course prepares students for employment as a Nursing Assistant in a Long Term Care Facility. Theory and basic nursing care skills will be taught with an emphasis being placed on the psychosocial-cultural approach to client care. Students will learn communication skills, basic anatomy and physiology, growth and development, infection control, body mechanics, basic nutrition, client/resident elimination needs, the client/resident unit, vital signs, range of motion exercises, bed making, rehabilitation and restorative care, client admission and discharge, common health problems, dealing with death and dying, and basic medical terminology. NA 104 and NA 104L (laboratory) must be successfully completed with a C- or better in order to continue to NA 105 Nursing Assistant Clinical. NA 105 must also be successfully completed with a C- or better to be eligible to take the state certification competency examination. Attendance is required to meet the federal requirements for training hours and content prior to direct contact with a patient/resident and the state competency examination. Restricted to Community Colleges campuses only.
Prerequisite(s): Test out of all CCDE and CCDR courses and eligible to take ENGL 111G.
Corequisite(s): NA 104 L.
NA 104 L. Nursing Assistant Fundamentals Lab
1 Credit
This course prepares students for employment as a Nursing Assistant in a Long Term Care Facility. Students will learn and demonstrate personal care skills including bathing, grooming, dressing, toileting, assisting with eating and hydration, skin care, transfers and positioning. Students will also learn and demonstrate the use of assistive devices, and how to maintain resident safety, dignity and privacy. NA 104 & NA 104L must be successfully completed with a C- or greater in order to continue to NA 105 Clinical. NA 105 must be successfully completed with a C- or greater to be eligible to take the state certification competency examination.

Prerequisite(s)/Corequisite(s): NA 104. Prerequisite(s): English COMPASS score of 35 or greater or CCDE 110N, and reading COMPASS score of 55 or greater or CCDR 105N. Restricted to Community Colleges campuses only.

NA 105. Nursing Assistant Clinicals
4 Credits (3+3P)
Extension of basic fundamentals of personal care, including theory, skills and clinical experience leading to the certified Nursing Assistant Examination at the conclusion of the semester. Continuation of NA 104. Requires a C or better to pass. Restricted to: Community Colleges only.

Prerequisite(s): C or better in NA 104 or consent of instructor.

NA 106. Home Health Assistant
4 Credits (3+3P)
Theory, skills and clinical experience leading to a job working with clients in the home environment. Prepares the certified nursing assistant for certification in the home health care arena.

Prerequisite: current CNA or consent of instructor.

Corequisites: CCDM 114N and CCDE 110N.

NA 107. Medication Assistant
5 Credits (4+3P)
Theory, skills, and clinical to prepare the student to meet the State of New Mexico requirements to distribute medication in a residential setting to Medicaid DD waiver clients.

Prerequisites: CCDM 114N and CNA, or consent of instructor.

NA 108. Disabilities Support Services
4 Credits (3+2P)
Beginning level preservice preparation for providing in-home care for individuals with disabilities. Crosslisted with: AHS 108. Restricted to: Community Colleges only.

Prerequisite(s): NA 101 or NA 104 or Consent of Instructor.

NA 109. Phlebotomist Basic
4 Credits (2+4P)
This course provides the latest information, techniques, skills, and equipment for blood and specimen collection based on the standards of the Clinical and Laboratory Standards Institute, Needlestick Prevention Act, Joint Commission 2008 National Patient Safety Goals, OSHA and CDC. An advanced skills lab is included in the course to provide a "hands-on" practice experience and a 30 hour practicum in a supervised work environment collecting blood and specimens on actual patients for laboratory tests. Attendance is mandatory. Prepares students for employment as a phlebotomist in health care settings. Requires a "C" or better to pass. Upon successful completion of the course, student has the opportunity to test for National Healthcareer Certification. Consent of Instructor required.

Prerequisite(s)/Corequisite(s): BIOL 154 or BIOL 226. Restricted to Community Colleges campuses only.

NA 110. Electrocardiogram Technician Basic
4 Credits (3+3P)
Prepares students for employment as an Electrocardiogram Technician. Includes basic theory of the cardiovascular system, cardiac rhythm interpretation, 12 lead ECG lead placement, and ECG equipment troubleshooting. The course includes an advanced skills laboratory for "hands-on" practice and 16 hours of supervised clinical in the work environment assisting with ECG testing. Attendance is mandatory. Course requires a grade of "C" or better to pass. Upon successful completion of course, student has the opportunity to test for National Healthcareer Certification. Restricted to Community Colleges campuses only.

Prerequisite(s): BIOL 154 OR BIOL 225 & BIOL 226.

NA 111. Alzheimer/Dementia Care Focus
3 Credits
Students will learn respectful care of Alzheimer/Dementia persons while ensuring their dignity, maximizing safe independence focusing on strengths and abilities. Pre/

Prerequisite(s)/Corequisite(s): NA 104 or NA 101. Restricted to: Community Colleges only.

NA 112. Patient Care Assistant
4 Credits (2+4P)
This course prepares students to become patient care assistants (certified nursing assistant [CNA]). The course prepares students in the areas of critical thinking, collaboration with healthcare team members and performance of Certified Nursing Assistant skills within acute care units including: out-patient care unit (pre-operative), medical-surgical unit, orthopedic unit, mother-baby (obstetrics) and the mental health inpatient unit. Lab and clinical time will include learning skills in a practice setting with mannequins and in a hospital for acute care skill learning and application. Must pass course with a C- or better.

Prerequisite(s): NA-101 or current State of New Mexico Certified Nursing Assistant (CNA) certificate (CNA certification must remain current through end of course).

Corequisite(s): Current Basic Life Support (BLS) for the Health Care Provider (American Heart Association) (BLS certification must remain current through end of course).

NA 115. Phlebotomist Technician
6 Credits (3+6P)
Basic theory and skills of phlebotomy following OSHA and Center for Disease Control guidelines. Prepares students for the requirements of testing for the ASCP certification exam and employment in a healthcare organization as a phlebotomist in licensed settings. Laboratory hours include infection control skills & practice, patient assessment & teaching, and practice in venipuncture. Clinical time includes clinical laboratory processes and operations, patient assessment, venipuncture, and exposure to clinical policies and procedures. Upon successful completion students are workforce ready.

Prerequisite(s)/Corequisite(s): OSEM 101. Restricted to Community Colleges campuses only.

NA 204. Patient Care Technician
4 Credits (3+3P)
This course will prepare Certified Nursing Assistants (CNAs) to work in the acute care setting through an expansion of their existing basic skill set. Students will acquire expanded acute care skills, critical thinking skills, and knowledge in caring for patients of all ages. Currently CNA certified. Restricted to Community Colleges campuses only.

Prerequisite(s): (NA 104, NA 105, NA 109, NA 110, AHS 120, and (BIOL 154 or (BIOL 225 & BIOL 226)).

Corequisite(s): NA 205.
NA 205. Patient Care Technicians Practicum
4 Credits (1+9P)
This course will prepare Certified Nursing Assistants (CNAs) to work in the acute care setting through an expansion of their existing basic skill set. Students will acquire expanded acute care skills, critical thinking skills, and knowledge in caring for patients of all ages. Students will go to acute care settings to practice newly acquired skills. Must have a “C” or better to pass. Restricted to Community Colleges campuses only.
Prerequisite(s): (NA 104, NA 105, NA 109, NA 110, AHS 120, & (BIOL 154 or BIOL 225 & BIOL 226)) Currently CNA Certified.
Corequisite(s): NA 204.

NA 212. Medical Assistant Capstone Course
5 Credits (4+3P)
This course provides the student with entry-level theory and limited "hands-on" training in basic and routine clinical office tasks. The course will equip the Medical Assistant (MA) student with the competencies required to perform in a medical office under the direct supervision of a physician. The graduate will be able to assist the physician with physical exams, ECGs, phlebotomy, and minor surgical procedures. May be repeated up to 5 credits. CNA Certification within the last 5 years.
Prerequisite(s): NA 105, NA 110, NA 109, AHS 120, BIOL 154, HIT 110, BOT 208, HIT 228, HIT 248, HIT 258.

NA 214. Medical Assistant Practicum
6 Credits (1+6P)
This course is the practicum for NA 212 Medical Assistant Fundamentals Capstone Course. Students will prepare for a career as a medical assistant in medical offices and clinics. During practicum students will observe and participate in 180 hours in a supervised work environment using knowledge and skills learned in NA 212. This course includes weekly post-practicum conferences with the instructor. The student will be evaluated by both the employer and the instructor. Requires a "C" or better to pass. Upon successful completion the student may be eligible to test for National Certification. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s)/Corequisite(s): NA 212. Prerequisite(s): NA 105, NA 110, NA 109, AHS 120, BIOL 154, HIT 110, BOT 208, HIT 228, HIT 248, HIT 258. CNA Certified within the last 5 years. Restricted to Community Colleges campuses only.

NAV-NAVAJO (NAV)

NAV 101. Introduction to Navajo Studies
3 Credits
Covers geography, demography, institutions of modern Navajo society with historical overview. Restricted to: Community Colleges only.

NAV 111. Elementary Navajo I
4 Credits
Navajo for beginners with emphasis on speaking skills.
Prerequisite: not open to Navajo-speaking students except by consent of instructor.

NURS-NURSING (NURS)

NURS 120. Introduction to Pharmacology
3 Credits
General principles of pharmacology including methods of administration, effect on the body, interactions with other drugs, and classification of drugs. Focus on the health care provider's role in safe pharmacologic intervention. Restricted to Allied Health majors. Restricted to: Community Colleges only.

NURS 130. Foundations of Pharmacology
3 Credits
This course provides the nursing student with an introduction to the foundations of pharmacology including: science of drug action, principles of medication administration, accurate calculation of drug doses, medication therapy across the lifespan, application of medications to treat health alterations, normal and adverse responses by the client to medication therapy, medication safety, medication regulation, national patient safety goals, and appropriate nursing interventions to achieve the desired goals of medication therapy. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges only.
Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 147 & NURS 149.

NURS 134. Foundation of Nursing Skills and Assessment
3 Credits (1+6P)
This course provides nursing students with introductory nursing knowledge related to performance of nursing skills and assessment including: techniques of fundamental nursing care, basic and intermediate nursing skills, and foundational physical assessment techniques associated with care across the lifespan. Open to students who have been accepted into the nursing program. Restricted to: NUR majors. Restricted to: Community Colleges only.
Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 136 & NURS 137 or permission of the Program Director.

NURS 136. Foundations of Nursing Practice
6 Credits (4+6P)
This course will introduce the nursing student to foundational theoretical concepts of professional nursing practice, the nursing process, and foundational nursing skills. It includes developmental concepts related to clients across the lifespan. Clinical experiences in the simulation lab, long-term care, the community, and rehabilitation settings will provide the student with the opportunity to apply learned skills to provide total care to meet needs of one adult client and to develop care planning skills related to actual problems. Students must be concurrently enrolled in both the lecture and lab sections of the course. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges only.
Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 134, NURS 136 lab & NURS 137 or permission of the Program Director.

NURS 137. Care of Geriatric Patient
3 Credits
This course will introduce the nursing student to foundational concepts of age-appropriate/specific care of the older adult who represents the largest population of individuals placing demands on the healthcare system. It includes basic and complex concepts and issues related to care of the older client across the care continuum, provision of cost-effective care in a resource sparse environment. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges campuses only.
Prerequisite(s): Admission into the nursing program.
Corequisite(s): NURS 134 & NURS 136 or permission of the Program Director.
NURS 140. Pathophysiology for Allied Health Professionals
3 Credits
Introduction to the nature of disease and its effect on body systems. Deals with the disease processes affecting the human body via an integrated approach to specific disease entities. Includes a review of normal functions of the appropriate body systems. Diseases are studied in relationship to their etiology, pathological, physical signs and symptoms, diagnostic procedures, complication, treatment modalities, and prognosis. Restricted to Allied Health and Health Information Technology majors. Restricted to: Community Colleges only.
Prerequisite: a grade of C or better in OEHO 140.

NURS 146. Common Health Deviations
6 Credits (4+6P)
Common health deviations and the manner by which they alter various body functions are explored. The role of the licensed practical nurse in assisting clients with common health deviations is presented. Ethical and legal implications and the role of the practical nurse are also considered. The licensed practical nursing student will utilize the application of knowledge to client care situation both in the subacute and acute care settings. The nursing process is presented as guide for coordinating client care. Grade of C or better. May be repeated up to 6 credits. Restricted to: NURSING majors. Restricted to Carlsbad campus only.
Prerequisite(s): NURS 153, NURS 156, NURS 154, NURS 157, and NURS 210 or consent of program director.

NURS 147. Adult Health I
6 Credits (4+6P)
This course focuses on application of the nursing process and theoretical concepts of care for adults with commonly occurring health problems. Selected clinical learning experiences in the simulation lab, acute care, and community settings will allow the student to continue development of: prioritization skills, proficiency in performance of nursing skills, collaborative skills with clients, families, peers and health care team members, care planning skills related to patient actual, psychosocial, and potential problems in the delivery of total nursing care to meet needs of one adult client. Students must be concurrently enrolled in both the lecture and lab sections of this course. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NURS majors. Restricted to Carlsbad campus only.
Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 130, NURS 147, & NURS 149L, or permission of the Program Director.

NURS 148. Physical Assessment
2 Credits (1+3P)
Introduction of concepts and techniques of interviewing, history taking, review of body systems, and physical assessment of an adult client. The student should be able to apply knowledge of anatomy and physiology, assessment skills, communication skills, cultural awareness, nursing process, critical thinking skills, teaching skills, and psychomotor skills. Restricted to: Community Colleges only.

NURS 149. Mental Health Nursing
3 Credits (2+3P)
This course will allow the nursing student to develop skills necessary to provide nursing care for clients with mental health problems in various health care settings including: common mental health disorders, psychosocial dysfunction, psychosocial safety/substance abuse issues, violence, suicide, restraints, developmental age related pathophysiology, psychopharmacology, cultural/religious considerations, grief/loss, promotion of mental health, and therapeutic communication. Selected clinical learning experiences in the simulation lab, acute care, and community settings will allow the student to develop ability to develop: proficiency in performance of nursing skills, collaborative skills with clients, families, peers and health care team members, care planning skills related to patient actual, psychosocial, and potential problems in the delivery of total nursing care to meet needs of one client across the life span with acute/chronic mental health needs. Students must be concurrently enrolled in both the lecture and lab sections of this course. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges only.
Prerequisite(s): Admission into the Nursing Program.
Corequisite(s): NURS 130, NURS 154, & NURS 149L, or permission of the Program Director.

NURS 150. Medical Terminology
3 Credits
Understanding of the basic elements of medical words. Use of medical abbreviations. Same as OEHO 120 and BOT 150.

NURS 153. Medication and Dosage Calculation
1 Credit
Techniques of dosage calculation for medication and fluid administration. RR applicable.
Prerequisite(s): Meet NMSU basic skills requirement in mathematics or consent of program director.
Corequisite(s): NURS 156 and NURS 154.

NURS 154. Physical Assessment
2 Credits
Beginning techniques of physical assessment by systems will be presented using the nursing process as a guide for providing safe client centered care throughout the life span. Grade of C or better is required. May be repeated up to 2 credits. Restricted to: NURSING majors. Restricted to Carlsbad campus only.
Prerequisite(s): BIOL 154 or BIOL 225 or consent of program director.
Corequisite(s): NURS 153, NURS 156.

NURS 155. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes.

NURS 156. Basic Nursing Theory and Practice
6 Credits (4+6P)
Introduction to the nursing profession and the beginning skills of nursing practice as it relates to normalcy. The nursing process is presented as a means of guiding the student in providing safe client centered care. Ethical and legal aspects of nursing practice are also included. Basic clinical nursing skills will be presented and practiced in the nursing lab. The student will perform these skills with clients in an actual health care setting. May be repeated up to 6 credits. Restricted to: NURSING majors. Restricted to Carlsbad campus only.
Prerequisite(s): Consent of Program Director.
Corequisite(s): NURS 153, NURS 154.
NURS 157. Maternal/Child Health Deviations  
8 Credits (6+6P)  
The concepts and principles of nursing care of the family from conception to adolescence. Utilizing the nursing process, the student provides safe client centered care to diverse clients and families. Theoretical instruction is applied to client care situation. Students collaborate with clients, families and the interdisciplinary team in meeting health care needs. Experiences may occur in any of the regional health care facilities. Grade of C or better required. May be repeated up to 8 credits. Restricted to: NURSING majors.Restricted to Carlsbad campus only.  
Prerequisite(s): NURS 156, NURS 153, and NURS 154 or consent of program director.  
Corequisite(s): NURS 210.  

NURS 180. The Adult Client I  
8 Credits (4+12P)  
Holistic care of the adult client throughout the lifespan, utilizing the nursing process to address personal wellness and acute alterations in wellness in a variety of health care settings. Laboratory and clinical practice will focus on application of the nursing process in simulated and real world settings. Restricted to: Community Colleges only.  
Prerequisite(s): NURS 170, NURS 172, and NURS 173L.  
Corequisite(s): NURS 185.  

NURS 182. Legal and Ethical Issues in Nursing Practice  
2 Credits  
Introduction to legal and ethical implications of nursing practice (through the holistic approach to wellness) as a registered nurse. Restricted to: Community Colleges only.  

NURS 185. Holistic Approach to Pharmacotherapeutic Intervention I  
2 Credits  
Level I. Holistic approach to the study of basic pharmacology concepts. Includes pharmacodynamic phases of drug interaction. Nursing process is discussed in relation to medication administration. Special emphasis on the role of the nurse and basic concepts related to specific drug categories. Restricted to: Community Colleges only.  
Prerequisite(s): NURS 170, NURS 172, and NURS 173L.  
Corequisite(s): NURS 180.  

NURS 201. Special Topics  
1-4 Credits  
Specific topics to be announced in the Schedule of Classes. May be repeated for a maximum of 10 credits. Restricted to: Community Colleges only.  
Prerequisite: admission to the nursing program.  

NURS 209. Independent Study  
1-4 Credits  
Individual studies to meet identified student needs. May be repeated for a maximum of 10 credits. Restricted to: Community Colleges only.  
Prerequisite: admission to the nursing program.  

NURS 210. Pharmacological Requisites of the Childbearing Family  
1 Credit  
Basic concepts of pharmacology including pharmacokinetics, pharmacodynamics, and pharmacotherapeutics, and their relationship to nursing care will be discussed focusing on medications commonly utilized with the childbearing family. Medication classes to be discussed include labor and delivery, analgesic, vitamins, respiratory, gynecological, endocrine, and anti-microbial/anti-infective drugs. Grade of C or better required. Restricted to: Carlsbad campus only.  
Prerequisite(s): BIOL 225 and BIOL 226 or consent of instructor and NURS 153, NURS 154 and NURS 156.  
Corequisite(s): NURS 157.  

NURS 211. Pharmacological Requisites of Simple Health Deviations  
1 Credit  
Basic concepts of pharmacology including pharmacokinetics, pharmacodynamics, and pharmacotherapeutics, and their relationship to nursing care are addressed focusing on medications related to the psychiatric, gastrointestinal, musculoskeletal, gynecological, hematological, and anti-neo-plastic client. Grade of C or better required. Restricted to: Carlsbad campus only.  
Prerequisite(s): BIOL 225 and BIOL 226 or consent of instructor and NURS 153, NURS 154, NURS 156, NURS 157 and NURS 210.  
Corequisite(s): NURS 246 and NURS 258.  

NURS 212. Pharmacological Requisites of Complex Health Deviations  
1 Credit  
Basic concepts of pharmacology including pharmacokinetics, pharmacodynamics, and pharmacotherapeutics, and their relationship to nursing care will be discussed focusing on medications related to complex health deviations. Drug classes to be discussed include cardiovascular, renal, endocrine, and neurological. Grade of C or better required. Restricted to: Carlsbad campus only.  
Prerequisite(s): BIOL 225 and BIOL 226 or consent of instructor and NURS 153, NURS 154, NURS 156, NURS 157, NURS 210, NURS 211, NURS 212.  
Corequisite(s): NURS 256 and NURS 260.  

NURS 224. Maternal Child Nursing  
5 Credits (4+3P)  
This course provides the intermediate nursing student with an in-depth review of care of the childbearing woman, family structures and roles, and nursing care of the child from birth through adolescence. Emphasis includes the care of pre-partum, intra-partum and postpartum clients, the neonate and health deviations in pediatric clients. Clinical experiences in the simulation lab, the community, and acute care settings will provide the student with the opportunity to apply learned skills to provide total care to meet needs of up to two adult, neonatal, or pediatric clients and to apply care planning skills related to actual, psychosocial and potential problems. Students must be concurrently enrolled in both the lecture and lab sections of the course. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges only.  
Prerequisite(s): Admission into the Nursing Program.  
Corequisite(s): NURS 224 lab, NURS 235, & NURS 236, or permission of the Program Director.
NURS 226. Adult Health II  
6 Credits (4+6P)  
This course focuses on application of nursing process and theoretical concepts of care for adults with complex health alterations. Selected clinical learning experiences in the simulation lab, acute care, and community settings will allow the student to apply: prioritization skills, maintain proficiency in performance of nursing skills, collaborative skills with clients, families, peers and health care team members, and care planning skills related to patient actual, psychosocial, and potential problems in the delivery of nursing care to meet needs of three adult clients. Students must be concurrently enrolled in both the lecture and lab sections of the course. Only students who have been admitted to the nursing program may enroll in this course. Restricted to: NUR majors. Restricted to: Community Colleges only.  
Prerequisite(s): Admission into the Nursing Program.  
Corequisite(s): NURS 224, NURS 226 lab, & NURS 235 or permission of the Program Director.

NURS 234. Community Health Nursing  
1 Credit  
This course provides an introduction to community health, focusing on health care systems, epidemiology, and nursing care of individuals, families and aggregates of varied cultural backgrounds. Primary, secondary, and tertiary prevention are emphasized. Diverse roles of the community health nurse are examined. Educational theories and their applications are explored. Restricted to: Community Colleges only.

NURS 235. Nursing Leadership and Management  
1 Credit  
This course introduces the intermediate nursing student to professional practice principles of nursing leadership and management including: health policy and politics, fiscal management & budgeting, conflict management, decision making, interdisciplinary practice, working with teams, roles in disaster planning and management, application of standards of care to risk management, organization of care delivery, health care systems, processes, and practice environments. May be repeated up to 1 credits. Restricted to: NUR majors. Restricted to Community Colleges campuses only.  
Prerequisite(s): Admission into the Nursing Program.  
Corequisite(s): NURS 224, NURS 226 & Clinical Or Permission of the Program Director.

NURS 236. Nursing Preceptorship - Adult Health III  
6 Credits (2+12P)  
This course is the final course involving care of the patient with acute or chronic illness. It focuses on care of patients with complex or multi-system problems allowing the graduating nursing student to discuss and apply all the skills learned in previous nursing courses. After successfully passing the HESI exam, students have clinical practice with preceptor in various health care settings. Selected clinical learning experiences in the simulation lab, acute care, and community settings will allow the student to: organize care of a group of clients, maintain proficiency in performance of nursing skills, collaborate with clients, families, peers and health care team members, and support care planning skills related to patient actual, psychosocial, and potential problems in the delivery of nursing care to meet needs of the preceptors group of clients. Students must be concurrently enrolled in both the lecture and lab sections of the course. Only students who have been admitted to the nursing program and have successfully completed all level 1, 2 and 3 nursing courses may enroll in this course. Clinical may include inpatient or outpatient care, days, evenings, nights, or weekend experiences. Students are required to work the preceptors assigned schedule. Restricted to: NUR majors. Restricted to: Community Colleges only.  
Prerequisite(s): Admission into the Nursing Program.  
Corequisite(s): NURS 201, NCLEX Review or permission of the Program Director.

NURS 246. Health Deviations I  
7 Credits (4+9P)  
Introduction to medical/surgical clients, whose health care needs are routine and predictable. Focus is on simple health deviations, including concepts relative to health promotion and maintenance. The nursing process is utilized to provide evidenced based, safe client centered care. Students are expected to apply clinical judgment, communicate and collaborate with clients and the interdisciplinary team in providing care for a group of two to three clients. Grade of C or better required. May be repeated up to 7 credits. Restricted to: Nursing majors. Restricted to Carlsbad campus only.  
Prerequisite(s): NURS 153, NURS 156, NURS 154, NURS 157 and NURS 210 or consent of program director.  
Corequisite(s): NURS 211, NURS 258.

NURS 256. Health Deviations II  
8 Credits (4+12P)  
Concepts and principles applied to clients with complex health deviations. Building upon knowledge gained in NURS 246, focus will be on acutely ill clients. The nursing process continues to serve as a guide to provide safe, client centered care. The student collaborates with the interdisciplinary team in all aspects of client care. Student experiences the role of the staff nurse under the guidance and direction of the nursing instructor. Grade of C or better required. May be repeated up to 8 credits. Restricted to: Nursing majors. Restricted to Carlsbad campus only.  
Prerequisite(s): NURS 153, 154, 156, 157, 210, 211, 246, and 258 or consent of program director.  
Corequisite(s): NURS 212, NURS 260.
NURS 258. Psychosocial Requisites: A Deficit Approach
3 Credits (2+3P)
Nursing theory and practice as it relates to the care of the client experiencing psychosocial health deviations. The role of the nurse is discussed along with the ethical and legal aspects of care for the client with psychosocial disorders. Building upon the communication skills of listening and responding, the student develops the therapeutic skills of interpersonal relationships. Grade of C or better is required. May be repeated up to 3 credits. Restricted to Carlsbad campus only.
Prerequisite(s): NURS 153, 154, 156, 157, 210, 246, and 258 or consent of program director.
Corequisite(s): NURS 211, NURS 246.

NURS 260. Management of Patients with Health Deviations
2 Credits (2)
A capstone course to the nursing program in which principles in management and delegation to less prepared personnel is explored. A review of leadership roles, legal issues, quality initiatives, informatics and scope of practice is included. Preparation for the NCLEX is an integral portion of the course. Grade of C or better is required. May be repeated up to 2 credits. Restricted to: Nursing majors. Restricted to Carlsbad campus only.
Prerequisite(s): NURS 153, 154, 156, 157, 210, 211, 246, and 258 or consent of program director.
Corequisite(s): NURS 212, NURS 256.

NURS 270. The Adult Client II
5 Credits (2+9P)
Care of adult clients experiencing chronic, life-threatening, and end-of-life health alterations with emphasis on the geriatric population using a holistic approach to wellness. Nursing process, pathophysiology, pharmacology, diet therapy, and alternative therapies are stressed throughout the course. Clinical component will provide an opportunity to apply the nursing process in both the hospital and community setting. Restricted to: Community Colleges only.
Prerequisite(s): NURS 170, NURS 172, NURS 173L, NURS 180, and NURS 185.
Corequisite(s): NURS 285.

NURS 272. Care for the Aging Client
1 Credit
Normal physiological changes of aging and nursing implications related to safety and wellness. Restricted to: Community Colleges only. Restricted to: Nursing majors. Community Colleges only.

NURS 275. Holistic Approach to Pharmacotherapeutic Interventions II
2 Credits
Level II. Holistic approach to the study of basic pharmacology concepts. Includes pharmacodynamic phases of drug interaction. Nursing process is discussed in relation to medication administration. Special emphasis on the role of the nurse and basic concepts related to specific drug categories. Restricted to majors. Community Colleges only.
Prerequisite: NURS 185.
Corequisites: NURS 280 and NURS 283.

NURS 280. Women's Health Issues
4 Credits (2+6P)
Consists of lecture and associated clinical/laboratory experiences that focus on the holistic health concerns for women and the care of families expecting birth. Emphasis placed on the wellness of normal and high-risk women's health, including maternal and newborn care. The nursing process will be utilized to develop caring interventions and effective community communication through teaching healthy strategies. Restricted to: Community Colleges only.
Prerequisite(s): NURS 170 and NURS 180.
Corequisite(s): NURS 275 and NURS 283.

NURS 282 L. Practicum: Management of Client Care
1 Credit
Organization and delivery of wellness care services for groups of clients based on the nursing process. Restricted to: Community Colleges only.
Prerequisite(s): NURS 170, NURS 172, NURS 173L, NURS 180, and NURS 185.
Corequisite(s): NURS 284 L.

NURS 283. Pediatric Nursing
4 Credits (2+6P)
Consists of lecture and associated clinical and laboratory experiences which focus on the care of children from infancy through adolescence including acute and chronic health care problems. Employs nursing process, pathophysiology, pharmacology, and diet therapy through the holistic approach to wellness. Restricted to: Community Colleges only.
Prerequisite(s): NURS 170 and NURS 180.
Corequisite(s): NURS 275, NURS 280.

NURS 284 L. Practicum: Preceptorship
3 Credits
Clinical experience in a leadership role in specific practice areas enhancing the transition from student to practitioner utilizing the holistic approach to wellness. Restricted to: Community Colleges only.
Prerequisite(s): NURS 182.
Corequisite(s): NURS 282 L.

NURS 285. Holistic Approach to Pharmacotherapeutic Intervention III
1 Credit
Level III. Holistic approach to the study of basic pharmacology concepts. Includes pharmacodynamic phases of drug interaction. Nursing process is discussed in relation to medication administration. Special emphasis on the role of the nurse and basic concepts related to specific drug categories. Restricted to: Community Colleges only.
Prerequisite(s): NURS 185 and NURS 275.
Corequisite(s): NURS 270.

NURS 291. Pathophysiology II
1-3 Credits
A continuation of materials presented in NURS 290, Pathophysiology I, covering the remaining body systems. Restricted to: Community Colleges only.
Prerequisite(s): BIOL 226 or 254 and NURS 290 or consent of program director.

NURS 293. Introduction to Nursing Concepts
3 Credits
This course introduces the nursing student to the concepts of nursing practice and conceptual learning. Same as NMNEC course no.: NMNEC101. Restricted to: BSN, BSNP, BSNR, NURS majors. Restricted to Las Cruces campus only.
Prerequisite(s): Admission to Nursing Program.
Corequisite(s): NURS 294, NURS 362.
NURS 294. Principles of Nursing Practice
4 Credits
This course introduces the nursing student to the application of concepts through clinical skills in seminar, laboratory, and/or clinical settings. Principles of communication, assessments, safety, and interventions including accurate calculation, measurement, and administration of medications will be included. Same as NMNEC course no.: NMNEC102. Restricted to: NURS majors. Restricted to Las Cruces campus only. **Prerequisite(s):** Admission to the nursing program.

NURS 300. Principles of Professional Nursing Practice
7 Credits (4+6P)
Focus on the principles, concepts, theories, and terminology central to the study of nursing and its evolution. Uses the nursing process as a framework for providing research-based professional nursing care. Includes clinical component. Restricted to Majors. Restricted to BSN, BSNP, BSNR, NURS majors.

NURS 302. Foundations of Health Assessment
3 Credits (2+2P)
Theoretical basis and skills for biopsychosocial assessment of adults. Includes clinical component. Restricted to BSN, BSNP, BSNR, NURS majors.

NURS 314. Computer Technology for Nurses
3 Credits
Introduction to health care informatics and its use in nursing practice. Focus includes electronic communication resources, issues and technological applications that support nursing and health care.

NURS 315. Introduction to Professional Nursing for the R. N.
3 Credits
Transition course for the R.N. providing an overview of theories and concepts that are the bases for professional nursing practice.

NURS 322. Nursing Health Assessment
3 Credits
Theoretical basis for the biopsychosocial assessment of individual patients across the life span for the RN. Restricted to Majors.

NURS 324. Nursing Care of the Older Adult
3 Credits
Survey course addressing nursing care provisions for the elderly population in a variety of acute, community and home settings.

NURS 325. Human Pathophysiology for Nursing
3 Credits
Concepts of alteration and adaptation in structure and function of the human body across the life span.

NURS 326. Pharmacology in Clinical Nursing Practice
4 Credits
Pharmacological concepts and principles and their implications for nursing practice. Includes techniques of dosage calculation for medication and fluid administration. Restricted to BSN, BSNP, BSNR, NURS majors.

NURS 328. Human Pathophysiology Foundation for Nursing
4 Credits
Human pathophysiology concepts of adaptation and alteration in function and structure across the life span and their implications for nursing practice. Restricted to: BSN, BSNP, BSNR majors. **Prerequisite(s):** Grade of C or better in both BIOL 253 and BIOL 254.

NURS 352. Bioterrorism
3 Credits
Examines the role of today's nurse in the face of real or potential radiological and chemical threats. Emphasis is placed on clinical and public education and safety as well as nursing/logical responses. Taught online.

NURS 353. Nursing Informatics
3 Credits
This course addresses nursing informatics principles and practices. Key concepts include relationship with evidence-based nursing practice, use of decision support systems, clinical information systems, telehealth, and standardized nursing language. Restricted to BSNC majors.

NURS 360. Introduction to Nursing Concepts
3 Credits
This course introduces the nursing student to the concepts of nursing practice and conceptual learning. Same as NMNEC course no.: NMNEC103. Restricted to: NURS majors. **Prerequisite(s):** Admission to Nursing Program. **Corequisite(s):** NURS 361, NURS 362.

NURS 362. Evidence Based Practice
3 Credits
The focus of this course is the principles of evidence based nursing practice. It includes the identification of clinical practice problems, the evaluation of available evidence, and the integration of evidence with clinical expertise and patient preferences in application to practice. Same as NMNEC course no.: NMNEC103. Restricted to: NURS majors. **Prerequisite(s):** Admission to the nursing program. **Corequisite(s):** NURS 293, NURS 294.

NURS 372. Adult Health Nursing I
8 Credits (4+8P)
Theoretical basis for select acute and chronic illnesses related to adults is provided, and critical thinking is used to plan nursing care. Includes clinical component.

NURS 373. Nursing the Psychiatric-Mental Health Client
5 Credits (3+4P)
Theoretical and practical knowledge applied to provision of psychiatric-mental health nursing service across the health care continuum. Includes clinical component. Restricted to BSN, BSNR, BSNP, NURS majors.

NURS 375. Introduction to Nursing Research
3 Credits
Introduction to scientific inquiry. Evaluation and utilization of nursing research for clinical practice. **Prerequisite(s):** (STAT A ST 251G, A ST 311, OR STAT 271G) and (NURS 303, NURS 326, and NURS 328) or consent of Instructor. Restricted to BSN, BSNP, BSNR, NURS majors.

NURS 376. Research and Evidence-Based Practice for the Practicing RN
3 Credits
Course provides introduction to evidenced-based practice and research principles for the practicing RN. Evidence-based practice principles and processes are covered. Foundations of research (quantitative and qualitative) research designs and research evaluation are included. Emphasis is placed on ethical and practical issues in critiquing and using research/evidence-based findings. Restricted to BSNC majors. **Prerequisite(s):** A ST 311, or admission to RN-BSN Option with consent of instructor.
NURS 377. Health and Illness Concepts I
3 Credits
This course will focus on health and illness concepts across the lifespan. Concepts covered are related to homeostasis/ regulation, sexuality/ reproductive, protection/movement and emotional processes. Same as NMNEC course no.: NMNEC201. Restricted to: NURS majors.
Prerequisite(s): NURS 294, NURS 293 & NURS 362.
Corequisite(s): NURS 378, NURS 379, NURS 380.

NURS 378. Health Care Participant
3 Credits
This course introduces the nursing student to the attributes of the health care participant as an individual, a family, or a community. Same as NMNEC course no.: NMNEC202. Restricted to: NURS majors.
Prerequisite(s): NURS 293, NURS 294 & NURS 362.
Corequisite(s): NURS 377, NURS 379, NURS 380.

NURS 379. Nursing Pharmacology
3 Credits
This course introduces the nursing student to pharmacologic nursing practice from a conceptual approach. Same as NMNEC course no.: NMNEC203. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): BIO 253 & BIO 254 OR SPM 271 & SPM 371 OR BIO 225 & Bio 226.
Corequisite(s): NURS 328.

NURS 380. Assessment and Health Promotion
4 Credits
This course introduces the nursing student to the assessment of and the health promotion for the health care participant as an individual, a family, or a community. This course uses seminar, laboratory and/or clinical settings. Same as NMNEC course no.: NMNEC204. Restricted to: NURS majors.
Prerequisite(s): NURS 293, NURS 294 & NURS 362.
Corequisite(s): NURS 377, NURS 378, NURS 379.

NURS 395. Health and Illness Concepts II
3 Credits
This course will cover health and illness concepts across the lifespan. Concepts covered are related to oxygenation and hemostasis, homeostasis and regulation, protection and movement, and cognitive and behavioral processes. Same as NMNEC course no.: NMNEC301. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 328, NURS 377, NURS 378, NURS 379, NURS 380.
Corequisite(s): NURS 395, NURS 396.

NURS 396. Professional Nursing Concepts I
3 Credits
This course covers foundational concepts for professional development, including selected professional attributes and care competencies. Same as NMNEC course no.: NMNEC302. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 328, NURS 377, NURS 378, NURS 379, NURS 380.

NURS 397. Special Topics
1-9 Credits (1-9)
Specific subjects to be announced in the Schedule of Classes. May be repeated for a total of 21 credits.

NURS 398. Care of Patients with Chronic Conditions
4 Credits
The focus of this course is to provide safe, evidence-based nursing care for patients with chronic conditions, across the lifespan in a variety of settings. This course builds upon curricular concepts. This course is a combination of lab and clinical. Same as NMNEC course no.: NMNEC303. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 328, NURS 377, NURS 378, NURS 379, NURS 380.
Corequisite(s): NURS 395, NURS 396.

NURS 410. Adult Health Nursing II
6 Credits (3+6P)
Focus is on the use of critical thinking to plan nursing care of adults with selected complex illnesses. Clinical component included.

NURS 415. Parent-Child Nursing
8 Credits (4+8P)
Concepts and principles of nursing applied to healthy and ill infants, children, adolescents, and childbearing women within the context of the family. Includes clinical component.

NURS 416. Older Adult Nursing
2 Credits
Introduction to aging, health problems and issues associated with aging. Implications for nursing care of the elderly.

NURS 420. Community Health Nursing
3 Credits
Concepts basic to the nursing care of families, groups, and communities with an emphasis on health promotion, disease prevention, and health maintenance.

NURS 426. Community Health Nursing for the R.N.: Clinical
3 Credits
Nursing process applied to the care of families, groups, and communities.

NURS 466. Health and Illness Concepts III
4 Credits
This course will cover health and illness concepts across the lifespan. Concepts covered are related to hemostasis/regulation, oxygenation/hemostasis, protection/movement, and emotional processes. Same as NMNEC course no.: NMNEC401. Restricted to: BSN, BSNP, BSNR majors.
Prerequisite(s): NURS 360, NURS 361, NURS 362.
Corequisite(s): NURS 467, NURS 468.

NURS 467. Clinical Intensive I
4 Credits
This is the first of two Level Four clinical courses in which the student will apply the curricular concepts in the management of care participants with acute conditions across the lifespan. This course is a combination of seminar, lab, and clinical. Same as NMNEC course no.: NMNEC402. Restricted to: BSN, BSNP, BSNR, NURS majors.
Prerequisite(s): NURS 395, NURS 396, NURS 398.
Corequisite(s): NURS 466, NURS 468.
NURS 468. Clinical Intensive II
4 Credits
This is the second of two Level Four clinical courses in which the student will apply the curricular concepts in the management of care participants with acute conditions across the lifespan. This course is a combination of seminar, lab, and clinical. Same as NMNEC course no.: NMNEC404. Restricted to: BSN,BSNP,BSNR,NURS majors.
Prerequisite(s): NURS 395, NURS 396, NURS 398.
Corequisite(s): NURS 466,NURS 467.

NURS 470. Nursing Organization and Management
3 Credits
Concepts of organization and delivery of care to groups of patients based on the nursing process. Emphasis on the roles of the nurse as manager, leader, and change agent within health-care organizations.

NURS 472. Community and Population Focused Nursing
6 Credits (3+6P)
Synthesis of nursing, social, and public health science to develop health promotion, disease prevention, and protection strategies for communities and populations. Clinical component included.

NURS 475. Issues and Trends in Professional Nursing
3 Credits
Explores the challenges associated with issues and trends in health care and the legal and ethical implications of professional nursing practice.

NURS 476. Nursing Organization & Management for the R.N.: Clinical
3 Credits
Nursing process applied to organization, management, and delivery of health care. An integrating experience for the R.N. student designed to facilitate the transition to professional practice. Students work with mentors in a clinical setting to develop professional nursing roles related to leadership and management.

NURS 477. Nursing Organization and Management for the RN
3 Credits
Course covers nursing organization, leadership, and management principles, theories, and research for the practicing RN. Restricted to: BSNC majors.

NURS 479. Nursing Care for Complex Patients
8 Credits (2+12P)
Principles and priorities of nursing care for patients across the life span experiencing complex care problems. Includes integrating experiences designed to facilitate the transition from student to professional nurse. Includes clinical component.

NURS 486. Concept Synthesis
3 Credits
This course will focus on the synthesis of curricular concepts in the care of complex patients. Same as NMNEC course no.: NMNEC501. Restricted to: BSN,BSNP,BSNR,NURS majors.
Prerequisite(s): NURS 466, NURS 467, NURS 468.
Corequisite(s): NURS 487,NURS 488,NURS 489.

NURS 487. Professional Nursing Concepts II
3 Credits
This course covers policy concepts for professional nursing. Same as NMNEC course no.: NMNEC502. Restricted to: BSN,BSNP,BSNR,NURS majors.
Prerequisite(s): NURS 466, NURS 467, NURS 468.

NURS 488. Clinical Intensive III
4 Credits
The focus of this clinical course is application of the curricular concepts in the management of care participants with complex conditions across the lifespan. This course is a combination of seminar, lab, and clinical. Same as NMNEC course no.: NMNEC503. Restricted to: BSN,BSNP,BSNR,NURS majors.
Prerequisite(s): NURS 466, NURS 467, NURS 468.
Corequisite(s): NURS 486,NURS 487,NURS 489.

NURS 489. Capstone
4 Credits
The synthesis, integration, and application of concepts to professional nursing practice will be applied in the final clinical course to ensure readiness to enter practice. Same as NMNEC course no.: NMNEC504. Restricted to: BSN,BSNP,BSNR,NURS majors.
Prerequisite(s): Successful completion of all previous nursing courses.
Corequisite(s): NURS 486,NURS 487,NURS 488.

NURS 490. Independent Study
1-3 Credits
Individual studies with prior approval of department head.

NURS 500. Applied Statistics for Evidence-Based Practice
3 Credits
Provides the logic and appropriate use of statistical techniques most commonly used. Emphasis is based on underlying logic of procedure, the appropriate use of underlying assumptions of procedures, interpretation of results from statistical software and evaluation of published results of the procedures. Statistical software will be used. Restricted to: NURP majors.
Prerequisite(s): Admission to DNP Program.

NURS 505. Theoretical Foundations of Advanced Nursing
3 Credits
This course is a graduate-level introduction to nursing theory. This course assists students in understanding the nature of theory development in nursing, evidence-based practice and related disciplines. Students examine the definitions and meanings of the basic concepts of theory along with theory development and will explore an analysis of selected theories/models and their application to nursing practice, research, education, and administration.
Prerequisite(s)/Corequisite(s): Students must be enrolled in the graduate program in nursing or have the permission of advisor and faculty of course to enroll in course. Restricted to: NURS majors.

NURS 506. Health Policy for Advanced Nursing Practice
3 Credits
Course provides a conceptual approach to understanding health policy including the social, legal, political and ethical factors that influence policy development. Strategies for influencing policy direction and change are examined. Restricted to: NURS, NUSC, NURP majors.

NURS 507. Nursing Research in Evidence-Based Practice
3 Credits
This course is designed to prepare advance practice nurses with the skills and knowledge needed to critically analyze and synthesize scholarly evidence to promote high quality evidence-based practice.
Prerequisite(s)/Corequisite(s): Students must be enrolled in the graduate program in nursing or have the permission of advisor and faculty to enroll in the course. Restricted to: NURS, NUSC, NURP majors.
NURS 511. Advanced Pathophysiology for Clinical Nursing
3 Credits
In-depth study of the physiological and pathological bases of altered health states of patients across the life span. Case studies facilitate application of complex concepts to clinical nursing practice. Restricted to: NURS, NUSC, NURP majors.

NURS 512. Advanced Clinical Pharmacology
3 Credits
Principles of clinical pharmacology for advanced clinical practice. Focus on pharmacology as it relates to human physiology and pathophysiology across the lifespan. Restricted to: NURS, NUSC, NURP majors.

NURS 514. Psychopharmacology for Advanced Practice
3 Credits
Principles of clinical psychopharmacology with emphasis on clinical application of major drug classifications including decision making, prescribing, drug monitoring and patient education.

NURS 515. Advanced Health Assessment
3 Credits (2+1P)
Assessment theory and skills for advanced clinical practice. Emphasis on assessment of patients across the life span. May be repeated up to 3 credits. Restricted to: NURS, NUSC, NURP majors.

NURS 518. Genetics and Health
2 Credits
Assess the impact of emerging genetic technologies on healthcare at the individual, system and population level. Restricted to DNP majors.

NURS 519. Genetics and Health
2 Credits
Assess the impact of emerging genetic technologies on healthcare at the individual, system and population level. Restricted to DNP majors.

NURS 520. Promoting Health Behavior
3 Credits
Emphasis is on the role of the advanced practice nurse in facilitating health behavior change. The impact of health status on health behavior, ethical issues relate to health promotion, and the processes for promoting healthy behaviors are explored. Theoretical models of behavior change and primary, secondary, and tertiary prevention concepts serve as a basis for developing nursing interventions that promote behavior change.

NURS 540. Advanced Psychosocial Pathology for Family, Psychiatric-Mental Health Nursing
3 Credits
In-depth study of psychosocial pathology, factors contributing to psychosocial dysfunction, and diagnostic reasoning basic to advanced-practice psychiatric mental health nursing; emphasis on etiology and differential diagnoses. Restricted to: NURS majors.

NURS 562. Innovations and Health Care Organizations
3 Credits
Examines complexity and innovation within health care systems, health care delivery, and population health. Areas of focus are systems, organizations, health disparities, and ethical decision making. Emphasis is on improvement in services and outcomes. Taught with NURS 649. Restricted to: NURS, NUSC, NURP majors.

NURS 563. Human Resource Management in Nursing
3 Credits
Contemporary approaches to the development and management of nursing resources that complement organizational vision, strategies and management goals. Management of a diverse, quality workforce that results in an improved organizational performance. Performance evaluation, motivation, professional development and legal and regulatory aspects will be explored.

NURS 564. Nursing Fiscal Management
3 Credits
Concepts of financial management emphasizing principles of health care budgeting and finance in managing health care resources. A focus is to achieve quality outcomes through financial resource management. Restricted to: NURS majors.

NURS 565. Advanced Leadership in Healthcare
3-5 Credits (3+1-2P)
Analysis of leadership theories as they pertain to the nurse executive and the advanced practice nurse in complex health care organizations. Emphasis will be placed on organizational change and conflict management in working with interdisciplinary health care teams. Clinical component included for DNP students only. May be repeated up to 5 credits. Restricted to: NURS, NUSC, NURP majors.

NURS 566. Seminar in Nursing Administration- Roles
3 Credits
Role preparation for the nurse administrator as manager, leader, collaborator and change agent. Synthesis of concepts from management and nursing as a basis for role effectiveness in nursing administration.

NURS 574. Oncology Nursing
3 Credits
This course emphasizes the comprehensive management of individuals with acute and chronic cardiovascular/renal diseases within the context of family and communities using a case-based approach.

NURS 576. Oncology Nursing
3 Credits
This course presents the clinical aspects of cancer diagnosis, the clinical management of major cancers, and their treatment modalities. The course will also focus on supportive therapies for the cancer patient and symptom management.

NURS 590. Independent Study
1-10 Credits
Individual studies and directed research with prior approval of department head. May be repeated on a different topic. May be repeated for a maximum of 20 credits.

Prerequisite: consent of instructor.
NURS 591. Preceptorship: Prescription Drugs, Medicines and Other Therapeutics
3-11 Credits (4+4P)
The course provides preceptored clinical experiences that provide advanced practice nursing students opportunities for practice and mastery of skills for management of culturally diverse patients within their designated specialty area to include prescribing drugs, medicines and other therapeutics, as well as monitoring the effects of the prescribed management. It requires the student to demonstrate integration, synthesis and application of assessment, diagnosis and management to include health promotion of patients with acute and/or stable chronic health conditions. Graded: S/U. Restricted to MSN majors. Prerequisite(s): NURS 542 or NURS 530 or NURS 521.

NURS 595. Advanced Field Work in Nursing
1-6 Credits (4+24P)
Faculty-supervised, independent work in student’s advanced practice role. Field work normally taken after the core and designated specialty courses. Minimum of three field-work credits (12 contact hours) required in major area of study. May be repeated for a maximum of 12 credits. Restricted to majors. Graded S/U. Prerequisites: NURS 532 and NURS 561.

NURS 597. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a different subject area. May be repeated for a maximum of 8 credits. Prerequisite: consent of instructor.

NURS 600. Philosophy of Science in Nursing
3 Credits
Offers a framework for asking both ontological and epistemological questions about knowledge, human science, and nursing science.

NURS 601. Theory I: Methods and Processes of Nursing Knowledge Development
3 Credits
Building on the Philosophy of Science course, the student will engage in analysis and critique of both developmental processes and composition of nursing disciplinary knowledge. Diverse approaches will be used to appraise and critique historical and contemporary milestones in the development and evaluation of nursing thought. Emphasis is also placed on implications of theory and knowledge development as related to multicultural and rural issues. Prerequisite(s): NURS 600.

NURS 602. Theory II: Contemporary Substantive Nursing Knowledge
3 Credits
Critically examine existing & evolving substantive knowledge drawn from nursing and other disciplines. Focus on the construction, analysis of current substantive nursing knowledge, including evaluation of relationships among theories, evidence and explanation will be pursued. Special attention to existing and evolving theories applicable to rural, multicultural and educational settings. Prerequisite: NURS 601

NURS 606. Quantitative Methods in Nursing Research
3 Credits
Focus on approaches to developing nursing knowledge by means of quantitative research methods as applied to clinical problems, theoretical modeling of human responses to health and illness, and health policy issues. Emphasizes detailed analysis and critique of non-experimental and experimental designs, issues pertaining to sampling and statistical power, the reliability and validity of measurers, and uses and abuses of descriptive and inferential statistics in nursing research literature. Students are expected to develop sufficient discernment to read, critique, evaluate, and discuss the quality, significance, and limitations of published quantitative nursing research. Prerequisite: NURS 621.

NURS 607. Qualitative Methods in Nursing Research
3 Credits
Major methodological traditions of qualitative research and their applications to knowledge development and clinical research in nursing are the emphasis. Overview of at least one computer-assisted qualitative data analysis software application. Students will engage in detailed critique and discussion of significant nursing investigation representing various qualitative approaches and traditions.

NURS 608. Field Methods in Qualitative Research
3 Credits
The purpose of this course is to provide opportunities for students to engage in, analyze and evaluate various procedures and techniques used to gather qualitative data. Major data collection approaches including ethnography, phenomenology, grounded and critical theory are discussed. Students have the opportunity to participate in mini-field work projects while gathering expertise in field techniques used in qualitative research. Issues such as role of literature in qualitative research, investigator as instrument, ethical dilemmas, field entry and departure, and reflexivity are analyzed as they relate to the process of gathering and interpreting qualitative data. Prerequisites: NURS 607 or consent of instructor.

NURS 610. Nursing Education: Pedagogy and Roles
3 Credits
Teaching-learning process in the clinical and classroom settings. Focuses on educational patterns and pathways in nursing and the roles of faculty in academia. Educational reform is analyzed in relationship to diversity in students, faculty, practice settings and technology-driven learning environments. Instructional designs, teaching strategies, and outcome evaluations are examined for their pedagogic use. The development of critical thinking outcomes, mentorships and partnerships to meet the needs of students are addressed. The course examines issues and challenges that impact the educational process such as student and faculty recruitment, the changing healthcare environment, differentiation of practice, advanced practice, reduced resources and links with theory and research.

NURS 620. Advanced Health Care Statistics I
3 Credits
This course provides knowledge, skills and practice in collecting, analyzing and interpreting data. The following quantitative techniques will be examined and utilized using SPSS: principle of measurement, probability, principles of parametric and non parametric techniques, Kolmogorov-Smirnov test, comparison of means, correlation analyses, use of psychometric techniques, binomial test, sign test, McNemar test, median test, Cochran Q test, Phi coefficient, Fisher’s Exact test, Mann-Whitney U, Kruskal-Wallis test, Wilcoxon Signed Ranks and Spearman Rho. A graduate level statistics course completed within three years prior to the date of expected admission is desirable. Restricted to majors.
NURS 621. Advanced Health Care Statistics II
3 Credits
This course is the second of a two-semester quantitative statistical course designed to provide knowledge, skills and practice in collecting, analyzing, and interpreting data. The following quantities techniques will be examined and utilized using SPSS: analysis of variance (ANOVA), analysis of covariance (ANCOVA), linear, multiple, and logistic regression, structural equation modeling (SEM), principle components analysis, and factor analysis. Restricted to majors.
Prerequisite: NURS 620.

NURS 623. Mixed Methods
3 Credits
Presents a brief overview of research paradigms with emphasis on formulating research questions, aims and methods for a mixed method/model approach. Students may use proposals developed in earlier qualitative and quantitative research classes to devise mixed method proposal integrating readings on these methods and own research interests. Prerequisite: NURS 606 and NURS 607

NURS 624. Measurement in Culturally Diverse Border Populations
3 Credits
The focus of this course is the development of essential competencies required to locate, select, evaluate, and use instruments to operationalize nursing variables. Ethical considerations in nursing research and research issues in diverse populations will be discussed. Specific attention is given to the process of moving from concept to construct, measurement theory, validity/reliability issues, and measurement issues in diverse populations including literacy, social desirability bias, sensitive data, translations, and cultural equivalency. Restricted to PhD in Nursing majors.
Prerequisite(s): Admission to PhD in Nursing program; NURS 606; NURS 623; or consent of Instructor.

NURS 630. Issues in Studying Health of Culturally Diverse and Border Populations
3 Credits
Analysis and evaluation of the unique health care needs of culturally diverse and rural populations across the lifespan from ethnic, economic, gender, and sexual orientation perspectives. Interdisciplinary strategies to affect positive health outcomes are discussed, analyzed, and evaluated. Restricted to: NURS, NUSC, NURP majors.

NURS 631. Population Based Approaches to Health Promotion
3 Credits
Population based approaches to health promotion focuses on preparing nursing students to identify, critically analyze and evaluate health promotion initiatives in culturally diverse and border populations using the Southwestern U.S. and U.S./Mexico border as the case exemplar. It examines historical, socio-economic, legal and professional issues associated with health promotion and policy initiatives. It considers prospects for social change, political movements and alternative approaches to develop and hasten adaption of health promotion initiatives in partnership with communities, advocacy groups and health care agencies.

NURS 649. Innovations and Health Care Organizations
3 Credits
Examines complexity and innovation within health care systems, health care delivery, and population health. Areas of focus are systems, organizations, health disparities, and ethical decision making. Emphasis is on improvement in services and outcomes. Taught with NURS 562. Restricted to: NURS, NUSC, NURP majors.

NURS 650. Behavioral Approaches and Determinants of Nursing and Health
3 Credits
Focuses on how behavioral/mental health concepts are applied in determining health outcomes for individuals, families, and communities. Students will apply and synthesize theoretical constructs within practice and research focusing on behavioral/mental health concepts. Health outcomes are viewed in a traditionally holistic manner in that health outcomes are discussed as an integral part of the human experience of healing and health.

NURS 651. Applied Nursing Science for the APN
3 Credits
Explores the philosophical and scientific underpinnings for nursing knowledge relevant to the role of the doctorate of nursing practice. Restricted to: NURS, NUSC, NURP majors.
Prerequisite(s): NURS 507.

NURS 652. Translational Methods and Evidence-Based Practice
3 Credits
Designed to prepare DNP student to demonstrate advanced levels of clinical judgment, systems thinking, and accountability in design, delivery, and evaluating evidence based on care to improve patient outcomes. Translate evidence into their specialty practice environment. Restricted to: NURS, NUSC, NURP majors.
Prerequisite(s): NURS 651.

NURS 658. The Aging Adult
3 Credits
This course focuses on the care and management of older adults and their families. Content is directed at assessment and management of acute and chronic presentations of illness and complex, multiple health problems across the health care continuum. It will include examination of the psycho-socio-cultural processes which influence the behavioral patterns, coping, and adaptation of older adults. Restricted to DNP majors.
Prerequisite(s): Admission to DNP program.

NURS 659. Addictive Disorders
4 Credits
Focus on care of the individual with addictive disorders. The impact on the individual as well as the community will be examined. Advanced practice nursing interventions based on theoretical and research based knowledge of addictions will be addressed. The pharmacology of psychoactive substances, the addiction process, and pharmacological approach to treatment will be included. Treatment of addictive disorders and their relevance to culturally diverse clientele with a variety of lifestyles will be evaluated. Restricted to: NURP majors.
Prerequisite(s): Admission to DNP program.

NURS 660. Family, Psychiatric Mental Health Nursing I
7 Credits (3+16P)
This course provides the family psychiatric nurse practitioner student with advanced theoretical knowledge and practice in individual therapies, comprehensive psychiatric evaluation, personality development concepts, dual diagnoses and psychotherapy principles; including management of health promotion, health maintenance and disease prevention activities. Emphasis will be placed on individuals across the lifespan in a multicultural environment. Restricted to: NURP, NUSC, NURS majors.
Prerequisite(s): NURS 511, NURS 512, NURS 515.
NURS 662. Family, Psychiatric-Mental Health Nursing II
3-7 Credits (3+1-4P)
This course provides further knowledge and skills for the family psychiatric nurse practitioner student in the conceptual framework and practice of psychotherapy in a variety of settings. Emphasis is placed on work with individuals and families across the lifespan in a multicultural environment to help manage their acute and chronic mental illnesses, including, dual diagnosis, psychopathology and psychopharmacology. Advanced practice nurses in the certificate program will have varying hours of credit. May be repeated up to 7 credits. Restricted to: NURS,NUSC,NURP majors.
Prerequisite(s): NURS 660.

NURS 664. Family, Psychiatric Mental Health Nursing III
5 Credits (1+4P)
This course provides further knowledge and skills for the family psychiatric nurse practitioner student to refine competencies in neuropsychology, assessment, diagnosis and treatment. Emphasis will be placed on individuals, families and groups across the lifespan in a multicultural environment. May be repeated up to 5 credits. Restricted to: NURS,NUSC,NURP majors.
Prerequisite(s): NURS 662.

NURS 670. Diagnostic Reasoning
3 Credits (2+4P)
This course is designed to develop advanced knowledge of differential diagnosis based upon physical and mental assessment of clients/patients across the lifespan in a variety of clinical settings. Students apply, synthesize, and integrate advanced clinical problem solving and reasoning to determine differential nursing and medical diagnoses, interpret and apply laboratory and diagnostic techniques to determine a final judgment and diagnosis. Restricted to DNP majors.

NURS 671. Primary Care I
7 Credits (3+16P)
This course provides the nurse practitioner student with advanced theoretical knowledge and practice in the assessment and management of health promotion, health maintenance and disease prevention activities across the lifespan; including the assessment and management of common acute and chronic health concerns. Emphasis will be placed on primary health care of individuals and their families in a multicultural environment. Restricted to: NURS, NURP, NUSC majors.
Prerequisite(s): NURS 511, NURS 512, NURS 515.

NURS 672. Primary Care II
3-7 Credits (3+1-4P)
The course continues the development of knowledge and skills for the nurse practitioner student for the assessment and management of selected common acute and chronic health conditions across the lifespan. Emphasis will be placed on primary health care of individuals and their families in a multicultural environment. Advanced practice nurses in the certificate program will have varying hours of credit. May be repeated up to 7 credits. Restricted to: NURS, NURP, NUSC majors.
Prerequisite(s): NURS 671.

NURS 673. Primary Care III
5 Credits (1+4P)
The course continues the development of knowledge and skills for the nurse practitioner student with special attention to complex and chronic health conditions across the lifespan and business, legal, and ethical issues in primary care. Variable clinical credits, 1-4. May be repeated up to 5 credits. Restricted to: NURS, NUSC, NURP majors.
Prerequisite(s): NURS 672.

NURS 676. Women's Health
3 Credits
The course will examine patient and family perspectives as well as health care system variables and societal issues that affect the organization and delivery of women's health care. Students will engage in critical analysis of the evidence base concerning psychosocial and spiritual concerns and barriers to and opportunities for improving women's health care across the diverse settings in which health care is delivered. Focus on evidence-based approaches to the primary care management of women. May be repeated up to 3 credits.

NURS 678. Health Needs of Special Populations
2-4 Credits (2+1-2P)
This course provides an overview of infant, child, adult and older adult health needs and interventions that promote and support optimal health. The conceptual and theoretical foundation for advanced practice with individuals and families across the lifespan is emphasized, including pharmacotherapeutic and integrated bio-psychosocial interventions for diverse populations across the continuum of care. Advanced practice nurses in the certificate program will have varying hours of credit. May be repeated up to 4 credits.
Prerequisite(s): NURS 671, NURS 672, NURS 673, NURS 660, NURS 662, NURS 664.

NURS 684. Lifestyle Change and Adherence Issues with Diverse Populations
3 Credits
Includes the critical examination of selected theories of health behavior on lifestyle choices and adherence issues with diverse populations within the community setting. Emphasis is given to the analysis of health behavior in regard to planning, development, and evaluation of population based health programs. Restricted to DNP majors.

NURS 685. Epidemiology for Advanced Nursing Practice
2 Credits
Emphasis is on the practical application of the principles of epidemiology in the measurement and evaluation of population health. Epidemiological literature will be critiqued and synthesized to evaluate population-based public health nursing problems. Issues related to disease surveillance, causation, genetic patterns, screening and social trends in population health will be examined. Use of existing data bases and technology programs are covered. Restricted to: NURP, NURS, NUSC majors.

NURS 690. Doctoral Nursing Seminar
1-3 Credits (1-3)
Seminar to build nursing leadership skills, consisting of a series of 1 credit seminars that are taken as part of the doctoral degree plan. May be repeated up to 7 credits. Restricted to: NUSC majors.

NURS 691. Independent Study
1-6 Credits (1-6)
Individual studies and directed research with prior approval of department head. May be repeated for a maximum of 12 credits.
Prerequisite: consent of instructor.

NURS 697. Professional Roles for Advanced Practice Clinical Nursing
3 Credits
This course will focus on providing an in depth understanding of the legal, historical, political, social, and ethical aspects of advanced practice nursing. Traditional and emerging roles for advanced practice nursing are examined. Restricted to DNP majors.
Prerequisite(s): Admission to DNP program, NURS 664 OR NURS 672.
NURS 698. Advanced Clinical Immersion
1-4 Credits (1-4)
Capstone practicum experience for advanced practice students. Focus will be on a practice issue chosen by the student for further development as an evidence-based doctoral project. May be repeated up to 4 credits. Restricted to: NURP majors. S/U Grading (S/U, Audit).
Prerequisite(s): NURS 511, NURS 512, NURS 515 or enrollment in post-masters track.

NURS 699. Clinical Scholarly Project
1-4 Credits (1-4)
Building on the practice expertise of the DNP student, this series of credits is to provide the student with the opportunity to design an innovative clinical practice improvement project/program addressing an actual health care concern. Through mentored activities, the DNP student will identify, develop, implement, evaluate, and disseminate an independent analytic. Graded: S/U. NURS 652. Restricted to: NURP majors. S/U Grading (S/U, Audit).
Prerequisite(s): Admission to DNP program.

NURS 700. Doctoral Dissertation
1-9 Credits (1-9)
Dissertation may be repeated to maximum of 30 credits. Minimum requirements are 21 credit hours. Comprehensive examine is included within these 21 credits.

NURS 999. Practical Nursing Requirements Completed
99 Credits
A phantom course created to indicate a student has met Practical Nursing requirements. Used to indicate this in academic history to replace an administrative message not converted from SOLAR to VISTAS. 01/97

OEBM-BIOMEDICAL TECHNOLOGY (OEBM)

OEBM 140. Applied Human Biology for Biomedical Technology
3 Credits
Essential human biology, anatomy, physiology and medical terminology for biomedical equipment technicians. Focus on the vocabulary necessary for effective communication in the hospital environment as part of the health care team. Restricted to: Community Colleges only.

OEBM 141. Medical Electronics and Safety in Healthcare
3 Credits
Introduction to the biomedical equipment technology field. Operation of common biomedical equipment to include pressure and temperature systems, infusion devices, patient monitors, and other physiologic and patient systems. Hospital safety and health regulations explained. Restricted to Community Colleges campuses only.
Prerequisite(s): OEBM 140.

OEBM 200. Biomedical Internship
3 Credits
Practice working in industry as a biomedical electronics technologist. Students work on a variety of medical equipment and job tasks. An employer evaluation, student report, and a minimum of 100 work hours are required. May be repeated up to 9 credits. Consent of Instructor required. Restricted to Community Colleges campuses only.
Prerequisite(s): OEBM 140 and OEBM 141.

OEBM 210. Biomedical Clinical
4 Credits (1+9P)
Clinical experiences to include advanced biomedical equipment maintenance, inventory control, and medical facility and industry standards. Restricted to Biomedical majors.
Prerequisite(s): OEBM 200.

OEBM 211. CBET Exam Preparation
1 Credit
An overview of the Certified Biomedical Equipment Technician exam. Topics include anatomy and physiology, electronics principles, safety issues, equipment operation, and equipment troubleshooting.
Prerequisite(s)/Corequisite(s): OEBM 241 AND OEBM 240. Restricted to Community Colleges campuses only.

OEBM 240. Medical Imaging Systems
3 Credits
The fundamentals of diagnostic radiography equipment will be explored. Principles of an x-ray system will be explained including the x-ray generation, image formation and film processing. Focus will be on both safety and quality. Restricted to Community Colleges campuses only.
Prerequisite(s): OEBM 140.

OEBM 241. Advanced Medical Electronics
3 Credits (3+1P)
Advanced study in biomedical equipment to include cardiovascular, pulmonary, telemetry and other critical life support systems. Restricted to Community Colleges campuses only.
Prerequisite(s): OEBM 141.

OECs-Computer Technology (OECs)

OECs 101. Computer Basics
1 Credit
Hands-on instruction to introduce computer use and commonly used software. Graded S/U.

OECs 105. Introduction to Information Technology
3 Credits
Introduction and application of basic information technology skills using personal computers including operating systems, common office application software, and the impact of technology on the economy and society. Restricted to: Community Colleges only.

OECs 110. Introduction to Power Point
1 Credit
An introduction to Power Point software to develop business presentations. Includes concepts of basic presentation methods and graphic design principles. Students will create and deliver presentations using text, charts, digitized images, and sound.
Prerequisites: BCIS 110, C S 110, or OECs 105.

OECs 125. Operating Systems
1-3 Credits
Installation, configuration and optimization of current operating systems. Restricted to: Community Colleges only.

OECs 128. Operating Systems Linux/Unix
3 Credits
Installation, configuration, and use of Linux/Unix operating system software and utilities including hardware management, file management, use of command line, and scripting. Restricted to: Community Colleges only.
OECS 140. Introduction to Game Production Industry
3 Credits
Students explore the business behind game production, understanding how game companies are organized and funded, positions within the game industry, and what skills game producers need.
Prerequisite(s): Either BCIS 110, C S 110, or OECS 105.

OECS 141. Introduction to Interactive Game Programming
3 Credits
This introductory programming class reviews the basics of programming, including the object-oriented approach. Students will de-construct existing games, develop their own code, and gain an appreciation for coding strategies. May be repeated for a maximum of 6 credits. Restricted to: Community Colleges only.
Prerequisite(s): C S 110, BCIS 110, or OECS 105.

OECS 145. Mobile Application Development
3 Credits
An in-depth review of concepts, design strategies, tools and APIs needed to create, test and deploy applications for mobile devices. Topics include: design of mobile user interfaces, application life-cycle, multi-threading, inter-process communication, data persistency, background services, geo-location/mapping, graphics/animation, performance, and security. Restricted to: Community Colleges only.
Prerequisite(s): CS 110, OECS 220, and MATH 120.

OECS 150. Introduction to Programming Using Visual Basic
4 Credits
Introduction to algorithmic problem-solving concepts, structured programming design-oriented application programming interface development. Solutions to problems are implemented using the Visual Basic programming language in the Windows environment, with connection to Access databases as applicable. Restricted to: Community Colleges only.
Prerequisite(s): CS 110, BCIS 110, or OECS 105.

OECS 155. Special Topics - Introductory Computer Technology
0.5-4 Credits (.5-4)
Topics to be announced in the Schedule of Classes. May be repeated up to 8 credits.

OECS 185. PC Maintenance and Repair I
1-3 Credits
Introduction to most common types of PC configurations, installations, and failures. This course will explore troubleshooting skills for maintaining and repairing common hardware and software related problems. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

OECS 192. C++ Programming I
3 Credits
Development of skills in programming using the C++ programming language. Restricted to: Community Colleges only.

OECS 195. Java Programming I
1-3 Credits
Developing of skills in programming using the Java programming language. Restricted to: Community Colleges only.

OECS 200. Accounting on Microcomputers
3 Credits
Fundamental accounting principles using popular microcomputer software to include G/L, A/R, A/P, purchase order, billing, inventory, and forecasting modules.
Prerequisite: ACCT 252 or BOT 121.

OECS 203. UNIX Operating System
1-3 Credits
Introduction to the UNIX operating system using Telnet to access a remote UNIX system. Basic UNIX commands and file system concepts.
Prerequisite: C S 110, B CS 110G or OECS 105.

OECS 204. Linux Operating System
1-3 Credits
Install and configure the Linux operating system on X86 systems. Covers issues involved in maintaining operating system, networking, creating and managing users, and installing and updating software. General procedures for working with operating systems will include maintaining disk space, preserving system security, and other related topics. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.

OECS 205. Advanced Operating Systems: Administration
3 Credits
Examines operating systems designed for PC, minicomputers and mainframes. Covers maintaining operating systems, creating and managing users, and installing and updating software. General procedures for working with operating systems will include maintaining disk space, preserving system security, providing mail services, among other topics. May be repeated for a maximum of 6 credits.
Prerequisite: OECS 128.

OECS 207. Windows
0.5-3 Credits
Installation, configuration, and maintenance of Windows. May be repeated for a maximum of 6 credits under different subtitles listed in the Schedule of Classes. May be repeated up to 6 credits. Restricted to: Community Colleges only.
Prerequisite(s): OECS 105 or BCS 110G or CS 110G or consent of instructor.

OECS 208. Internet Applications
1-3 Credits
Survey of the Internet to include e-mail, file transfer, current search techniques, the World Wide Web and basic Web page development. May be repeated for a maximum of 6 credits.
Prerequisite: C S 110G, BCIS 110 or OECS 105.

OECS 209. Computer Graphic Arts
1-3 Credits
Basic graphics composition using computer programs to include editing and manipulating graphic images, clip-art, and printing of pictures. May be repeated for a maximum of 6 credits under different subtitles listed in the Schedule of Classes.
Prerequisite: OECS 105, C S 110, or OECS 101.

OECS 211. Word Processing Applications
1-3 Credits
Basic word processing to include composing, editing, formatting, and printing of documents. May be repeated under different subtitles listed in the Schedule of Classes for a maximum of 6 credits.
Prerequisite(s): C S 110, BCIS 110 or OECS 105.

OECS 213. Image Processing
1 Credit
Introduction to digital imaging acquisition and editing. Use of digital cameras and computer graphic software for business and personal use. Graded S/U.
Prerequisite: C S 110, BCIS 110 or OECS 105.
OECS 214. Creating a Web Page
1 Credit
Introduction to creating Web pages for business and personal use. Graded S/U.
Prerequisite(s): C S 110, BCIS 110 or OECS 105.

OECS 215. Spreadsheet Applications
1-3 Credits
Use of spreadsheets to include graphics and business applications. May be repeated for a maximum of 6 credits.
Prerequisite(s): C S 110, BCIS 110 or OECS 105.

OECS 216. Programming for the Web
3 Credits
Designing web-based applications using appropriate programming language(s) such as, but not limited to HTML, PHP, MySQL, SQL, Java, Perl, C or C++. May be repeated up to 6 credits. Restricted to: Community Colleges only.
Prerequisite(s): One semester of any programming course.

OECS 220. Database Application and Design
1-3 Credits
Creating, sorting, and searching of single and multifile databases to include report generation and programming database commands. May be repeated for a maximum of 6 credits under different subtitles listed in the Schedule of Classes. Restricted to: Community Colleges only.
Prerequisite(s): C S 110 OR BCIS 110 OR E T 120 OR E T 122 OR OECS 105.

OECS 221. Internship I
1-3 Credits
Work experience that directly relates to a student's major field of study that provides the student an opportunity to explore career paths and apply knowledge and theory learned in the classroom. Internships may be paid or unpaid. Students are supervised/evaluated by both the employer and the instructor. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: OECS majors. S/U Grading (S/U, Audit). Restricted to Community Colleges campuses only.
Prerequisite(s): Consent of instructor.

OECS 222. Internship II
1-3 Credits
Continuation of OECS 221. Each credit requires specified number of hours of on-the-job work experience. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: OECS majors. S/U Grading (S/U, Audit). Restricted to Community Colleges campuses only.
Prerequisite(s): OECS 221 and consent of instructor.

OECS 227. Computer Applications for Technicians
3 Credits
Computer applications for service technicians in various disciplines. Hardware and software applications explored. Includes operating systems, high level programming, and networking hardware and software.

OECS 230. Data Communications and Networks I
1-3 Credits
Definition of data communication; survey of hardware applications and teleprocessor software; examination and design of networks. May be repeated for a maximum of 6 credits.
Prerequisite: OECS 185.

OECS 231. Data Communications and Networks II
1-3 Credits
Installation and application of popular microcomputer network software. May be repeated for a maximum of 6 credits.
Prerequisite: OECS 230.

OECS 232. Implementing and Supporting Networks I
3 Credits
Knowledge and skills relating to post-installation and day-to-day administration tasks in a single-domain or multiple-domain network.
Prerequisite: OECS 230 or OECS 261.

OECS 234. Linux Server
3 Credits
This course addresses the implementation and support needs of IT professionals that are planning to deploy and support Linux Server(s). It provides in-depth, hands-on training for planning, implementation, management and support of Linux networking services. May be repeated up to 6 credits.
Prerequisite(s): OECS 128, OECS 203 or OECS 204.

OECS 235. Structured Query Language (SQL)
1-3 Credits
Installation, configuration, administration, and troubleshooting of SQL client/server database management system.
Prerequisite: OECS 185, OECS 207, OECS 230 or OECS 261.

OECS 237. Windows Server
3 Credits
This course addresses the implementation and support needs of IT professionals that are planning to deploy and support Microsoft Windows Server Active Directory Domain Services in medium to large businesses. It provides in-depth, hands-on training for Information Technology (IT) professionals responsible for the planning, implementation, management, and support of Windows Active Directory services. Restricted to: Community Colleges only.
Prerequisite(s): OECS 207.

OECS 245. Game Programming I
3 Credits
Development of programming skills for games and animation using current programming languages and tools. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

EOCS 250. Systems Analysis and Design I
3 Credits
Analysis, configuration, design and testing of organizations' work flow as it relates to hardware, software, data, procedures and personnel. Systems Life Cycle approach matching end users' needs to feasible financial, technical and operational solutions. Restricted to Community Colleges campuses only.
Prerequisite(s): OECS 220.

OECS 252. Project Management
3 Credits
Utilization of project management software to establish, control and coordinate timelines, budgets, and work teams. Introduction to methods and principles of oriented project management emphasizing team-based performance.

OECS 255. Special Topics
1-4 Credits
Topics to be announced in the Schedule of Classes.
OECS 260. Hypertext Markup Language (HTML)
1-3 Credits
Coverage of HTML as used for web-page development for Internet and Intranet. Text manipulation, graphics, hypertext links, lists, and tables. May be repeated for a maximum of 3 credits.
Prerequisite: C S 110, BCIS 110 or OECS 105.

OECS 261. Introduction to Networks
4 Credits
Introduction to networking principles including the practical and conceptual skills for understanding basic networking, planning and designing networks, implementing IP addressing schemes, examining the OSI and TCP/IP layers, and performing basic configurations for routers and switches. Aligns to the first course of the Cisco Networking Academy CCNA curriculum. Restricted to Community Colleges campuses only.
Prerequisite(s): C S 110G, BCIS 110G, OECS 105, or E T 120.

OECS 262. Essentials of Routing and Switching
4 Credits
Examination of the architecture, components, and operations of routers and switches in a small network. Student will learn how to configure, verify and troubleshoot: routers and switches, static routing, default routing, VLANs, and ACLs. Aligns to the second course of the Cisco Networking Academy CCNA curriculum. Restricted to: Community Colleges only.
Prerequisite(s): OECS 261.

OECS 263. Network Fundamentals
4 Credits
Fundamentals of networking architecture, components, and operations including practical and conceptual skills using routers and switches. Student will learn how to configure, verify and troubleshoot static routing, default routing, VLANs, and ACLs. This course aligns to the third course of the Cisco Networking Academy CCNA curriculum. Restricted to: Community Colleges only.
Prerequisite(s): OECS 262.

OECS 264. Network Routing Protocols
4 Credits
Fundamentals of routing protocols for troubleshooting advanced network operations. Covers common networking issues such as RIP, OSPF, and EIGRP for IPv4 and IPv6 networks. This course aligns to the fourth course of the Cisco Networking Academy CCNA curriculum. Restricted to: Community Colleges only.
Prerequisite(s): OECS 263.

OECS 269. Network Security
3-4 Credits (3-4)
Fundamentals of design and implementation of network security solutions that will reduce the risk of system vulnerability. May be repeated up to 8 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): OECS 204 or OECS 207 or OECS 261 or consent of instructor.

OECS 272. Introduction to Bioinformatics Research
3 Credits
Bioinformatics is the intersection of computer science and molecular biology. It is the science of informatics as applied to biological research. This course develops the understanding of genomics research techniques and how large amounts of complex data is managed. This research based class is designed to introduce skills necessary to enter this high demanding field of study. Restricted to: Community Colleges only.
Prerequisite(s): BCIS 110, or C S 110, or OECS 105.

OECS 275. PC Maintenance and Repair II
1-3 Credits
Continuation of OECS 185. May be repeated for a maximum of 6 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): OECS 185.

OECS 280. Desktop Publishing I
3 Credits
Design and production of publication materials to fill the needs of business communities, using a microcomputer. May be repeated for a maximum of 6 credits. Same as BOT 280.
Prerequisite(s): either BCIS 100G, C S 110, OECS 105.

OECS 285. Fundamentals of Multimedia Applications
1-3 Credits
Fundamentals of designing video, audio and web-based multimedia presentations for business and technical needs. Restricted to: Community Colleges only.

OECS 290. Computer Technology Capstone
1-3 Credits
Refines skills learned in the OECS program. Culminates in a review and practice of advanced software applications. May be repeated up to 3 credits. Restricted to: OECS & OECT majors. Restricted to: Community Colleges campuses only.
Prerequisite(s): (OECS 125, OECS 128, OECS 207, OR OECS 203) AND (OECS 185 OR E T 283).

OECS 299. Independent Study
1-3 Credits
Specific subjects to be determined based on need. DAS Occupational Education, Dental Assisting. Restricted to: Community Colleges only.

OEEM- PARAMEDIC (OEEM)

OEEM 101. CPR for the Health Care Professional
1 Credit
Students learn identification and response to airway and circulation emergencies, including use of a SAED and accessing the EMS system. This course is taught using the American Heart Association guidelines for course completion. Required: grade of C or better.

OEEM 103. Heartsaver First Aid/CPR
1 Credit
Students learn how to identify and respond to airway, circulation and basic first aid emergencies, to include using a SAED and accessing the EMS system. This course is intended for students who are not Allied Health Majors and utilizes the American Heart Association guidelines for course completion. Required: grade of C or better.

OEEM 106. Advanced First Aid
2 Credits
Theory and advanced first aid skills taught emphasizing recognition and providing care for injury or sudden illness until professional medical help arrives. Course meets and/or exceeds the Red Cross or National Safety Council standards.
Corequisite: OEEM 101 or consent of instructor.

OEEM 115. First Responder Prehospital Professional
3 Credits (2+3P)
Provides training in prehospital medical and traumatic emergencies. Requires a C or better to pass. Restricted to majors.
Prerequisite: consent of instructor.
Corequisite: OEEM 101.
OEEM 116. Emergency Medical Technician Bridge
5 Credits (3+6P)
Enhanced skill instruction and didactic integration designed to meet the requirements for an EMT-Basic certificate. Requires a "C" or better to pass. May be repeated up to 5 credits. Consent of Instructor required. Restricted to Community Colleges campuses only.
Prerequisite(s): OEEM 115, OEEM 101.
Corequisite(s): OEEM 153, OEEM 121.

OEEM 120. Emergency Medical Technician Basic
6 Credits
EMT-Basic skills to include care of soft tissue and muscular/skeletal injuries, circulatory, nervous, general medical and respiratory emergencies. Requires a "C" or better to pass. May be repeated up to 6 credits. Consent of Instructor required.
Corequisite(s): OEEM 101, OEEM 120 L, OEEM 121.
Prerequisite(s)/Corequisite(s): OEEM 153. Restricted to: OEMS, OEEM majors. Restricted to Community Colleges campuses only.

OEEM 120 L. Emergency Medical Technician Basic Lab
2 Credits
EMT-Basic skills development with emphasis on assessment, skills competency and team-work in patient care in the prehospital setting. Requires a C or better to pass.
Corequisites: OEEM 101 or OEEM 120, and OEEM 121, or consent of instructor.

OEEM 121. Emergency Medical Technician Basic Field/Clinical
1 Credit
Covers the patient care experience provided through assigned shifts in the hospital and/or ambulance setting. Requires a "C" or better to pass. May be repeated up to 6 credits. Consent of Instructor required.
Corequisite(s): OEEM 116 or OEEM 120, OEEM 120 L.
Prerequisite(s)/Corequisite(s): OEEM 101. Restricted to: OEMS, OEEM majors. Restricted to Community Colleges campuses only.

OEEM 122. Emergency Medical Technician Basic Advanced Field/Internship
2 Credits
Expanded patient care experience provided through practical scenarios, assigned shifts in the hospital and/or ambulance setting. Requires a C or better to pass.
Prerequisite: current EMT-basic license and consent of instructor.

OEEM 150. Emergency Medical Technician Intermediate
5 Credits
Theory of the roles, responsibilities and scope of practice of the EMT-Intermediate. Assessment and management of respiratory, cardiac, trauma, environmental, behavior, reproduction, and childhood emergencies. Requires a C or better to pass.
Prerequisites: current EMT-basic license, pretest and consent of instructor.
Corequisites: OEEM 150L and OEEM 151.

OEEM 150 L. Emergency Medical Technician Intermediate Lab
2 Credits
EMT-Intermediate skills development with an emphasis on assessment, skills competency, and team work in patient care in the prehospital setting. Requires a C or better to pass. Restricted to: Community Colleges only.
Corequisite(s): OEEM 150 and OEEM 151.

OEEM 151. Emergency Medical Technician Intermediate Field/Clinical
2 Credits
Patient care experience provided through assigned shifts in the hospital and/or ambulance setting. Requires a C or better to pass.
Prerequisite: consent of instructor.
Corequisites: OEEM 150 and OEEM 150L.

OEEM 153. Introduction to Anatomy and Physiology for the EMS Provider
3 Credits
To properly assess and manage a patient, a prehospital provider must have a solid foundation in human anatomy and physiology. This course provides a systematic approach to building this foundation. Grade of "C" or better is required to pass the course. Consent of Instructor required. Restricted to Community Colleges campuses only.

OEEM 155. Special Topics
1-6 Credits
Specific topics to be listed in Schedule of Classes. May be repeated for a maximum of 10 credits.

OEEM 158. Emergency Medical Technician-Combination Refresher
2 Credits
A comprehensive review of prehospital medicine for the prehospital care provider from the first responder level through the EMT Intermediate. New material relevant to recertification of the New Mexico First Responder, EMT Basic and EMT Intermediate licensure included. Graded S/U.

OEEM 177. Emergency Medical Services Instructor
4 Credits
Theory of student learning, methodology, instructional components, evaluation, and course coordination for the EMS profession. Restricted to majors. Requires a C or better to pass.
Prerequisite: consent of instructor.

OEEM 201. Human Pathophysiology
3 Credits (2+3P)
Overview of anatomy and physiology. Emphasis on human body pathophysiology including a medical illness component. Requires a "C" or better to pass. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: OEMS, OEEM majors. Restricted to Community Colleges campuses only.
Prerequisite(s): OEEM 120, OEEM 120 L.

OEEM 202. EMT-Paramedic I Respiratory Emergencies
3 Credits (2+3P)
Review anatomy, physiology and pathophysiology of the respiratory system. Assessment and management of respiratory emergencies and acute respiratory failure in the prehospital setting. Requires a "C" or better to pass. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: OEMS, OEEM majors. Restricted to Community Colleges campuses only.
Prerequisite(s): OEEM 212.

OEEM 203. EMT-Paramedic II Trauma Emergencies
3 Credits (2+3P)
Study of the effects of trauma on the human body. Assessment and management of trauma patients and scenes, including vehicular extrication. Restricted to majors. Requires a C or better to pass.
Prerequisites: OEEM 202 and consent of instructor.
OEEM 206. Introduction to Advanced Prehospital Care  
3 Credits (2+3P)  
Overview of prehospital care including roles and responsibilities of EMT-P, EMS systems, medical, legal, ethical issues, stress management, medical terminology, medical report writing and communication. Includes ride-along with ambulance and dispatch observation. Requires a C or better to pass. Restricted to majors. Consent of instructor required. Restricted to: Community Colleges only. Restricted to OEMS majors. 
Prerequisite(s): OEEM 120.

OEEM 207. Introduction to Pharmacology  
3 Credits (2+3P)  
Drug actions, factors modifying drugs and dosages: characteristics of drug effects, and drug history and dosages. Prehospital protocol, transport, and common patient prescription medications. Restricted to majors. Requires a C or better to pass. Restricted to: Community Colleges only. Restricted to OEEM majors. 
Prerequisite(s): OEEM 206.

OEEM 210. Cardiac Rhythm Interpretation  
3 Credits (2+3P)  
Cardiac conduction system: electrophysiology, electrocardiogram, monitor, atrial, sinus, ventricular and junctional dysrhythmias, multiple lead EKG and 12 lead EKG interpretation. Requires a “C” or better to pass. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: OEMS, OEEM majors. Restricted to Community Colleges campuses only. 
Prerequisite(s): OEEM 201, OEEM 206, OEEM 207.

OEEM 212. EMT-Paramedic Cardiovascular Emergencies  
3 Credits (2+3P)  
Review anatomy, physiology, and pathophysiology of cardiovascular system. Assessment and management of cardiovascular emergencies in the prehospital setting. Requires a “C” or better to pass. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: OEMS, OEEM majors. Restricted to Community Colleges campuses only. 
Prerequisite(s): OEEM 210.

OEEM 213. EMT-Paramedic: Medical Emergencies I  
3 Credits (2+3P)  
Study of the disease process; assessment and management of neurological, endocrine, gastrointestinal, renal emergencies and infectious disease. Requires a “C” or better to pass. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: OEMS, OEEM majors. Restricted to Community Colleges campuses only. 
Prerequisite(s): OEEM 212.

OEEM 214. EMT-Paramedic: Medical Environmental Emergencies II  
3 Credits (2+3P)  
Study of disease process, assessment, and management of poisoning, drug and alcohol abuse, environmental, behavioral and geriatric emergencies. Requires a “C” or better to pass. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: OEMS, OEEM majors. Restricted to Community Colleges campuses only. 
Prerequisite(s): OEEM 213.

OEEM 216. EMT-Paramedic: Reproductive and Childhood Emergencies  
3 Credits (2+3P)  
Covers anatomy, physiology, disease processes, assessment and management of male and female reproductive system emergencies, childhood emergencies and growth and development. Restricted to majors. Requires a C or better to pass. Restricted to: Community Colleges only. 
Prerequisite(s): OEEM 214 and consent of instructor.

OEEM 218. Pediatric Advance Life Support for the Healthcare Professional  
1 Credit  
Identify and respond to life threatening pediatric emergencies. Taught using the American Heart Association guidelines for course completion. Graded S/U. 
Prerequisite: OEEM 101.

OEEM 219. Advance Cardiac Life Support for the Healthcare Provider  
1 Credit  
Identify and respond to life threatening cardiac emergencies. Taught using the American Heart Association guidelines for course completion. Graded S/U. 
Prerequisite: OEEM 101.

OEEM 230. EMT-Paramedic Clinical Experience I  
3 Credits  
Assigned clinical experiences in patient assessment and specific management techniques. Successful completion includes minimum required hours and completion of course objectives. Restricted to majors. Requires a C or better to pass. 
Prerequisite: consent of instructor.

OEEM 231. EMT-Paramedic Clinical Experience II  
3 Credits  
Assigned clinical experiences in patient assessment and specific management techniques. Successful completion includes minimum required hours and completion of course objectives. Restricted to majors. Requires a C or better to pass. 
Prerequisite: consent of instructor.

OEEM 232. EMT-Paramedic Field Experience I  
3 Credits  
Assigned clinical experiences in patient assessment and specific management techniques. Successful completion includes minimum required hours and completion of course objectives. Restricted to majors. Requires a C or better to pass. 
Prerequisite: consent of instructor.

OEEM 233. EMT-Paramedic Field Experience II  
3 Credits  
Assigned clinical experiences in patient assessment and specific management techniques. Successful completion includes minimum required hours and completion of course objectives. Restricted to majors. Requires a C or better to pass. 
Prerequisite: consent of instructor.

OEEM 243. EMT-Paramedic Preparation for Practice  
2 Credits  
Comprehensive final program testing to prepare for licensing examination. Requires a “C” or better to pass. May be repeated up to 2 credits. Consent of Instructor required. Restricted to: OEMS, OEEM majors. Restricted to Community Colleges campuses only. 
Prerequisite(s): OEEM 242.
OEEM 247. Emergency Medical Technician - Paramedic Refresher  
2 Credits (1+3P)  
A comprehensive review of prehospital emergency medicine for the EMT Paramedic. New material relevant to recertification of the New Mexico and Nationally Registered Paramedic licensure. Graded S/U.

OEEM 253. Critical Care Emergency Medical Transport Program  
6 Credits (5+6P)  
This course will provide further education to Paramedics, Registered Nurses and Registered Respiratory Therapists who wish to function as part of a critical care transport team. Consent of instructor required. Restricted to: Community Colleges only.  
Prerequisite(s): Licensed Paramedic, Registered Nurse or Registered Respiratory Therapist with one or more years experience.

OEET- ELECTRICAL TRADES (OEET)

OEET 110. Basic Electricity and Electronics  
4 Credits (3+3P)  
An introduction to electricity theory and practice, including electron theory, Ohm's law, construction of electrical circuits, direct and alternating currents, magnetism, transformers, and practical applications. Same as HVAC 102, ELT 105, OEPB 102.

OEET 112. Math Study Skills for Electrical  
1 Credit  
Covers specific math study skills and critical thinking processses to reinforce practical uses of math relating to electrical apprenticeship applications. The student will be introduced to electrical mathematical formulas during the problem-solving steps required for electrical circuit design and analysis. May be repeated up to 4 credits.  
Prerequisite(s)/Corequisite(s): OEET 151 OR OEET 152. Restricted to: Community Colleges only.

OEET 115. Wiring Methods and Materials  
5 Credits (2+6P)  
Application of electrical code in selection of wiring materials; proper methods of installation.  
Corequisite: OEET 110 or consent of instructor.

OEET 120. Basic Motor Controls  
5 Credits (2+6P)  
Developing schematics and wiring simple manual and electromechanical control devices.  
Prerequisite: OEET 110 or consent of instructor.

OEET 130. Introduction to Electrical Power Systems  
2 Credits  
An overview of electrical power systems, equipment, safety practices, first aid and CPR. Restricted to majors.  
Prerequisite: acceptance into the electrical lineworker program.  
Corequisite: OEET 110 and OEET 131.

OEET 131. Electrical Lineworker Lab I  
6 Credits  
Climbing and work on utility poles using ropes and rigging, pole setting and an introduction to transmission and distribution line construction. Maintenance and troubleshooting to include the use of hot sticks. Restricted to majors.  
Prerequisite: acceptance into the electrical lineworker program.  
Corequisite: OEET 110 and OEET 130.

OEET 140. Electrical Power Systems II  
3 Credits (2+2P)  
Theory of power generation and distribution with emphasis on three phase systems to include transformers, voltage regulators, surge arrestors. Includes troubleshooting. Restricted to majors.  
Prerequisites: acceptance into the electrical lineworker program and OEET 130.  
Corequisite: OEET 141.

OEET 141. Electrical Lineworker II  
6 Credits  
Practice in the installation of electrical power lines including transformers, voltage regulators, and surge arrestors. Also advanced hot sticking procedures, troubleshooting, underground systems procedures, and pole-top rescue. Restricted to: Community Colleges only.  
Prerequisites: Acceptance into the lineworker program and OEET 131.  
Corequisite: OEET 140.

OEET 151. Electrical Apprenticeship I  
6 Credits  
Apprenticeship responsibilities and benefits as well as first aid and CPR will be covered. Hand tools, electrical theory, and the regulations imposed by national codes and OSHA. Students will apply theory taught in their jobs.  
Prerequisite: consent of instructor.

OEET 152. Electrical Apprenticeship II  
6 Credits  
OHM's law circuit sizing and service panel sizing will be covered in detail. Other topics include low voltage systems, heating and air conditioning circuits, alarm systems and smoke detectors.  
Prerequisites: OEET 151 and consent of instructor.

OEET 153. Electrical Apprenticeship III  
6 Credits  
Various electrical measuring devices will be covered in detail. Inductance, transformers, capacitance, and simple motors will be studied.  
Prerequisites: OEET 152 and consent of instructor.

OEET 154. Electrical Apprenticeship IV  
6 Credits  
Theory and application of three-phase transformers and autotransformers. Electrical distribution using switchboards, panelboards, and circuit breakers.  
Prerequisites: OEET 153 and consent of instructor.

OEET 205. National Electric Code  
3 Credits  
Interpretation and application of the National Electric Code.  
Prerequisite: OEET 110.

OEET 210. Intermediate Electricity  
5 Credits (3+4P)  
Introduction to inductance, capacitance, reactances, and power factor correction.  
Prerequisite: OEET 110.

OEET 221. Cooperative Experience I  
1-4 Credits  
Supervised cooperative work program. Student is employed in an approved occupation and is supervised and rated by the employer and instructor. Student will meet in a weekly class. Graded S/U.  
Prerequisite: consent of instructor.
OEET 251. Electrical Apprenticeship V
6 Credits
Commercial/industrial applications for electricians. Blueprint interpretation, commercial construction types and processes, wiring methods, wiring materials, and motor controls.
Prerequisites: OEET 154 and consent of instructor.

OEET 252. Electrical Apprenticeship VI
6 Credits
In-depth commercial applications to include commercial/industrial service calculations, mobile home parks, multi-family dwellings, and commercial fire/security systems.
Prerequisites: OEET 251 and consent of instructor.

OEET 253. Electrical Apprenticeship VII
6 Credits
Control devices in commercial/industrial applications; emphasis on logic in-line diagrams, time delay starters, reversing starters, and manual/magnetic solenoids.
Prerequisites: OEET 252 and consent of instructor.

OEET 254. Electrical Apprenticeship VIII
6 Credits
Miscellaneous topics for the journeyman electrician to include power distribution/transmission, solid state controls and relays, photoelectric and proximity controls and programmable controllers.
Prerequisites: OEET 253 and consent of instructor.

OEET 295. Special Topics
1-6 Credits
Topics to be announced in the Schedule of Classes.

OEGS-GEOGRAPHIC INFO SYS (OEGS)

OEGS 181. Introduction to Principles of Geographic Information Systems
4 Credits (3+3P)
This course will introduce students to fundamental software capabilities of geographic information systems (GIS), along with the underlying conceptual framework. Topics include origins, development, and methods of cartography, components of a GIS, the nature and characteristics of spatial data, methods of data capture and sources of data, review of typical GIS operations and applications. Producing useful, aesthetically pleasing maps will be an integral part of the course. ArcGIS software will be used for this course. May be repeated up to 4 credits.

OEGS 187. GIS Data Acquisition and Management
4 Credits (3+3P)
An introduction to defining data needs and evaluating whether a given dataset matches those needs. Students will explore some common geographic data formats used in ArcGIS and learn about sources of data and maps that can be incorporated into a GIS project. The student will learn the advanced functionality and versatility of using geodatabases. The student will demonstrate how to design and build a geodatabase, migrate existing data to a geodatabase and edit data stored in a geodatabase. Methods for georeferencing scanned maps, aerial photos and computer aided drafting files will be explored and discussed. May be repeated up to 4 credits.
Prerequisite(s): OEGS 181.

OEGS 231. Introduction to GIS Spatial Analysis
4 Credits (3+3P)
This course aims to provide students with the knowledge and skills necessary to investigate the spatial patterns which result from social and physical processes operating on or near the Earth’s surface. Essential theoretical concepts of quantitative geography are examined, including measures of geographical distribution (including point and areal pattern analysis) and spatial autocorrelation, interpolation and network connectivity. Students will also be introduced to ArcView (online GIS) and the open source programs such as QGIS and GRASS. May be repeated up to 4 credits.
Prerequisite(s): OEGS 181.

OEGS 291. Special Topics in Geographic Information Systems
1-3 Credits (1-3)
Topics to be announced in the Schedule of Classes. May be repeated up to 12 credits. Restricted to Community Colleges campuses only.

OEPS-PUBLIC SAFETY (OEPS)

OEPS 150. Correctional Officer Training I
4 Credits (2+4P)
Introduction to corrections, departmental policies and procedures, report writing, officer safety, and physical conditioning. Restricted to majors.
Prerequisite: consent of instructor.

OEPS 180. Correctional Officer Training II
4 Credits (2+4P)
Criminal justice system, communications, ethics, correctional law and responsibilities, search procedures, hostage situations, institutional gangs. Restricted to majors OEPS 195.
Prerequisite: consent of instructor.

OEPS 250. Correctional Officer Training III
4 Credits (2+4P)
Use of force, firearms, baton, chemical agents, standard first aid, and CPR. Restricted to majors.
Prerequisite: consent of instructor.

OEPS 280. Correctional Officer Training IV
4 Credits (2+4P)
Stress management, supervision of special needs offender, defensive driving, preparation for certifying exams. Restricted to majors.
Prerequisite: consent of instructor.
OEPT-PHOTOGRAPHIC TRADES (OEPT)

OEPT 100. Photographics I
3 Credits (2+2P)
Covers basic black and white photographic techniques. Emphasizes black and white film and paper handling, film processing, proof printing, projection print, and print finishing. Adjustable camera required. Same as ART 270.

OEPT 120. Photo Finishing and Presentation
2 Credits (1+2P)
Use of visual language for personal expression. Freelance photography; care of original photos; preparation of portfolios, photographic markets, exhibitions and judging, galleries and copyrights. Students will prepare a photographic portfolio. Restricted to: Community Colleges only.
Prerequisite(s): OETS 115.

OEPT 155. Portraiture
3 Credits (2+2P)
Hands-on study of professional photography involving people. Studio and environmental portraits, fashion/glamour, and wedding photography. Studio and exterior lighting techniques, selecting lighting equipment, film and supplies. Restricted to: Community Colleges only.
Prerequisite(s): OETS 115 or ART 270 or CMT 115.

OETS-TECHNICAL STUDIES (OETS)

OETS 100. Industrial/Construction Safety
2 Credits
Covers safety issues such as PPE, BBP, ladder safety,, RTK, HazCom, MSDS and information about safety organizations such as OSHA, NIOSH, NFPA, National Safety Council. Community Colleges only. Restricted to: Dona Ana and Carlsbad campuses.

OETS 101. Energy for the Next Generation
3 Credits (2+2P)
This course will survey a broad range of sources of energy, types of energy, energy storage, and the forms of energy. Students will be exposed to theory in the classroom, laboratory exercises, and field trips to provide them with a solid foundation for all subsequent energy related environmental courses. Pre/ Restricted to: Community Colleges only.
Corequisite(s): OETS 118 or MATH 120.

OETS 102. Career Readiness Certification Preparation
1 Credit
This course is designed to prepare students to successfully obtain Career Readiness Certifications in all areas and at the appropriate levels for their program of study. Graded: S/U. May be repeated up to 3 credits. S/U Grading (S/U, Audit).

OETS 103. Technical Career Skills
4 Credits
This course will be project-based and will encompass writing, presentation, math, reading, and critical thinking skills applied in a technical environment. Restricted to: Community Colleges only.

OETS 104. Basic Mathematics for Technicians
4 Credits
Fundamental mathematical concepts and computations including measurement, ratio and proportions, and pre-algebra as it relates to technical programs.
Prerequisite: appropriate placement test score.

OETS 105. Building Analyst I
3 Credits (2+2P)
This course is designed to provide the foundational knowledge and expertise necessary for the energy auditor and home performance contractor. Restricted to: Community Colleges only.

OETS 106. Building Analyst II
3 Credits (2+2P)
Designed to prepare the student for the BPI Building Analyst Certification. This course will walk the student through the hands-on process of conducting visual building inspections, diagnostic testing, identifying improvement opportunities, documenting a home's performance and preparing a scope of work. Restricted to: Community Colleges only.
Prerequisite(s): OETS 105.

OETS 110. Photovoltaic Application
4 Credits (3+2P)
This course will provide an introduction to Photovoltaic (PV) installation. The course will provide instruction on site selection, prep, installation, and maintenance for photovoltaic applications. Students that complete the course and have the opportunity to take the entry level exam with the North American Board of Certified Energy Practitioners (NABCEP) en route to becoming Certified Installers. Restricted to: Community Colleges only.
Prerequisite(s): OETS 101.

OETS 117. Writing for Technicians
3 Credits
Instruction in the skills for developing clear, written descriptions of processes and procedures used by technicians in various fields. Emphasis on correct grammar, logical organization, and receiving audience. Focuses on clarity, structure, and concise writing methods. Does not substitute for ENGL 111G. Restricted to: Community Colleges only.

OETS 118. Mathematics for Technicians
3 Credits (2+2P)
Analysis and problem solving of technical problems using measuring instruments and techniques of arithmetic, algebra, geometry, and trigonometry. Restricted to: Community Colleges only.
Prerequisite(s): OETS 104 or CDM 103N or appropriate placement test score.

OETS 120. Business Fundamentals
3 Credits
Instruction in the skills for basic business concepts used by technicians in various fields. Emphasis placed on basic business concepts; business ownership including marketing, management, accounting, and customer services; interpersonal communication; and basic computer concepts including word processing, spreadsheets, and presentation software. Restricted to Community Colleges campuses only.

OETS 156. Building Envelope
3 Credits (2+2P)
Designed to prepare the student for the BPI Building Envelope Certification. This course will provide the principles behind building performance testing and the purpose of completing a comprehensive energy audit. Through lecture and subsequent field training, the student will learn how to use building diagnostics to develop a prescriptive plan for enhancing comfort, health & safety, building durability, and energy savings. The student will learn how to outline the follow-up process required after completion of the retrofit. Restricted to: Community Colleges only.
Prerequisite(s): OETS 106.
OETS 255. Special Topics Technical Studies
1-6 Credits
Topics to be announced in the Schedule of Classes. Restricted to: Community Colleges only.
Prerequisite(s): Consent of instructor.

P E-PHYSICAL EDUCATION (P E)

P E 102. Beginning Weight Training
1 Credit
Introduction to basic principles and techniques of weight training.

P E 103. Beginning Weight Training for Women
1 Credit
Introduction to basic principles and techniques of weight training as related to women.

P E 104. Military Physical Fitness
1 Credit
Directed physical fitness activities designed to develop and maintain muscular strength/endurance, cardiopulmonary efficiency, flexibility, and coordination required for leadership roles after graduation.

P E 109. Pilates
1 Credit
Designed exercise program involves the entire body while focusing on strengthening the core muscles of the torso. Exercises promote coordination, balance, and strength.

P E 110. Sports Conditioning
1 Credit
Sport specific conditioning using aerobic and resistive overload training. May be repeated for a maximum of 4 credits.
Prerequisite: consent of instructor.

P E 112. Beginning Volleyball for Men
1 Credit

P E 113. Beginning Volleyball for Women
1 Credit

P E 114. Basketball for Women
1 Credit

P E 115. Basketball for Men
1 Credit

P E 117. Beginning Soccer
1 Credit
Introduction to the basic techniques and skills of soccer.

P E 127. Cardio-Kickboxing
1 Credit
Activities that mimic punches, blocks, and kicks which have been modified to serve the purpose of providing a cardiovascular workout.

P E 128. Aerobic Dance
1 Credit
Designed to increase knowledge of the human body's responses to exercise, enhance the level of muscular development, and cardiovascular endurance with the use of music.

P E 129. Step Aerobics
1 Credit
Designed to increase knowledge of the human body's responses to exercise, enhance the level of muscular development, and cardiovascular endurance with the use of music and steps.

P E 130. Beginning Swimming
1 Credit

P E 131. Aqua Aerobics
1 Credit
Designed to increase knowledge of the human body's responses to exercise, enhance the level of muscular development, and cardiovascular endurance through exercise in water.

P E 132. Intermediate Swimming
1 Credit
Development of fitness through participation in aquatics activities.
Prerequisite(s): Ability to swim 200 yards.

P E 134. Lifeguard Training
2 Credits
Skills training for a nonsurf lifeguard. Course will include Standard First Aid and CPR certification.
Prerequisites: swim 500 yards, dive to 9-foot depth and retrieve a 10-pound brick, surface dive to 5 feet then swim under water 15 yards, tread water one minute.

P E 147. Beginning Tennis
1 Credit

P E 148. Beginning Racquetball
1 Credit

P E 150. Beginning Golf
1 Credit

P E 154. Personal Defense
1 Credit
Physical conditioning and defense skills for men and women.

P E 159. Introduction to Brazilian Jiu-Jitsu
1 Credit
Brazilian Jiu-Jitsu is primarily a ground fighting art. This course will place heavy emphasis on positional strategy and focus on the sportive aspect of the sport. A Judo/Jiu-Jitsu Gi (uniform) is required.

P E 166. Futsal (Five-A-Side Soccer)
1 Credit
Futsal, official form of indoor soccer, approved by FIFA.

P E 173. Running Fitness
1 Credit
Basic fitness knowledge techniques and training methods of fitness running are practiced and refined.

P E 199. Yoga
1 Credit
A holistic approach to exercise benefiting the body, mind, and spirit. Practices focus on alignment, strength, breath relaxation, and restoration.

P E 202. Intermediate Weight Training
1 Credit
Intermediate training and skill techniques in weight lifting.
Prerequisites: P E 102 or consent of department head.

P E 204. Cross Training
1 Credit
Intensive training program that incorporates both aerobic and resistive overload approaches to training.

P E 205. Walking Fitness
1 Credit
Basic fitness knowledge techniques and training methods of fitness walking are practiced and refined.
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P E 206. Beginning Physical Fitness
1 Credit
Progressive exposure to steady state exercise tailored to individual needs for the purpose of determining, improving, and maintaining physical fitness.

P E 208. Marathon Preparation
1 Credit
Gradual training progression for novice and experienced runners to develop and/or refine a training program enabling completion of or better personal record for the marathon. Discussions on equipment, nutrition, injury prevention and treatment.
Prerequisite: presently running three miles, three to four times per week.

P E 209. Intermediate Pilates
1 Credit
Intermediate training and skill techniques in Pilates.
Prerequisite(s): PE 109 or consent of instructor.

P E 212. Intermediate Volleyball-Men
1 Credit
Prerequisite: P E 112 or consent of department head.

P E 213. Intermediate Volleyball-Women
1 Credit
Prerequisite: P E 113 or consent of department head.

P E 215. Intermediate Walking
1 Credit
A continuation of basic fitness knowledge techniques and training methods of fitness walking are practiced and refined.
Prerequisite: P E 205 or consent of department head.

P E 216. Advanced Walking
1 Credit
Advanced walking fitness and training techniques are presented, practiced, and refined.

P E 228. Intermediate Aerobic Dance
1 Credit
Aerobic dance at a high intensity level with a more in-depth study of the body’s physiological response to exercise.
Prerequisite: P E 128 or consent of department head.

P E 229. Intermediate Step Aerobics
1 Credit
Step aerobic dance at a high intensity level with a more in-depth study of the body’s physiological response to exercise.
Prerequisite: PE 129 or consent of instructor.

P E 230. Advanced Swimming
1 Credit
Perfection of basic strokes, survival swimming, and physical fitness.
Prerequisite(s): P E 130 or ability to swim 100 yards.

P E 247. Intermediate Tennis
1 Credit
Prerequisite: P E 147 or consent of department head.

P E 248. Intermediate Racquetball
1 Credit
Advanced skills and strategies in racquetball.
Prerequisite: P E 148 or consent of instructor.

P E 250. Intermediate Golf
1 Credit
Prerequisite: P E 150 or consent of department head.

P E 263. Outdoor Recreation Skills
1 Credit
Selected outdoor activities. Appropriate subtitles, such as hiking and backpacking, camping and survival, hunting and gun safety, casting and angling skills. May be repeated for maximum of 4 credits.

P E 264. Intermediate Cycling
1 Credit
Introduction to competitive cycling. Content includes techniques in training, riding, racing, and racing tactics.

P E 270. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. Each offering will carry appropriate subtitle. May be repeated for a maximum of 4 credits.

P E 276. Intermediate Aqua Aerobics
1 Credit
A continuation of basic fitness to increase knowledge of the human body’s responses to exercise, enhance the level of muscular development and cardiovascular endurance through exercise in water.

P E 299. Intermediate Yoga
1 Credit
Intermediate training and skill techniques in Yoga.
Prerequisite(s): PE 199 or consent of instructor.

P E 310. Advanced Weight Training: Theory and Practice
3 Credits
For men and women who wish to continue weight training and learn principles of strength training.

PE-P-PHYSICAL EDUCATION (PE P)

PE P 185. Introduction and Foundations
3 Credits
Historical and cultural foundations and vocational, scientific, and educational data on careers in health education, physical education, and recreation. Restricted to: Main campus only.

PE P 208. Fitness for Health and Sport
3 Credits
A study of the fitness needs for health enhancement and sport participation. Restricted to: P E,SP M,KIN,S ED majors.

PE P 210. Theory and Technique of Aquatics
2 Credits
Introduction to fundamental aquatics knowledge and skills.
Prerequisite(s): Ability to swim 100 yards.

PE P 296. Theory of Coaching I
3 Credits
Focus on areas of academic theory associated with coaching athletics. Orientation: theoretical and practical application.

PE P 315. Elementary School Physical Education
3 Credits (2+2P)
Methods for teaching physical education at the elementary level. Primary focus on creating a learning environment for the acquisition and enhancement of developmentally appropriate locomotor, manipulative, and nonmanipulative skills. Field experience included. Consent of instructor required. Restricted to SED/PE P majors.
Prerequisite(s): GPA of 2.5.
PE P 319. Lifetime Activities
2 Credits
Knowledge and skills related to the lifetime activities of swimming, weight training, and other fitness promoting activities with emphasis on learning progressions.
Prerequisite(s): PE P 208.

PE P 323. Racquet Sports
2 Credits
Knowledge and skills related to the racquet sports of tennis, badminton, and pickleball with emphasis on developmental strategies and skill performance that influences pedagogical content knowledge. Administrative issues will be addressed.

PE P 363. Theory and Technique of Lifelong Outdoor Leisure Activities
2 Credits
Knowledge and skills related to lifelong outdoor leisure activities, including the examination of environmental science and awareness, kinesiology, and fundamental motor skills.

PE P 392. Theory and Technique of Sports and Games
2 Credits
Knowledge and skills related to team sports and games, with emphasis on developmental strategies and skill performance that influence pedagogical content knowledge. Administrative issues will also be addressed.

PE P 393. Theory and Technique of Dance and Rhythms
2 Credits
Knowledge and skills related to dance and rhythms, with emphasis on the analysis of dance elements and its role in physical education.

PE P 394. Designing Student Centered Afterschool Physical Activity Clubs
3 Credits
Knowledge, skills and field based practical application for creating student centered and student designed after school physical activity clubs.

PE P 455. Adapted Physical Education
3 Credits
Selection and scope of corrective activities in posture and body mechanics, and the adaptation of movement activities for the exceptional student.
Prerequisite: junior or senior standing.

PE P 465. Senior Seminar
3 Credits
Capstone course for physical education. Graded S/U.
Prerequisite: senior standing.

PE P 466. Methods of Teaching Secondary Physical Education
6 Credits
Theoretical and practical applications of curriculum, pedagogy and assessment for teaching secondary physical education. Provides the students opportunities to develop curriculum, teach, and assess student learning through a supervised practicum in both middle and high school physical education settings. Consent of instructor required.
Prerequisite(s): PE P 315 and admittance to TEP required.

PE P 499. Problems
1-3 Credits (1-3)
Problems in physical education and recreation and independent work in their solutions. A maximum of 3 credits during any one semester. May be repeated up to 6 credits. Consent of Instructor required.

PE P 501. Special Topics
1-3 Credits (1-3)
Offered under various subtitles that indicate the subject matter. May be repeated for a maximum of 3 credits per semester and a total of 6 credits overall. May be repeated up to 6 credits.

PE P 504. Teaching Processes in Physical Education
3 Credits
Analysis of effective teaching and coaching. Systematic observation strategies will be employed to evaluate instructional variables such as feedback, climate, academic learning time, and styles of teaching.

PE P 515. Advanced Athletic Training Education
3 Credits
Advanced clinical experiences and education in athletic training. Assessment of Athletic Training Program clinical proficiencies as described by the National Athletic Trainers' Association Education Council. Consent of Instructor required.

PE P 550. Advanced Topics in Physical Education
1-4 Credits
Advanced study in teaching processes, perceptual motor development, bioenergetics, biomechanical instrumentation, psychological bases of performance, or motor control.

PE P 551. Sociology of Sports
3 Credits

PE P 555. Adapted Physical Education
3 Credits
Selection and scope of corrective activities in posture and body mechanics, and the adaptation of movement activities for the exceptional student. Same as PE P 455 with additional requirements for graduate credit.
Prerequisite: consent of instructor.

PE P 557. Adapted Physical Education : A Practitioner's Approach
3 Credits
Preparation for qualified physical education professionals to teach individuals with disabilities motor and fitness skills. Knowledge of the Adapted Physical Education National Standards is developed so students may become nationally certified in the field. The inclusion of disability sports into general physical education curriculum is also major emphasis of this course. Consent of Instructor required.

PE P 558. Adapted Physical Education National Standards (APENS) Professional Preparation
3 Credits
This distance education course is to prepare physical education teachers to pass the Certified Adapted Physical Education (CAPE) National Examination, which is based on the Adapted Physical Education National Standards (APENS). These standards were developed by professionals in the field to ensure that physical education instruction for students with disabilities is provided by qualified physical education teachers.

PE P 624. BODY IN CULTURE
3 Credits
This course will explore how people's health and physical activity experiences and choices are often shaped by cultural narratives and expectations of the male and female body. Designed for graduate students in allied health and physical activity professions.
PHIL-PHILOSOPHY (PHIL)

PHIL 100G. Philosophy, Law and Ethics
3 Credits
An introduction to practical problems in moral, social, political, and legal philosophy. Topics to be discussed may include ecology, animal rights, pornography, hate speech on campus, same-sex marriage, justice, abortion, terrorism, treatment of illegal immigrants, and New Mexican Aboriginal Peoples’ land claims.

PHIL 101G. The Art of Wondering
3 Credits
Introduction to some of the main problems of philosophy, with an emphasis on critical thinking. Philosophy conceived as an aid to living in this world with oneself and with others.

PHIL 124G. Philosophy of Music
3 Credits
This is an introductory course in the philosophy of music. This course will survey three questions: What is music? Why is music important? How can we distinguish good music from bad music? We will draw examples from a wide variety of musical genres, from classical music, jazz and blues to punk and rap. Students will be encouraged to apply philosophical theorizing to think about their preferred musical form.

PHIL 136G. The Quest for God
3 Credits
An effort to understand the religious life; a consideration of some of the traditional approaches to God and what it means to be religious.

PHIL 201G. Introduction to Philosophy
3 Credits
Selected problems within the main branches of philosophy: metaphysics, theory of knowledge, ethics. Practice given in critical thinking.

PHIL 211G. Informal Logic
3 Credits
Logical analysis of ordinary language, construction of definitions, argumentation, analysis of fallacious modes of thought and basic rhetorical considerations.

PHIL 223G. Ethics
3 Credits
The philosophical explication of morality. Significant ethical systems developed in the history of Western thought.

PHIL 302. Business Ethics
3 Credits
An analysis of the ethical issues that arise in contemporary business life, including the obligations businesses and employees have to each other, consumers, society and the environment.

PHIL 305. Philosophy and Literature
3 Credits
Examination of philosophical ideas as presented in selected literary works and literary criticism.

PHIL 306. Philosophy Through Film
3 Credits
An exploration of a range of philosophical issues through the use of film. Topics include personal identity and memory, faith and the problem of evil, free will and moral responsibility, and the meaning of life. Films may include The Prestige, Memento, The Third Man, A Clockwork Orange, Fight Club, and Synecdoche, New York.

PHIL 312. Formal Logic
3 Credits
Introduction to symbolic logic and its application in the analysis of arguments in scientific and ordinary discourse.

PHIL 315. Philosophy of Language
3 Credits
A critical examination of philosophical inquiries into the syntactic, semantic, and pragmatic dimensions of language.

PHIL 316. Philosophy of Mathematics
3 Credits
Survey of traditional philosophical problems and views concerning the nature of mathematics including such questions as: What is the nature of mathematical knowledge? What is mathematical truth? What is a number? What is proof? What is the relationship between logic and mathematics?

PHIL 320. Social and Political Philosophy
3 Credits
This course critically examines such fundamental concepts as liberty, equality and human rights.

PHIL 321. Biomedical Ethics
3 Credits
Examines ethical dimensions of such issues as abortion, euthanasia, and physician-assisted suicide; informed consent as a condition of treating patients and experimenting on subjects; genetic engineering; and alternative reproductive methods, including surrogate motherhood. Also considers what implications moral theories have for these issues.

PHIL 322. Environmental Ethics
3 Credits
Explores the ethical and topical issues raised by mining and grazing, air and water pollution, factory farming, global warming, and treatment of animals. It also studies some recent ecological movements such as ecofeminism, social ecology, and deep ecology.

PHIL 323V. Engineering Ethics
3 Credits
A critical examination of philosophical inquiries into the syntactic, semantic, and pragmatic dimensions of language.

PHIL 324. Feminist Philosophy
3 Credits
Examines contemporary ethical issues related to sports, including the relationship between morally right action and that required for competitive success, strong paternalism in sports, fair play, doping, sportsmanship, and the impact of sports on society.

PHIL 325. Topics in Feminist Philosophy
3 Credits
Philosophical treatment of issues concerning women, gender, and feminism. Topics may include social and political equality, pornography and freedom of speech, ethical issues raised by reproductive technologies, and feminist critiques of science.

PHIL 327. Ethics and Sports
3 Credits
Examines contemporary ethical issues related to sports, including the relationship between morally right action and that required for competitive success, strong paternalism in sports, fair play, doping, sportsmanship, and the impact of sports on society.
PHIL 328. Applied Ethics  
3 Credits  
Examines the implications of utilitarianism, Kantian ethics, natural law theory, and other moral theories for controversial moral issues such as the death penalty, euthanasia, abortion, genetic engineering, gay marriage, affirmative action, and pornography.

PHIL 330. Ethics and Biomedical Research  
3 Credits  
Explores some ethical issues raised by biological and biomedical research. Topics include: possible abuses of genetic engineering, cloning, and genetically modified foods; experimentation on humans and informed consent; animal experimentation; honesty in research and conflicts of interest; and intellectual property.

PHIL 331. Philosophy of Religion  
3 Credits  
The nature, fundamental concepts, and problems of religion. Emphasis on the significance of religion for creative and practical value.

PHIL 332. Ethics and Global Poverty  
3 Credits  
Philosophical scrutiny of and moral reflection on various aspects of global poverty and foreign aid. For example: Is poverty fundamentally a lack of income, or can it be understood as a failure to meet basic needs, or as a lack of valuable freedom? Do human rights exist? What, if any, are the moral obligations of rich countries to poor countries? Can foreign aid be immoral? How should the answers to these questions influence public policy? Restricted to: Main campus only.

PHIL 341. Ancient Philosophy  
3 Credits  
Introduction to the philosophies of the pre-Socratics, Socrates, Plato, Aristotle, with brief discussion of the Epicureans and Stoics.

PHIL 344. Modern Philosophy  
3 Credits  
Foundations of contemporary thought: introduction to the philosophies of Descartes, Bacon, Spinoza, Leibniz, Locke, Berkeley, Hume, Kant, and Hegel.

PHIL 346. Philosophy of Mind  
3 Credits  
Examination of some of the most influential accounts of the mind, focusing on such issues as the relation between the mind and the body, mental causation and consciousness.

PHIL 350. Epistemology  
3 Credits  
Introduction to epistemology. The philosophical critique of alleged ways of knowing. An examination of the nature of truth.

PHIL 351. Philosophy of Science  
3 Credits  
Philosophical examination of the methodology of science. The logical, metaphysical, epistemological, and ethical critique of science and its impact on human affairs.

PHIL 352. Advance Studies in Ethics and Global Poverty  
3 Credits  
Advanced philosophical scrutiny of and moral reflection on various aspects of global poverty and foreign aid. For example: Is poverty fundamentally a lack of income, or can it be understood as a failure to meet basic needs, or as a lack of valuable freedom? Do human rights exist? What, if any, are the moral obligations of rich countries to poor countries? Can foreign aid be immoral? How should the answers to these questions influence public policy? Restricted to: Main campus only.

PHIL 373. Ethical Theory  
3 Credits  
The critical examination of the justification of ethical theories with particular attention to the language of moral discourse.

PHIL 376. Philosophy of Law  
3 Credits  
Ethical, logical, and epistemological implications of law, together with an analysis of the rhetoric of legal practice.

PHIL 380. Metaphysics  
3 Credits  
Introduction to metaphysics: a treatment of such issues as the meaning of existence, the mind-body problem, the problem of universals, and free will versus determinism.

PHIL 397. Existentialism  
3 Credits  
The origins of existentialist thought in philosophy and literature, including the thought of Nietzsche, Kierkegaard, Dostoyevsky, Camus, and Sartre. The course covers topics in ethics and political philosophy, metaphysics, philosophical psychology, philosophy of religion, and other sub-disciplines of philosophy.

PHIL 413. Modal Logic  
3 Credits  
A formal introduction to the logic of necessity, possibility, and impossibility: the syntactic and semantic aspects of the formal modal systems T, S4, S5, as well as their philosophical implications.

PHIL 448. Writing Philosophy  
3 Credits  
A workshop on writing philosophy papers. Includes how to read and understand philosophical writing, organize a paper effectively, present a clear and forceful argument, and avoid common mistakes.  
Prerequisite(s): completed 18 hours of philosophy credit.

PHIL 463. Independent Studies  
1-3 Credits  
For students with a strong background in philosophy. Independent work in a specific area. May be repeated for a maximum of 6 credits.  
Prerequisite: consent of instructor.

PHIL 464. Independent Studies  
1-3 Credits  
For students with a strong background in philosophy. Independent work in a specific area. May be repeated for a maximum of 6 credits.  
Prerequisite: consent of instructor.

PHIL 505. Advanced Studies in Philosophy and Literature  
3 Credits  
Examination of philosophical issues (e.g. personal identity, free will, moral dilemmas, the meaning of life) as presented in selected literary works and literary criticism. Consent of Instructor required.

PHIL 532. Advance Studies in Ethics and Global Poverty  
3 Credits  
Advanced philosophical scrutiny of and moral reflection on various aspects of global poverty and foreign aid. For example: Is poverty fundamentally a lack of income, or can it be understood as a failure to meet basic needs, or as a lack of valuable freedom? Do human rights exist? What, if any, are the moral obligations of rich countries to poor countries? Can foreign aid be immoral? How should the answers to these questions influence public policy? Restricted to: Main campus only.
PHIL 540. Science and Ethics
1-3 Credits (1-3)
Ethical concerns facing researchers in the basic and applied biological sciences. Coverage of responsible conduct in research including scientific integrity and research misconduct, mentor/trainee responsibilities, data management, authorship, publication practices, human subjects, animal welfare, intellectual property, conflicts of interest and effort and collaborative science. Emphasis on ethical reasoning skills. Discussion of ethical and societal implications of issues selected from a broad range of contemporary research areas (genetics, reproductive biology, environmental sciences, nanoscience, drug discovery, bioengineering, neuroscience). Subtitled. May be repeated for a maximum of 12 credits.

PHLS-PUBLIC HEALTH SCIENCES (PHLS)

PHLS 100. Introduction to Health Science
1 Credit
An overview of professional career opportunities in the realm of health science as well as the functional roles of practice, education, administration, and research. Some field trips will be required.

PHLS 150G. Personal Health and Wellness
3 Credits
A holistic and multi-disciplinary approach towards promoting positive lifestyles. Special emphasis is placed on major problems that have greatest significance to personal and community health. Topics to include nutrition, stress management, fitness, aging, sexuality, drug education, and others.

PHLS 275. Foundations of Health Education
3 Credits
Role and responsibility of the health educator with emphasis on small group dynamics, oral and written communication skills, building community coalitions and an introduction to grant writing. Taught with HL S 375. Cannot receive credit for both HL S 275 and HL S 375. Prerequisite(s): Either HL S 100 or HL S 150G, or consent of instructor.

PHLS 295. Essentials of Public Health
3 Credits
The course will focus on principles and major areas of public health, including ecological and total personal concept of health care system, epidemiological approaches to disease prevention and control. Consent of instructor required.

PHLS 301V. Human Sexuality
3 Credits
Examination of human sexuality from a variety of perspectives: cultural, sociological, physiological and psychological. Issues examined from viewpoints such as gender, individual, family, and professional roles.

PHLS 305V. Global Environmental Health Issues
3 Credits
Introduction to global environmental health challenges in the 21st century with an emphasis on environmental problems as they affect public health and personal well-being.

PHLS 375. Foundations of Community Health Education
3 Credits
Role and responsibility of the health educator, with emphasis on small-group dynamics, oral and written communication skills, building community coalitions, and an introduction to grant writing. Equivalent to PHLS 275. May be repeated up to 3 credits.

PHLS 380V. Women's Health Issues
3 Credits
A focus on the unique issues and problems that confront women today and how they affect the health of women. Same as WS 381V.

PHLS 395. Foundations of Public Health
3 Credits
The course will focus on principles and major areas of public health, including ecological concepts of healthcare systems and epidemiological approaches to disease promotion and control. Equivalent to PHLS 295. May be repeated up to 3 credits.

PHLS 450. Epidemiology
3 Credits
Epidemiologic approaches to disease prevention and control. Factors influencing health status. May be repeated up to 3 credits. Restricted to: Public Health majors. Prerequisite(s): PHLS 471.

PHLS 451. Biometrics and Health Research
3 Credits
Critical analysis of community health research and related methodologies. May be repeated up to 3 credits. Restricted to: Public Health majors. Prerequisite(s): E ST 311G.

PHLS 452. Environmental Health
3 Credits
Introduction to environmental health designed to address public health issues. May be repeated up to 3 credits. Restricted to: Public Health, HNFS and ES majors. Prerequisite(s): Junior or Senior standing.

PHLS 457. Administration of Health Programs
3 Credits
Covers administrative responsibilities, organizational theory, strategic planning, and systems theory as applied to the administration of a variety of health programs. May be repeated up to 3 credits. Restricted to: Public Health majors. Prerequisite(s): HL S 395 or HL S 450, or consent of instructor.

PHLS 458. Public Health Resources and Policy Analysis
3 Credits
Covers issues related to U.S.-health policy and allocation of resources. Examination of local, state, and federal public health and health care funding. Assessment of impact of health policy on health education, medical practice, and the workplace. May be repeated up to 3 credits.

PHLS 459. Infectious and Noninfectious Disease Prevention
3 Credits
History, etiology, and prevention of diseases affecting humans. May be repeated up to 3 credits. Consent of Instructor required. Crosslisted with: MPH 559. Restricted to: Public Health majors. Prerequisite(s): PHLS 395 and Consent of Instructor.

PHLS 460. American Indian Health
3 Credits
Critical health issues facing American Indians in the contemporary world. Course included in the undergraduate American Indian Program minor. May be repeated up to 3 credits. Crosslisted with: MPH 560.
PHLS 461. Health Disparities: Determinants and Interventions
3 Credits
Investigates: descriptions of health disparities and measurement issues; physical environmental factors, behavioral and emotional variables; impact of aging of the populations, increased racial and ethnic diversity, and technological developments; intervention strategies and evaluation results. May be repeated up to 3 credits. Crosslisted with: MPH 561.

PHLS 462. Hispanic Health Issues
3 Credits
Cultural differences that aid or hinder communication with Hispanic clients and the application of cross-cultural communication skills. Some field trips may be required. May be repeated up to 3 credits. Crosslisted with: MPH 562.

PHLS 464V. Cross-Cultural Aspects of Health
3 Credits
An examination of health practices from a variety of cultural perspectives: communication, observation, research, and assimilation. Issues to be addressed will be examined from a number of viewpoints, such as individual, family, community, and professional roles.

PHLS 465. International Health Problems
3 Credits
Comparison of domestic health programs and problems with those in other parts of the world: emphasis on political parameters and delivery processes. Additional attention is focused on the health issues of the U.S.-Mexico border. May be repeated up to 3 credits. Crosslisted with: MPH 565.

Prerequisite(s): HL S 395 or consent of instructor.

PHLS 466. International Health Practicum
1-3 Credits
Intensive examination of health practices and beliefs from a cultural perspective. Focus on health structure, index of diseases, morbidity, mortality and epidemiological approaches to planning. Required travel (personal travel, lodging, and related expenses are extra). May be repeated up to 3 credits. Crosslisted with: MPH 566. Restricted to: BPH majors.

PHLS 467. Rural Health Issues
3 Credits
Comprehensive overview of rural health services with Southwestern United States and New Mexico focus. May be repeated up to 3 credits. Crosslisted with: MPH 566. Restricted to: Public Health majors.

PHLS 468. Coping with Loss and Grief: A Cross-Cultural Perspective
3 Credits
A cross-cultural perspective to death, loss and grief. Hospice philosophy of caring for the dying will be included.

PHLS 469. U.S.-Mexico Border Health Issues
3 Credits
Interdisciplinary analysis of the impact of living conditions and health issues of communities along the U.S.-Mexico border and of the strategies and initiatives to address these issues. Problem-based learning, case analysis, lecture, guest speakers, computer based instruction, and field trips. May be repeated up to 3 credits. Crosslisted with: MPH 569.

PHLS 471. Health Informatics
3 Credits
The application of technology to engage communities and individuals in behavioral and environmental change processes. The course will focus on the use of technology to describe the magnitude of health problems and their sources; analyze risk factors; identify community strengths from which strategies may be defined and tools created to intervene, prevent problems, and promote health and well-being; and continuously evaluate, refine, and implement what works. May be repeated up to 3 credits. Crosslisted with: MPH 571. Restricted to: PHLC HL majors.

Prerequisite(s): HL S 395 or consent of instructor.

PHLS 473. Health Program Planning
3 Credits
Planning and development of community health education interventions for behavior change at the individual, family, social network levels of practice. Emphasis on applying program-planning models and designs into a grant-writing project. May be repeated up to 3 credits. Restricted to: Public Health majors.

PHLS 475. Methods of Community Health Education
3 Credits
Responsibilities of health educators, analysis of social forces affecting health needs, application of wide range of health education methods and instructional media, and program implementation skills. May be repeated up to 3 credits. Crosslisted with: MPH 575. Restricted to: Public Health majors.

Prerequisite(s): HL S 275/375.

PHLS 476. Theoretically-Based Interventions
3 Credits
Identifying and developing interventions to problematic health-related behaviors. Taught with MPH 576. May be repeated up to 3 credits. Restricted to: Public Health majors.

Prerequisite(s): HL S 473.

PHLS 478. Health Program Evaluation and Research
3 Credits
Covers the application of research and evaluation models for decision-making program and policy development of community health education interventions. Focus on the individual, family, and social network levels of practice. May be repeated up to 3 credits. Restricted to: Public Health majors.

Prerequisite(s): HL S 473.

PHLS 481. Public Health Preparedness and Response
3 Credits
This course is designed to teach students about the role of public health in emergency preparedness and response. It focuses on the nature of public emergencies as well as the role various sectors have in responding to them. One purpose of this online course is to introduce students to the basics of disaster preparedness and responding to disasters, and to build a base for further development in responder training. The course provides training and resources for a basic understanding of the Incident Command System (ICS) and National Incident Management System (NIMS). May be repeated up to 3 credits.

PHLS 486. Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.
PHLS 490. Independent Study
1-6 Credits
Individual studies with prior approval of department head. Maximum of 12 credits.
Prerequisites: consent of instructor.

PHLS 496. Community Health Education Field Experience
1-6 Credits
Senior-standing community health education majors will integrate and apply various concepts related to actual community health education practice. Experience aims to prepare students to integrate the competencies and responsibilities of community health education. Approximately 55 hours at field agency required per credit hour. May be repeated for a maximum of 6 credits. Consent of Instructor required. Restricted to: Public Health majors.
Prerequisite(s): HL S 475 or concurrent enrollment.

PHLS 497. Senior Seminar in Community Health Education
1 Credit
Critical analysis of issues in CHE and health care. Readings focus on social, economic, cultural, and political issues as they affect the profession and practice. Emphasis on future, local, national, and international health trends. May be repeated up to 1 credits. Restricted to: Public Health majors.
Prerequisite(s): HL S 475 or consent of instructor.

PHLS 499. Problems in Health Education
3 Credits
Provides opportunity for synthesis of program planning, implementation, and evaluation methodologies in the preparation and delivery of health education topics. Some field trips will be required. May be repeated up to 3 credits. Restricted to: Public Health majors.
Prerequisite(s): Either HL S 395, HL S 478, HL S 476, or consent of instructor.

PHYS-PHYSICS (PHYS)

PHYS 110G. The Great Ideas of Physics
4 Credits (3+3P)
Conceptual, quantitative, and laboratory treatments of the great ideas and discoveries that have influenced lives and changed perceptions of nature, from Johannes Kepler's laws of planetary motion and Isaac Newton's and Albert Einstein's laws of motion and gravity to the modern concepts of the quantum structure of nature and the big bang universe.

PHYS 120G. Introduction to Acoustics
4 Credits (3+2P)
Lecture, demonstration, and laboratory treatment of the general properties of waves, the production, transmission, and reception of sound waves, including musical and vocal sounds, and characteristics of the human ear and several kinds of sources.

PHYS 150. Elementary Computational Physics
3 Credits (2+2P)
Introduction to computational techniques for the solution of physics-related problems.
Prerequisite(s): a C- or better in MATH 121G.

PHYS 203. Supplemental Instruction to PHYS 213
0.5-1 Credits (.5-1)
Optional workshop as a supplement to PHYS 213. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.
Corequisite(s): PHYS 213.

PHYS 204. Supplemental Instruction to PHYS 214
0.5-1 Credits (.5-1)
Optional workshop as a supplement to PHYS 214. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.
Corequisite(s): PHYS 214.

PHYS 205. Supplemental Instruction to PHYS 215G
0.5-1 Credits (.5-1)
Optional workshop as a supplement to PHYS 215G. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.
Corequisite(s): PHYS 215G.

PHYS 206. Supplemental Instruction to PHYS 216G
0.5-1 Credits (.5-1)
Optional workshop as a supplement to PHYS 216G. The tutorial sessions focus on reasoning and hands-on problem solving. May be repeated up to 1 credits.
Corequisite(s): PHYS 216G.

PHYS 211G. General Physics I
3 Credits
Non-calculus treatment of mechanics, waves, sound, and heat. Knowledge of simple algebra and trigonometry is required.

PHYS 211GL. General Physics I Laboratory
1 Credit
Laboratory experiments in topics associated with material presented in PHYS 211G.
Prerequisite(s)/Corequisite(s): PHYS 211G.

PHYS 212G. General Physics II
3 Credits
Non-calculus treatment of electricity, magnetism, and light.
Prerequisite(s): PHYS 211G or PHYS 221G.

PHYS 212GL. General Physics II Laboratory
1 Credit
Laboratory experiments in topics associated with material presented in PHYS 212G.
Prerequisite(s)/Corequisite(s): PHYS 212G.

PHYS 213. Mechanics
3 Credits
Newtonian mechanics. Pre/Corequisite(s): MATH 191G.

PHYS 213 L. Experimental Mechanics
1 Credit
Laboratory experiments associated with the material presented in PHYS 213. Science majors. Pre/Corequisite(s): PHYS 213.

PHYS 214. Electricity and Magnetism
3 Credits
Charges and matter, the electric field, Gauss law, the electric potential, the magnetic field, Ampere's law, Faraday's law, electric circuits, alternating currents, Maxwell's equations, and electromagnetic waves. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 192G. Prerequisite(s): a C- or better in PHYS 213 or PHYS 215G.
PHYS 214 L. Electricity and Magnetism Laboratory
1 Credit
Laboratory experiments associated with the material presented in PHYS 214.
Prerequisite(s)/Corequisite(s): PHYS 214. Prerequisite(s): a C- or better in PHYS 213L or PHYS 215GL.

PHYS 215G. Engineering Physics I
3 Credits
Calculus-level treatment of kinematics, work and energy, particle dynamics, conservation principles, simple harmonic motion. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in MATH 191G.

PHYS 215GL. Engineering Physics I Laboratory
1 Credit
Laboratory experiments associated with the material presented in PHYS 215G. Students wishing to use the PHYS 215G-216G sequence to satisfy the basic natural science general education requirement must register for either PHYS 215GL or PHYS 216GL. Pre/Corequisite(s): PHYS 215G.

PHYS 216G. Engineering Physics II
3 Credits
A calculus-level treatment of topics in electricity, magnetism, and optics. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in PHYS 213 or PHYS 215G and MATH 192G.

PHYS 216GL. Engineering Physics II Laboratory
1 Credit
Laboratory experiments associated with the material presented in PHYS 216G.
Prerequisite(s)/Corequisite(s): PHYS 216G. Prerequisite(s): A C- or better in PHYS 213L or PHYS 215GL.

PHYS 217. Heat, Light, and Sound
3 Credits
Calculus-level treatment of thermodynamics, geometrical and physical optics, and sound. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in PHYS 213 or PHYS 215G.

PHYS 217 L. Experimental Heat, Light and Sound
1 Credit
Laboratory experiments associated with the material presented in PHYS 217. Science majors.
Prerequisite(s)/Corequisite(s): PHYS 217. Prerequisite(s): a C- or better in PHYS 213L or PHYS 215GL.

PHYS 221G. General Physics for Life Sciences I
3 Credits
This algebra-based introduction to general physics covers mechanics, waves, sound, and heat. Special emphasis is given to applications in the life sciences. This course is recommended for students in the life sciences and those preparing for the physics part of the MCAT.
Prerequisite: PHYS 211G or PHYS 221G.

PHYS 222G. General Physics for Life Sciences II
3 Credits
This algebra-based course covers electricity, magnetism, light, atomic physics, and radioactivity. Special emphasis is given to applications in the life sciences. This course is recommended for students in the life sciences and those preparing for the physics part of the MCAT.
Prerequisite: PHYS 211G or PHYS 221G.

PHYS 222GL. Laboratory to General Physics for Life Sciences II
1 Credit
Laboratory experiments in topics associated with material presented in PHYS 222G.
Prerequisite(s)/Corequisite(s): PHYS 222G. Restricted to Las Cruces campus only.

PHYS 223. Supplemental Instruction to PHYS 221
1 Credit
This optional workshop supplements Physics for Life Sciences I. The tutorial sessions focus on reasoning and hands-on problem solving.
Corequisite(s): PHYS 221G.

PHYS 224. Supplemental Instruction to PHYS 222
1 Credit
This optional workshop is a supplement to Physics for Life Science II. The tutorial sessions focus on reasoning and hands-on problem solving.
Corequisite(s): PHYS 222G.

PHYS 280. Independent Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

PHYS 290. Special Topics
1-3 Credits
Topics to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

PHYS 303V. Energy and Society in the New Millennium
3 Credits
Traditional and alternative sources of energy. Contemporary areas of concern such as the state of depletion of fossil fuels; nuclear energy, solar energy, and other energy sources; environmental effects; nuclear weapons; and health effects of radiation. Discussion of physical principles and impact on society. Focus on scientific questions involved in making decisions in these areas. No physics background required.

PHYS 304. Forensic Physics
4 Credits (3+3P)
Theories, laboratory, and field techniques in the area of forensic physics.

PHYS 305V. The Search for Water in the Solar System
3 Credits
Examines the formation, abundance and ubiquity of water in our Solar System stemming from comets, Martian and Lunar poles, Earth's interior and into the outer reaches of the Solar System. Topics will include nuclear synthesis, Solar System formation, remote sensing, as well as past, present and future NASA missions for water.

PHYS 315. Modern Physics
3 Credits
An introduction to relativity and quantum mechanics, with applications to atoms molecules, solids, nuclei, and elementary particles. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in MATH 291 and PHYS 214 or PHYS 216G.
PHYS 315 L. Experimental Modern Physics
3 Credits (1+6P)
Elementary laboratory in modern physics which supports the subject matter in PHYS 315. Required for physics majors. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): PHYS 315. Prerequisite(s): a C- or better in PHYS 214L or 216GL.

PHYS 350. Special Topics
1-3 Credits
Lectures, demonstrations, and discussions on such topics as lasers and holography, energy sources, clouds, and biophysics. May be repeated for a maximum of 12 credits under different subtitles.

PHYS 350. Special Topics
1-3 Credits
Lectures, demonstrations, and discussions on such topics as lasers and holography, energy sources, clouds, and biophysics. May be repeated for a maximum of 12 credits under different subtitles.

PHYS 380. Individual Study
1-3 Credits
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

PHYS 395. Intermediate Mathematical Methods of Physics
3 Credits
Introduction to the mathematics used in intermediate-level physics courses. Topics include vector calculus, curvilinear coordinates, matrices, linear algebra, function spaces, partial differential equations, and special functions. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 392. Prerequisite(s): a C- or better in MATH 291G.

PHYS 400. Undergraduate Research
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

PHYS 420. Capstone Project I
3 Credits
Application of engineering physics principles to a significant design project. Includes teamwork, written and oral communication and realistic technical, economic and public safety requirements.

PHYS 421. Capstone Project II
3 Credits
Continuation of PHYS 420.

PHYS 450. Selected Topics
1-3 Credits
Readings, lectures or laboratory studies in selected areas of physics. May be repeated for a maximum of 12 credits.

PHYS 451. Intermediate Mechanics I
3 Credits
Vector calculus, Lagrangian and Hamiltonian formulations of Newtonian mechanics. Topics include central force motion, dynamics of rockets and space vehicles, rigid body motion, noninertial reference frames, oscillating systems, relativistic mechanics, classical scattering, and fluid mechanics. Pre/
Prerequisite(s): PHYS 213 or PHYS 215G, and MATH 291G.

PHYS 454. Intermediate Modern Physics I
3 Credits
Introduction to quantum mechanics, focusing on the role of angular momentum and symmetries, with application to many atomic and subatomic systems. Specific topics include intrinsic spin, matrix representation of wave functions and observables, time evolution, and motion in one dimension. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): MATH 392 and PHYS 395. Prerequisite(s): a C- or better in PHYS 315.

PHYS 455. Intermediate Modern Physics II
3 Credits
Continuation of subject matter of PHYS 454. Specific topics include rotation and translation in three dimensions, solution of central potential problems, perturbation theory, physics of identical particles, scattering theory, and the interaction between photons and atoms. May be repeated up to 3 credits.
Prerequisite(s): a C- or better in PHYS 454.

PHYS 467. Nanoscience and Nanotechnology
3 Credits
See CHME 467. Crosslisted with: CHME 467.
Prerequisite(s): CHEM 112 and (PHYS 211 or PHYS 215) and (EH&S Safety training to include the courses: (1) Employee & Hazard Communication Safety (HazCom); (2) Hazardous Waste Management; and (3) Laboratory Standard.

PHYS 468. Intermediate X-ray Diffraction
3 Credits
Introduction to x-ray diffraction and reflectivity spectra. Topics include X-ray sources and detectors, atomic spectra, characteristic x-rays, thermionic emission, synchrotron radiation, instrument components, and beam conditioners. Crosslisted with: CHME 488.
Prerequisite(s): a C- or better in PHYS 315 and PHYS 315L.

PHYS 471. Modern Experimental Optics
3 Credits (1+6P)
Advanced laboratory experiments in optics related to the material presented in PHYS 473.
Prerequisite(s): PHYS 315 and PHYS 315L.
PHYS 473. Introduction to Optics  
3 Credits  
The nature of light, Geometrical optics, basic optical instruments, wave optics, aberrations, polarization, and diffraction. Elements of optical radiometry, lasers and fiber optics. Crosslisted with: E E 473  
Prerequisite(s): PHYS 216G or PHYS 217.  

PHYS 475. Advanced Physics Laboratory  
1-3 Credits (1+6P)  
Advanced undergraduate laboratory involving experiments in atomic, molecular, nuclear, and condensed-matter physics. May be repeated up to 3 credits.  
Prerequisite(s): a C- or better in PHYS 315 and 315L.  

PHYS 476. Computational Physics  
3 Credits  
An introduction to finite difference methods, Fourier expansions, Fourier integrals, solution of differential equations, Monte Carlo calculations, and application to advanced physics problems.  
Prerequisite(s): PHYS 150 or equivalent and MATH 392.  

PHYS 477. Fiber Optic Communication Systems  
4 Credits (3+3P)  
See E E 477 Crosslisted with: E E477.  
Prerequisite(s): C- or better in E E 315 or PHYS 461.  

PHYS 478. Fundamentals of Photonics  
4 Credits (3+3P)  
Prerequisite(s): PHYS 216G or PHYS 217.  

PHYS 479. Lasers and Applications  
4 Credits (3+3P)  
See E E479 Crosslisted with: E E479.  
Prerequisite(s): C- or better in E E 315 or PHYS 461.  

PHYS 480. Thermodynamics  
3 Credits  
Thermodynamics and statistical mechanics. Basic concepts of temperature, heat, entropy, equilibrium, reversible and irreversible processes. Applications to solids, liquids, and gases.  
Prerequisites: PHYS 217, PHYS 315 and MATH 291G.  

PHYS 485. Independent Study  
1-3 Credits  
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.  
Prerequisite: consent of instructor.  

PHYS 488. Introduction to Condensed Matter Physics  
3 Credits  
Crystal structure, X-ray diffraction, energy band theory, phonons, cohesive energy, conductivities, specific heats, p-n junctions, defects, surfaces, and magnetic, optical, and low-temperature properties.  
Prerequisite(s): PHYS 315.  

PHYS 489. Introduction to Modern Materials  
3 Credits  
Structure and mechanical, thermal, electric, and magnetic properties of materials. Modern experimental techniques for the study of material properties.  
Prerequisite: PHYS 315.  

PHYS 491. High Energy Physics I  
3 Credits  
Prerequisite(s): PHYS 455.  

PHYS 493. Experimental Nuclear Physics  
3 Credits (1+6P)  
Selected experimental investigations in nuclear physics such as measurement of radioactivity, absorption of radiation, nuclear spectrometry.  
Prerequisite(s): PHYS 315 and PHYS 315L.  

PHYS 495. Mathematical Methods of Physics I  
3 Credits  
Applications of mathematics to experimental and theoretical physics. Topics selected from: complex variables; special functions; numerical analysis; Fourier series and transforms, Laplace transforms.  
Prerequisite(s): MATH 392 and PHYS 395.  

PHYS 497. Introduction to Space Plasma Physics  
3 Credits  
Properties of plasmas, especially those in the heliosphere such as the solar wind, planetary magnetospheres and ionospheres, cosmic rays, and the Sun. Topics include both independent-particle and fluid descriptions of plasmas such as magnetohydrodynamics, the solar cycle and solar flares, planetary magnetic substorms and aurorae, Van Allen radiation belts, shocks in the solar wind, and wave propagation in plasmas.  
Prerequisite(s): (PHYS 461 or E E 351) and MATH 392.  

PHYS 500. Special Topics Seminar  
1-2 Credits  
Treatment of topics not covered by regular courses. Graded S/U. May be repeated.  

PHYS 511. Mathematical Methods of Physics I  
3 Credits  
Same as PHYS 495. Additional work required at a more advanced level.  

PHYS 520. Selected Topics  
1-3 Credits  
Formal treatment of graduate-level topics not covered in regular courses. May be repeated for a maximum of 9 credits.  
Prerequisites: graduate standing, consent of instructor, and selection of a specific topic prior to registration.  

PHYS 521. Individual Study  
1-3 Credits  
Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.  
Prerequisites: graduate standing, consent of instructor, and selection of a specific topic prior to registration.  

PHYS 527. Fiber Optic Communication Systems  
4 Credits (3+3P)  
Same as E E 527 Crosslisted with: E E 527.  

PHYS 528. Fundamentals of Photonics  
4 Credits (3+3P)  
Same as E E 528. Crosslisted with: E E528.  

PHYS 529. Lasers and Applications  
4 Credits (3+3P)  
Same as E E 529 Crosslisted with: E E 529.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 551</td>
<td>Classical Mechanics</td>
<td>3</td>
<td>Lagrangian and Hamiltonian formulation of dynamics. Advanced treatments of most topics listed under PHYS 451, plus canonical transformations and Hamilton-Jacobi theory. PHYS 451 strongly recommended.</td>
<td></td>
</tr>
<tr>
<td>PHYS 555</td>
<td>Quantum Mechanics II</td>
<td>3</td>
<td>Continuation of topics in PHYS 554.</td>
<td>PHYS 554 or consent of instructor.</td>
</tr>
<tr>
<td>PHYS 561</td>
<td>Electromagnetic Theory I</td>
<td>3</td>
<td>Detailed advanced treatments of most topics listed under PHYS 461, PHYS 462, plus multipole radiation, collisions of charged particles and bremsstrahlung, scattering, and radiation reaction. PHYS 461 and PHYS 462 strongly recommended.</td>
<td></td>
</tr>
<tr>
<td>PHYS 562</td>
<td>Electromagnetic Theory II</td>
<td>3</td>
<td>Continuation of topics in PHYS 561.</td>
<td>PHYS 561 or consent of instructor.</td>
</tr>
<tr>
<td>PHYS 567</td>
<td>Nanoscience and Nanotechnology</td>
<td>3</td>
<td>See CHME 567. Crosslisted with: CHME 567.</td>
<td></td>
</tr>
<tr>
<td>PHYS 568</td>
<td>Elements of X-ray Diffraction</td>
<td>3</td>
<td>Same as PHYS 468, but additional work required. Crosslisted with: CHME 588.</td>
<td></td>
</tr>
<tr>
<td>PHYS 571</td>
<td>Advanced Experimental Optics</td>
<td>3</td>
<td>Taught with PHYS 471 with additional work required at the graduate level. Consent of Instructor required.</td>
<td>PHYS 473 or PHYS 562.</td>
</tr>
<tr>
<td>PHYS 575</td>
<td>Advanced Physics Laboratory</td>
<td>1-3</td>
<td>Selected experiments in atomic, molecular, nuclear and condensed-matter physics.</td>
<td>1+6P</td>
</tr>
<tr>
<td>PHYS 576</td>
<td>Advanced Computational Physics I</td>
<td>3</td>
<td>Advanced treatment of topics listed under PHYS 476, plus additional required work. Applications of numerical methods to complex physical systems. Recommended knowledge of Fortran or C, and MATH 377 or MATH 392. Same as PHYS 476, but additional work required.</td>
<td></td>
</tr>
<tr>
<td>PHYS 577</td>
<td>Fourier Methods in Electro-Optics</td>
<td>3</td>
<td>Same as E E 577 Crosslisted with: E E 577</td>
<td></td>
</tr>
<tr>
<td>PHYS 578</td>
<td>Optical System Design</td>
<td>3</td>
<td>See E E 578. Crosslisted with: E E 578</td>
<td></td>
</tr>
<tr>
<td>PHYS 588</td>
<td>Condensed Matter Physics</td>
<td>3</td>
<td>Same as PHYS 488, but additional work required.</td>
<td>PHYS 554 or consent of instructor.</td>
</tr>
<tr>
<td>PHYS 589</td>
<td>Modern Materials</td>
<td>3</td>
<td>Same as PHYS 489 with differentiated assignments for graduate students.</td>
<td></td>
</tr>
<tr>
<td>PHYS 591</td>
<td>Advanced High-Energy Physics I</td>
<td>3</td>
<td>Taught with PHYS 491 with additional work required at the graduate level.</td>
<td>PHYS 555 or consent of instructor.</td>
</tr>
<tr>
<td>PHYS 592</td>
<td>Advanced High-Energy Physics II</td>
<td>3</td>
<td>Continuation of topics in PHYS 591</td>
<td>PHYS 591.</td>
</tr>
<tr>
<td>PHYS 593</td>
<td>Advanced Experimental Nuclear Physics</td>
<td>3</td>
<td>Advanced experimental investigation of topics such as measurement of radioactivity, absorption of radiation, and nuclear spectrometry.</td>
<td>PHYS 591</td>
</tr>
<tr>
<td>PHYS 597</td>
<td>Space Plasma Physics</td>
<td>3</td>
<td>Same as PHYS 497 but with added requirements.</td>
<td></td>
</tr>
<tr>
<td>PHYS 600</td>
<td>Research</td>
<td>1-15</td>
<td>Doctoral research. May be repeated.</td>
<td></td>
</tr>
<tr>
<td>PHYS 620</td>
<td>Advanced Topics in Physics</td>
<td>1-3</td>
<td>Advanced formal treatment of topics not covered in regular courses. May be repeated for a maximum of 9 credits.</td>
<td>consent of instructor.</td>
</tr>
<tr>
<td>PHYS 650</td>
<td>General Relativity I</td>
<td>3</td>
<td>Basic foundations and principles of general relativity, derivation of the Einstein field equations and their consequences, the linearized theory, the Bel-Petrov classification of the curvature tensor, derivation of the Schwarzschild solution and the four basic tests of general relativity.</td>
<td>PHYS 511 or PHYS 561 or consent of instructor.</td>
</tr>
<tr>
<td>PHYS 680</td>
<td>Independent Study</td>
<td>1-3</td>
<td>Individual analytical or laboratory studies directed by a faculty member. May be repeated for a maximum of 6 credits.</td>
<td>graduate standing or consent of instructor.</td>
</tr>
</tbody>
</table>
PHYS 688. Advanced Condensed Matter Physics  
3 Credits  
Continuation of the advanced condensed matter physics presented in PHYS 588. Topics include electronic structure methods, optical, magnetic, and transport properties of solids, semiconductors, crystalline defects, nanostructures, and noncrystalline solids. PHYS 588 strongly recommended.

PHYS 689. Advanced Modern Materials  
3 Credits  
Advanced topics in the physics of modern materials, such as crystalline, amorphous, polymeric, nanocrystalline, layered, and composite materials and their surfaces and interfaces.  
Prerequisites: PHYS 555, PHYS 588, or consent of instructor.

PHYS 691. Quantum Field Theory I  
3 Credits  
Path integrals, gauge invariance, relativistic quantum mechanics, canonical quantization, relativistic quantum field theory, introduction to QED.  
Prerequisites: PHYS 555 and PHYS 562, or consent of instructor.

PHYS 692. Quantum Field Theory II  
3 Credits  
QED, running coupling constant, QCD, electroweak theory, asymptotic freedom, deep inelastic scattering, basic QCD phenomenology, path integrals in quantum field theory, lattice QCD.  
Prerequisite: PHYS 691 or consent of instructor.

PHYS 700. Doctoral Dissertation  
15 Credits  
Dissertation.

**PL-S-PARALEGAL SERVICES (PL S)**

PL S 160. Legal System for the Paralegal  
3 Credits  
Introduction to the court system, administrative agencies, functions of law offices, and professional conduct and legal ethics. Restricted to: Community Colleges only.  
Prerequisite(s): ACT standard score in English of 16 or higher or a Compass score 76 or higher; for those scoring 13-15 in English on ACT or 35-75 on Compass, successful complete of CCDE 105N or CCDE 110N; for those scoring 12 or below on the ACT standard score in English or 34 or below on the Compass, successful completion of CCDE 105N & CCDE 110N.

PL S 161. Legal Terminology  
3 Credits  
Survey of the language of the law that will serve either as an introductory course or as a review course to prepare students for the certification test.

PL S 162. The Virtual Law Office  
3 Credits  
The Virtual Law Office class is a 'hands-on', project oriented course designated to provide the student with the basic law office skills needed to function successfully in a law office setting. The student will gain a practical, working knowledge of the procedures necessary to work in a law office. The skills learned in the class will directly translate to real life situations. Restricted to: Community Colleges only.  
Prerequisite(s): PL S 160.

PL S 163. The Virtual Law Office II  
3 Credits  
Continuation of PL S 162. Each credit requires specified number of hours of on-the-job work experience. Restricted to Community Colleges campuses only.  
Prerequisite(s): PL S 162.

PL S 180. Constitutional Law for the Paralegal  
3 Credits  
Case standing of the law of the Constitution and Bill of Rights with regard to day-to-day applications in the law practice. Documents dealing with constitutional problems in both civil and criminal areas of law will be drafted and discussed.  
Prerequisite: PL S 160.

PL S 190. Criminal Law for the Paralegal  
3 Credits  
Introduction to federal and state criminal law; criminal proceedings, prosecution and defense, sentencing and appeal.  
Prerequisite: PL S 160.

PL S 200. Legal Ethics for the Paralegal  
3 Credits  
Introduction to ethical dilemmas faced in the workforce and the rules of ethics developed by the American Bar Association, various national paralegal organizations, and the Supreme Court of New Mexico. Restricted to: Community Colleges only.  
Prerequisite(s): PL S 160.

PL S 203. Immigration Law  
3 Credits  
Survey of the basics of immigration law including the rights and obligations of citizenship and the naturalization process.  
Prerequisite: PL S 160.

PL S 221. Internship I  
2-4 Credits  
Work experience that directly relates to a student's major field of study that provides the student an opportunity to explore career paths and apply knowledge and theory learned in the classroom. Internships can be paid or unpaid. Students are supervised/evaluated by both the employer and the instructor. Restricted to Community Colleges campuses only.  
Prerequisite(s): PL S 274.

PL S 222. Internship II  
1-3 Credits  
Continuation of PL S 221. Each credit requires specified number of hours of on-the-job work experience. Restricted to Community Colleges campuses only.  
Prerequisite(s): PL S 221.

PL S 231. The Law of Commerce for the Paralegal  
3 Credits  
Law of contracts, negotiable instruments, bank transfers, secured transactions, debtor-creditor relations, agency, and business types and their formation. Students will study the relevant statutes as well as draft documents associated with these types of legal practice. Restricted to: Community Colleges only.  
Prerequisite(s): PL S 160.

PL S 272. Bankruptcy Law for the Paralegal  
3 Credits  
Individual and corporate bankruptcy; the basic principles and processes of bankruptcy law as a system of debtor relief and debt collection.  
Prerequisite: PL S 160.

PL S 274. Legal Research and Writing for the Paralegal I  
3 Credits  
Legal memoranda, briefs, and pleadings will be prepared and written based on the student's original research. Research materials and techniques will be identified and studied; introduction of computer usage in legal research.  
Prerequisite: PL S 160 and ENGL 111G.
PL S 275. Tort and Insurance for the Paralegal
3 Credits
Primary legal principles of tort and insurance law and means of establishing insurance plans, types of torts and insurance, as well as use of specific forms and procedures relating to these areas.
Prerequisite: PL S 160.

PL S 276. Wills, Trusts, and Probate for the Paralegal
3 Credits
Cases and statutes dealing with wills, trusts, and probate. Emphasis on preparation and drafting of documents and the application of the law and documents to the client's problems.
Prerequisite: PL S 160.

PL S 277. Family Law for the Paralegal
3 Credits
Methods of conducting client interviews and drafting of pleadings and research relative to families. Laws relating to marriage, divorce, custody, support, adoption, name change, guardianship, and paternity.
Prerequisite: PL S 160.

PL S 278. Litigation for the Paralegal
3 Credits
The law of procedure and evidence will be considered through rules and cases. Case situations will be used to identify and solve problems.
Prerequisite: PL S 160.

PL S 279. Legal Research and Writing for the Paralegal II
3 Credits
Continuation of PL S 274. Advanced training in legal research problems with a focus on analysis, writing, and preparation of sophisticated legal memoranda and documents.
Prerequisite: PL S 274.

PL S 280. Interviewing and Investigation for the Paralegal
3 Credits
Techniques of legal interviewing and investigation with emphasis on development of human relations and communication skills.
Prerequisite: PL S 160.

PL S 298. Independent Study
1-3 Credits (1-3)
Individual studies directed by consenting faculty with prior approval by department head. Restricted to Community Colleges campuses only.
Prerequisite(s): PL S 160.

PORT-PORTUGUESE (PORT)

PORT 213. Portuguese for Romance Language Students I
3 Credits
Introduction to the Portuguese language, Brazilian culture and civilization. Taught in Portuguese. Open to students with any previous Romance language study (French, Italian, Portuguese, Romanian, Spanish).

PORT 214. Portuguese for Romance Language Students II
3 Credits
Continuation of PORT 213.
Prerequisite: C or better in PORT 213 or consent of instructor.

PORT 225. Portuguese Conversation
3 Credits
Spoken Portuguese with emphasis on contemporary topics.
Prerequisite: PORT 214 or consent of instructor.

PORT 453. Independent Luso-Brazilian Studies
1-3 Credits (1-3)
Individualized, self-paced projects for advanced students in Luso-Brazilian studies. May be repeated up to 12 credits. Consent of Instructor required.

PORT 513. Graduate Portuguese for Romance Language Students I
3 Credits
Portuguese for beginners at the graduate level. May be completed on campus or via Study Abroad. Credit can be applied towards fulfilling the second language requirement. Credit is not accepted towards any graduate level major or minor.

PORT 514. Graduate Portuguese for Romance Language Students II
3 Credits
Portuguese for beginners at the graduate level. May be completed on campus or via Study Abroad. Credit can be applied towards fulfilling the second language requirement. Credit is not accepted towards any graduate level major or minor.
Prerequisite(s): Language placement exam or C or better in PORT 513, or consent of instructor.

PSY-PSYCHOLOGY (PSY)

PSY 201G. Introduction to Psychology
3 Credits
Methods and principles of behavior. Topics include human evolution and development, biopsychology, perception, learning, thinking, motivation, social interaction, and the diagnosis and treatment of abnormal behavior.

PSY 266. Applied Psychology
3 Credits
Explanation of the psychological principles of everyday living. Emphasizes motivation, learning of intelligent behavior, and applications of psychology to social issues. Community Colleges only.

PSY 274. A Study of Substance Abuse through Service Learning
3 Credits
Physiological and psychological impact of drug use on human behavior. Emphasizes practical applications of intervention and prevention in the community. Community Colleges only.

PSY 290. Psychology of Adjustment
3 Credits
Analyzes the responses people have to conflict, emotional stress, and frustration. It focuses on adapting to these problems and examines both normal and neurotic responses. Community College campus only.

PSY 301. Introduction to Psycholinguistics
3 Credits
Psychological aspects of language, including linguistic theories of grammar, psychological factors influencing language performance, primary language acquisition and the relationship of language to thought processes. Same as LING 301.
Prerequisites: PSY 201G and one of: STAT 251G, STAT 271G, or A ST 311; and PSY 310 or consent of instructor.

PSY 302. Abnormal Psychology
3 Credits
Introduces the types, causes, and treatment of mental disorders. Descriptions and explanations of the neuroses, affective disorders and the psychoses. Case histories are also analyzed.
Prerequisites: PSY 201G, MATH 120 and ENGL 111G.
PSY 310. Experimental Methods
3 Credits
4 Credits (2+4P)
The basic skills of literature search, experimental design, research methodology, and research reporting are emphasized; includes laboratory.
Prerequisite(s): PSY 201G, and either STAT 251G, STAT 271G, or A ST 311.

PSY 311. Advanced Research Seminar
4 Credits (2+4P)
Psychological research in conjunction with designing, conducting, writing, and presenting an independent research project. May also include various computer applications. Will discuss issues regarding application to graduate programs. Course should be taken no later than the first semester of senior year.
Prerequisite: PSY 310.

PSY 315. Emotion
3 Credits
An overview of the past century of research on human emotion from William James to Antonio Damasio. Explores a cognitive science perspective on emotion that includes questions about developmental, physiological, and evolutionary aspects of emotion and an exploration of the proximate and ultimate functions of emotion. Topics range from understanding the feeling component of emotion to understanding the role of facial displays of emotion.
Prerequisite(s): PSY 201G, and one of: STAT 251, STAT 271, or A ST 311G, and PSY 310 or consent of instructor.

PSY 317. Social Psychology
3 Credits
Ways in which people are influenced by the behavior of others are analyzed. Includes aggression, altruism, conformity, attraction, sexual behavior, prejudice, and nonverbal behavior.
Prerequisites: PSY 201G, MATH 120, and ENGL 111G.

PSY 320. Learning
4 Credits (3+2P)
Covers: habituation, Pavlovian conditioning, Thorndikian learning, stimulus generalization, transfer of training, and the learning and forgetting of related and unrelated material.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310.

PSY 321. Psychology of Personality
3 Credits
Introduces personality theories and supporting research. Psychoanalytic, physiological, and behavioral theories as they apply to personality are examined. Focuses on normal personality functioning.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310.

PSY 324. Sexual Behavior
3 Credits
Examines viewpoints of the evolution, control and function of human sexual behavior. Includes human sexuality, reproduction, male-female conflicts and the social implications of sex. Prerequisites: PSY 201G, MATH 120, and ENGL 111G

PSY 325. Health Psychology
3 Credits
Life stress, surgical stress, coronary-prone behavior, biofeedback, pain control, psychosocial approaches to geriatrics and cancer, behavioral treatments for addictions, obesity, and interpersonal issues in health care.
Prerequisite: PSY 201G.

PSY 330. Psychology and the Law
3 Credits
Discretionary practices in the judicial system including pretrial procedures, jury selection, jury decision making, eyewitness testimony, insanity, expert witnesses, and probation judgments.
Prerequisite: PSY 201G.

PSY 340. Cognitive Psychology
3 Credits
Review of research and theory in the study of human cognitive processes. Topics include information processing, pattern recognition, memory, attention, language, problem solving, decision making, and reasoning.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310.

PSY 342. Cognitive Neuroscience
3 Credits
Introduction to the study of the neural mechanisms underlying cognitive processes. Topics include relations between neural processes and attention, perception, memory, thinking and language; measuring changes in electrical activity, blood flow, and metabolism in the brain during cognition; the problem of consciousness; and evolutionary perspectives.
Prerequisites: PSY 201G and PSY 310.

PSY 350. Developmental Psychology: Conception through Childhood
3 Credits
Covers a wide range of topics concerning human psychological development from conception through childhood with special emphasis on current research and theory.
Prerequisite: PSY 201G.

PSY 351. Developmental Psychology: Adolescence through Old Age
3 Credits
Covers a wide range of topics concerning human psychological development from adolescence through old age with special emphasis on current research and theory.
Prerequisite: PSY 201G.

PSY 359. Psychology of Women
3 Credits
Examines theories and research on the psychological functioning of women in North American society. Influential theories of gender in psychology and current controversies in the psychological literature. Topics include women's development across the lifespan, women and work, women's physical and mental health and sexuality, the victimization of women, gender stereotypes, biological, social, and cultural influences on women's behavior, and gender comparisons in abilities and personality. Same as W S 359.
Prerequisite: PSY 201G.

PSY 370. Special Topics
1-3 Credits
May be taken under different subtitles announced in the Schedule of Classes for unlimited credit. May be repeated for a maximum of 12 credits.
Prerequisite: PSY 201G.

PSY 375. Psychology and the Brain
3 Credits
An exploration of how the brain produces thinking, emotion, and behavior.
Prerequisite(s): PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311 or consent of instructor.
PSY 376. Evolutionary Psychology
3 Credits
This course introduces the student to the science of Evolutionary Psychology. In this class we will explore how evolutionary psychologists think about a variety of topics ranging from our capacity for (and appreciation of) art, emotions, and beauty to an exploration of the "design" of our minds in regards to mating, status striving, social behavior and cultural production.
Prerequisite(s): PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311G, and PSY 310 or consent of instructor.

PSY 380. Perception
4 Credits (4+4P)
Primary emphasis on vision. Topics include measurement of sensations, development of visual-motor coordination, reading, speech perception, picture perception, illusions, 3-dimensional space, and causes and consequences of visual abnormalities.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310.

PSY 383. Memory
3 Credits
Examines facets of human memory from the information processing viewpoint, including encoding, storage, and retrieval and memory-aiding techniques.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 384. Perceptual and Cognitive Development
3 Credits
Development across the lifespan in perception, memory, attention, reasoning, language and academic skills.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 400. Research
1-3 Credits
Individual research projects supervised by a department faculty member. May be repeated for a maximum of 6 credits.
Prerequisites: PSY 310 and consent of instructor.

PSY 401. Directed Readings
1-3 Credits
May be repeated for a maximum of 6 credits.
Prerequisites: PSY 201G and consent of instructor.

PSY 402. Field Experience
1-3 Credits
Working with preschool, juvenile delinquent, handicapped, aged, convict, or mentally ill. Approximately five hours scheduled work per week per credit. May be repeated to 6 credits.
Prerequisites: 6 psychology credits and consent of instructor.

PSY 417V. Intercultural Relations
3 Credits
Exploration of cultural and subcultural differences from a psychological perspective. Emphasis on modern cultural settings. Issues may include: ethnocentrism, stereotyping, intercultural communication, culture shock, cultural differences, nonverbal behavior, conflict management, and developing intercultural interaction skills.
Prerequisite: PSY 201G.

PSY 430. Human-Computer Psychology
3 Credits
Theories, methodologies, and data from psychology applicable to interface design, with an emphasis on construction and application of conceptual psychological models.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 440. History and Systems of Psychology
3 Credits
History of scientific method emphasizing outstanding methodological problems of contemporary science, especially psychology. Also covers recent history of psychology and development of schools of psychology.
Prerequisites: PSY 201G, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 442. Thinking
3 Credits
Research and theory pertaining to human thinking and problem solving. Effective problem-solving methods and common obstacles to problem solving are analyzed.
Prerequisites: PSY 201G and PSY 310.

PSY 445. Clinical Psychology
3 Credits
Basic theories in clinical psychology and techniques of psychotherapy.
Prerequisites: PSY 201G, PSY 302, and one of: STAT 251G, STAT 271G, or A ST 311, and PSY 310 or consent of instructor.

PSY 450. Senior Thesis
3 Credits
A laboratory or field research project conducted under faculty supervision. Requires written research proposal, conduct of research, data analysis, and final written report. May be repeated for a maximum of 6 credits.
Prerequisites: PSY 310, 6 additional psychology credits, consent of supervising faculty member, and junior or above standing.

PSY 470. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

PSY 507. Quantitative Methods in Psychology I
3 Credits
Statistical concepts emphasizing distributions and methods most appropriate to the data, models, and theories in psychology. Emphasis on distributions, probability and basic inferential statistics in Psychological research.
Prerequisite(s): An elementary statistics course or consent of instructor.

PSY 508. Quantitative Methods in Psychology II
3 Credits
Statistical concepts emphasizing distributions and methods most appropriate to the data, models, and theories in psychology. Emphasis on Analysis of Variance (ANOVA) in Psychological research.
Prerequisite(s): PSY 507 or equivalent.

PSY 509. Quantitative Methods in Psychology III
3 Credits
Statistical concepts emphasizing distributions and methods most appropriate to the data, models, and theories in psychology. Emphasis on multiple regression in Psychological research.
Prerequisite(s): PSY 507 or equivalent.
PSY 510. Computer Methodology
3 Credits
Use of computers in psychological research with emphasis on developing experimental control programs.

PSY 520. Learning
3 Credits
Classical areas of learning, including instrumental and classical conditioning paradigms, habituation, reinforcement variables, stimulus generalization and transfer, and memory.

PSY 522. Sensation and Perception
3 Credits
Stimulus and decision variables in judging auditory and visual events. Topics include: detection of signals; signal intensity versus perceived strength; size, shape, and movement perception; reading and listening.

PSY 523. Methods in Cognitive Psychology
3 Credits
Experimental and correlational methodologies appropriate for investigating cognitive psychological theories and problems. Prerequisite(s): PSY 524 or consent of instructor.

PSY 524. Cognitive Psychology
3 Credits
Examines theoretical and empirical work on human cognition. Topics include: information processing theories, pattern recognition, memory, attention, language, problem solving, decision making, and reasoning.

PSY 525. Behavioral Neuroscience
3 Credits
The biological basis of behavior with an emphasis on human cognitive functioning.

PSY 527. Social Psychology
3 Credits
Current and traditional theories, research findings, and research methodologies of social psychology.

PSY 529. Methods in Social Psychology
3 Credits
Experimental, quasi-experimental, and correlational methodologies appropriate for investigating social psychological theories and problems. Prerequisite(s): Graduate student in psychology or consent of instructor.

PSY 530. Human-Computer Interaction
3 Credits
Issues associated with human-computer interface design. Concepts, methods, and data from HCI, cognitive psychology, human factors, artificial intelligence, and psycholinguistics that apply.

PSY 531. Human Memory
3 Credits
Current and traditional theories and research findings related to human memory.

PSY 535. Developmental Psychology
3 Credits
Examines theoretical and empirical work in lifespan developmental psychology, with an emphasis on perceptual and cognitive development, language development, and social cognitive development.

PSY 540. History and Systems of Psychology
3 Credits
History of scientific method emphasizing outstanding methodological problems of contemporary science, especially psychology. Covers recent history of psychology and development of schools of psychology.

PSY 543. Cognitive Neuroscience
3 Credits
Introduction to the study of the neural mechanisms underlying cognitive processes. Topics include relations between neural processes and attention, perception, memory, thinking and language; measuring change in electrical activity, blood flow, and metabolism in the brain during cognition; the problem of consciousness; and evolutionary perspectives.

PSY 547. Engineering Psychology
3 Credits
Covers concepts, methods, and findings of human performance. Treats the human as a subsystem that receives, stores and processes information, makes decisions, and acts within a human-machine environment system.

PSY 550. Teaching of Psychology
3 Credits
This class serves both new and experienced teachers. It will help new teachers design and conduct a successful course and help experienced teachers improve their teaching.

PSY 570. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes.

PSY 590. Research Seminar in Psychology
1 Credit (1)
Presentations on research by students, faculty, and guest speakers. May be repeated for credit.

PSY 598. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. May be repeated for credit.

PSY 599. Master's Thesis
15 Credits
Thesis.

PSY 600. Doctoral Research
1-15 Credits
This course number is used for assigning credit for research performed prior to successful completion of the doctoral qualifying examination.

PSY 698. Special Research Programs
1-3 Credits
Individual investigations either analytical or experimental. May be repeated for credit.

PSY 700. Doctoral Dissertation
15 Credits
Dissertation.

RADT-Radiologic Technology (RADT)

RADT 100. Introduction to Radiologic Technology and Patient Care
2 Credits
Overview of the profession, including ethics, terminology, and basic radiation protection. Addresses basic and specialized procedures and topics related to the care of the patient. Restricted to: Community Colleges only. Restricted to Majors.

RADT 101. Radiographic Positioning I
4 Credits (2+6P)
Covers radiographic procedure and positioning concepts, techniques, terminology, and mechanics related to the thorax, abdomen, extremities, spine and pelvis. Includes positioning lab and clinical observation.
RADT 102. Radiographic Positioning II
4 Credits (2+6P)
Continuation of RADT 101. Includes skull, gastrointestinal, urinary, reproductive, biliary systems, and more advanced skeletal positions. Includes positioning lab and clinical observation. Restricted to: Community Colleges only. Restricted to Majors.
Prerequisite: RADT 101.

RADT 103. Introduction to Radiographic Imaging
3 Credits (2+2P)
Provides the student with an in-depth knowledge of radiographic exposure technique and the factors affecting radiographic film quality. Includes lab experiments. Restricted to majors.

RADT 104. Special Radiologic Modalities
2 Credits
Discussion of various special procedures used in medical imaging such as, angiography, ultrasound, computerized tomography, magnetic resonance imaging, digital imaging, nuclear medicine, radiation therapy, etc. Includes guest lectures and field trips.
Prerequisite: RADT 103.

RADT 105. Radiographic Physics and Equipment
3 Credits
Fundamentals of rad physics. Includes electromagnetism, x-ray production and interactions, x-ray circuitry, tubes, grids, screens, AES, fluoroscopic and portable units, beam restricting devices, calibration and quality assurance/control. Overview of mammography, US, CT, MRI, and digital radiography. Restricted to: Community Colleges only. Restricted to Majors.
Prerequisite: RADT 103 or consent of instructor.

RADT 110. Radiographic Pathology
1 Credit
Overview of pathology demonstrated by radiographic procedures. Restricted to majors.
Prerequisite: RADT 154.

RADT 154. Radiographic Anatomy and Physiology
3 Credits
Basic A&P for radiographic application. Includes a systems approach to body structures and organs as they relate to anatomical projections, radiographic identification, and various imaging modalities. Restricted to: RADT majors. Restricted to: Community Colleges only.
Prerequisite(s): AHS 153 or AHS 140 or BIOL 225 or BIOL 154, or consent of instructor.

RADT 156. Independent Study
1-6 Credits
Individual studies/research on topics related to the radiological sciences. May be repeated for a maximum of 6 credits. Restricted to: Community Colleges only.
Prerequisite: RADT 202.

RADT 200. Radiation Biology and Protection
2 Credits
Biological effects of ionizing radiation on cells and tissues. Includes radiation measurements, policies and protection measures for self, patients, and others. Restricted to majors. Restricted to: Community Colleges only.
Prerequisite(s): RADT 103.

RADT 201. Clinical Education I
9 Credits
Supervised practice in a radiology department under direct supervision of a registered technician. Includes film critiques. Community Colleges Only. Restricted to: RADT, OERT majors. Restricted to Community Colleges campuses only.
Prerequisite(s): RADT 105.

RADT 202. Clinical Education II
12 Credits
Continuation of RADT 201. Student will work under indirect supervision of registered personnel. Restricted to: RADT, OERT majors. Restricted to Community Colleges campuses only.
Prerequisite(s): OERT 202.

RADT 203. Clinical Education III
11 Credits
Continuation of RADT 202. Restricted to: RADT, OERT majors. Restricted to Community Colleges campuses only.
Prerequisite(s): OERT 202.

RADT 205. Radiographic Image Critique
1 Credit
Review of radiographs produced in clinical settings to evaluate anatomy and technical issues. Restricted to majors.
Prerequisite: RADT 201.

RADT 206. Applied Radiographic Procedures
2 Credits (1+3P)
Advanced course which integrates the principles and techniques of radiologic technology. Restricted to majors.
Prerequisite: RADT 202.

RADT 207. Cross Sectional Anatomy for Medical Imaging
3 Credits
Anatomic relationships that are present under various sectional orientations as depicted by computed tomography or magnetic resonance imaging. May be repeated up to 3 credits. Restricted to: CTOM or RADT majors. Restricted to Community Colleges campuses only.

RADT 208. Clinical I (Computed Tomography)
3 Credits
A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. Direct supervision is provided by the clinic professional. May be repeated up to 3 credits. Restricted to: CTOM or RADT majors. Restricted to Community Colleges campuses only.

RADT 209. Clinical II (Computed Tomography)
3 Credits
A health-related work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. Direct supervision is provided by the clinic professional. (Capstone Course). May be repeated up to 3 credits. Restricted to: CTOM or RADT majors. Restricted to Community Colleges campuses only.
RDG-READING (RDG)

RDG 350. Teaching and Learning Reading and Writing
3 Credits (2+2P)
The foundation of this course is on understanding the reading process including the relationship between reading, writing, listening, and speaking; individual needs and abilities in reading instruction; and how to organize classrooms and select materials to support literacy development. Concepts of phonemic awareness, phonic instruction, vocabulary development, fluency and comprehension are integrated with the developmentally appropriate use of authentic assessment techniques, language/literacy immersion, and multicultural children's literature. Crosslisted with: RDG 360
Prerequisite(s): ECED 235.
Corequisite(s): ECED 440, ECED 455, ECED 329.

RDG 360. Elementary School Literacy I
3 Credits (2+2P)
Reading development, curriculum, and instruction in the elementary grades. Required of all elementary education majors as a prerequisite to student teaching. Same as RDG 560 with differentiated assignments for graduate students.
Corequisites: ECED 450, EDUC 451, and EDUC 452 (Block A courses).

RDG 361. Elementary School Literacy II
3 Credits (2+2P)
Reading development in curriculum and instruction with assessment and evaluation in the elementary grades (K-8). Same as RDG 561 with differentiated assignments for graduate students.
Prerequisite: RDG 360.
Corequisites: EDUC 453, EDUC 454, and EDUC 455 (Block B courses).

RDG 371. Instruction for Special Reading Needs
3 Credits
Emphasizes appropriate techniques for teaching reading to learners with special needs. Cannot substitute for RDG 361.
Prerequisites: RDG 356 or RDG 360 and RDG 361.

RDG 395. Special Topics
1-3 Credits
Each course will be identified by a qualifying subtitle. A maximum of 3 credits in any one semester and a grand total of 6 credits.

RDG 414. Content Area Literacy
3 Credits (2+2P)
Surveys integrated reading/writing/discursive practices in middle/secondary content areas. Same as RDG 514.

RDG 510. Adult and Family Literacy
3 Credits
Principles, practices, and instructional materials for adult and family literacy. Same as EDUC 506.

RDG 511. Literacy Assessment and Evaluation
3 Credits
Theoretical and practical aspects of using formal and informal assessment and evaluation procedures in literacy curriculum and instruction. Same as EDUC 511.

RDG 514. Content Area Literacy
3 Credits
Surveys integrated reading/writing/discursive practices in middle/secondary content areas. Same as RDG 314.

RDG 522. Language and Literacy Acquisition
3 Credits
Framework and strategies of language and literacy acquisition with attention to bilingual learners and the interrelationship among reading, writing, and oral language. Same as BIL 522, RDG 422.

RDG 525. Pedagogy and Theory of Literature for Adolescents
3 Credits
This course provides an in-depth exploration of pedagogy and theory related to literature for adolescents.
Prerequisite(s): Graduate Standing.

RDG 530. Sociopsycholinguistics of Reading
3 Credits
Examines current research on reading process, learning to read, and teaching children to read and evaluates current programs and materials.

RDG 536. Special Studies in Literacy
1-6 Credits
Each study will be designated by a qualifying subtitle. Same as RDG 636.

RDG 551. Literacy Development in Early Childhood
3 Credits
Advanced theory, research, and practice relating to early childhood reading. Same as RDG 351.

RDG 555. Introduction to Instructional Leadership for Literacy Educators
3 Credits
Three credit course will introduce students to the roles and responsibilities of literacy specialists in the K-12 school setting.
Prerequisite(s): Graduate standing, RDG 511 & RDG 530.

RDG 560. Elementary School Literacy I
3 Credits (2+2P)
Reading development, curriculum, and instruction in the elementary grades. Same as RDG 360 with differentiated assignments for graduate students.
Corequisites: ECED 550, EDUC 551, and EDUC 552 (block A course).

RDG 561. Elementary School Literacy II
3 Credits (2+2P)
Reading development in curriculum and instruction with assessment and evaluation in the elementary grades (K-8). Same as RDG 361 with differentiated assignments for graduate students.
Prerequisite: RDG 560.
Corequisites: EDUC 553, EDUC 554, and EDUC 555 (block B course).

RDG 585. Practicum in Literacy Education
1-6 Credits
Supervised laboratory experience with children with reading difficulties. The student implements a program of specific procedures to aid the disabled reader.
Prerequisite: RDG 511.

RDG 587. Pedagogy of TESOL
3 Credits
Overview of approaches that provide for interactive, culturally responsive pedagogy for students acquiring English. Emphasis on development of ESL literacy. Appropriate for public school and adult educators. Same as EDUC 587.

RDG 598. Selected Topics in Literacy
1-6 Credits
Offered under different subtitles in the Schedule of Classes. Same as RDG 698 with differentiated subjects for doctoral students.
RDG 600. Doctoral Research in Literacy
1-15 Credits
Research on topic of interest.

RDG 605. Independent Study Topics in Reading
1-6 Credits
A problem and seminar course for those pursuing an advanced degree. Each course will have an appropriate subtitle.

RDG 608. Critical Issues in Literacy Education
3 Credits
Critical issues from historical to current perspectives.

RDG 621. Literacy/Bilingual Assessment and Evaluation
3 Credits
Same as BIL 621.

RDG 630. Ethnography of Reading and Writing
3 Credits
Covers the dynamics of data interpretation and critical analysis in the study of literacy.

RDG 633. Praxis and Reflexivity
3 Credits
Same as BIL 633, ECED 633, EDLT 633, EDUC 633.

RDG 636. Special Studies in Literacy
1-6 Credits
Offered under different subtitles in the Schedule of Classes. Same as RDG 536 with differentiated assignments for doctoral students.

RDG 639. Multiculturalism, Literature, and Inquiry
3 Credits
Advanced exploration and examination of critical multicultural language education vis-a-vis children's adolescent, young adult, and adult literature, with an eye toward problematizing assumptions about literacy, articulating issues of social justice and enacting transactive, transformative pedagogy. Same as BIL 639.

RDG 640. Higher Education Teaching Apprenticeship
1-6 Credits
Instructor apprenticeship in teaching university-level literacy-related classes. Each course should bear a qualifying subtitle. Maximum of 6 credits per semester and a maximum of 6 credits.

RDG 685. Advanced Internship K-12 Literacy
3 Credits
Advanced internship in a professional position/research/application within K-12 schools and classes. Restricted to doctoral-level students of any major. Same as BIL 685.

RESP - RESPIRATORY THERAPY (RESP)

RESP 110. Respiratory Therapy I
3 Credits
Introduction to basic respiratory care techniques. Includes history, professional organizations, medical gas administration, oxygen therapy, cardiopulmonary AP, patient assessments, and medical terminology. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to DA-RESP-AA majors.

RESP 110 L. Respiratory Therapy I Lab
2 Credits
Laboratory practice of basic respiratory care procedures. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to DA-RESP-AA majors.

RESP 115. Respiratory Therapy Pharmacology
3 Credits
Concepts of physics as they apply to the physiology of the lungs. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to DA-RESP-AA majors.

RESP 120. Respiratory Therapy II
4 Credits
Advanced respiratory care techniques. Emphasis on airway management, aerosol treatment, chest physiotherapy, pharmacology, posture pressure breathing, and pulmonary rehabilitation. Requires a C or better to remain in program. May be repeated up to 4 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): Admission to program and RESP 110.
Corequisite(s): RESP 120 L.

RESP 120 L. Respiratory Therapy II Lab
2 Credits
Continuation of lab practices and procedures learned in RESP 120, Respiratory Care II, using equipment and simulations. Requires a C or better to remain in program. Corequisite(s): RESP 120. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program, RESP 110, RESP 110L and RESP 112.

RESP 124. Respiratory Therapy II Clinical
3 Credits
Supervised practice and application in a hospital setting. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program, RESP 110, RESP 110L and RESP 112.
Corequisite(s): RESP 120 and RESP 120L.

RESP 155. Respiratory Therapy Special Topics
1-4 Credits
Topics to be announced in the Schedule of Classes. May be repeated for a maximum of 10 credits. Consent of instructor required. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program.

RDG 698. Selected Topics in Literacy
1-6 Credits
Offered under various subtitles that indicate the subject matter. Same as RDG 598.

RDG 699. Research Project
1-15 Credits
Offered primarily for those pursuing the research requirement for the Ed.S. degree. Each research project will be designated by a qualifying subtitle.
RESP 210. Respiratory Therapy III
2 Credits
Introduction to adult, mechanical, neonatal ventilator theory and concepts of critical care medicine. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program, and RESP 115, RESP 120, RESP 120L, and RESP 124.
Corequisite(s): RESP 210L.
RESP 210 L. Respiratory Therapy III Lab
2 Credits
Advanced practice procedures using mechanical ventilation devices. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program, and RESP 115, RESP 120, RESP 120 L, and RESP 124.
Corequisite(s): RESP 210.
RESP 224. Respiratory Therapy IV Clinical
3 Credits
Continuation of RESP 124. Emphasis on mechanical ventilators. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program, and RESP 115, RESP 120, RESP 120 L, and RESP 124.
Corequisite(s): RESP 220.
RESP 230. Respiratory Therapy V
3 Credits
Continuation of RESP 215. Emphasis on special modalities. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to DA-RESP-AA majors.
RESP 230 L. Respiratory Therapy V Lab
2 Credits
Advanced practice and procedures of respiratory care. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to DA-RESP-AA majors.
RESP 233. Respiratory Therapy Cardiopulmonary
2 Credits
Concepts of physics as they apply to the physiology of the lung. Emphasis on laws pertaining to gas flow, humidity, and the mechanics of the breathing process. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to DA-RESP-AA majors.
RESP 234. Respiratory Therapy V Clinical
3 Credits
Continuation of RESP 214. Emphasis on special modalities. Restricted to: Community Colleges only. Restricted to DA-RESP-AA majors.
RESP 240. Respiratory Therapy VI
3 Credits
Advanced theory of hemodynamics, neonate, pediatric, and new specialties that apply to respiratory care. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program, and RESP 230, RESP 230L, RESP 233 and RESP 234.
Corequisite(s): RESP 240L.
RESP 240 L. Respiratory Therapy VI Lab
2 Credits
Advanced laboratory practice and procedures. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program, and RESP 230, RESP 230L, RESP 233 and RESP 234.
Corequisite(s): RESP 240.
RESP 242. Pediatric Advanced Life Support (PALS)
1 Credit
Etiology, diagnosis, clinical manifestations, and management of cardiopulmonary disorders related to respiratory care. Restricted to majors.
Corequisite: RESP 230.
RESP 243. Respiratory Therapy Neonatal Resuscitation
1 Credit
Advanced practice of the neonatal resuscitation and certification. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program and RESP 230, RESP 230L, RESP 233, and RESP 234.
Corequisite(s): RESP 240 and RESP 244.
RESP 244. Respiratory Therapy VI Clinical
3 Credits
Clinical experience on special modalities. Requires a C or better to remain in program. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program, and RESP 230, RESP 230L, RESP 233, and RESP 234.
Corequisite(s): RESP 240.
RESP 255. Respiratory Therapy Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 4 credits. Consent of instructor required. Restricted to: Community Colleges only. Restricted to RESP majors.
Prerequisite(s): Admission to program.
RGSC-RANGE SCIENCE (RGSC)
RGSC 150. Rangeland Science Profession
1 Credit
Introduction to scientific disciplines and career opportunities in rangeland science and management.
RGSC 250. Special Topics
1-4 Credits
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.
RGSC 294. Rangeland Resource Management
3 Credits
Overview of arid and semi-arid ecosystems in the US and abroad, rangeland plant physiology, ecology of rangeland plant communities and ecosystems, sustainable management for multiple uses including grazing livestock production, wildlife habitat, recreation and ecosystem services, and economics of rangeland-based enterprises. Restricted to: Main campus only.
RGSC 302V. Forestry and Society
3 Credits
Global study of the development and use of forest resources for production of wood, fuel, fiber, and food products. Climatic, edaphic, cultural, and economic influences on forests of the world evaluated. Same as HORT 302V.

RGSC 316. Rangeland Plants
3 Credits (2+3P)
Identification, classification, cultural uses, and economic importance of native and introduced rangeland plants.

RGSC 317. Rangeland Communities
3 Credits
Rangeland associations and communities, their plant species composition, and ecological factors affecting management of communities.

RGSC 318. Watershed Management
3 Credits (2+2P)
Management of rangeland and forest watersheds with emphasis on hydrologic cycle and land use effects on runoff and water quality.

RGSC 325. Rangeland Restoration Ecology
3 Credits
Principles and practices of vegetation management and ecological restoration. Course emphasizes problems associated with rangeland degradation, and implementation of rangeland restoration and improvements.
Prerequisite(s): Sophomore standing or consent of instructor.

RGSC 350. Special Topics
1-4 Credits
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester and a grand total of 9 credits.

RGSC 357. Grass Taxonomy and Identification
3 Credits (1+4P)
Taxonomy of grasses; grass anatomy, variation in reproductive structures, and identification of grasses by sight and through the use of dichotomous keys.
Prerequisite/Corequisite(s): Junior Standing or consent of the instructor.

RGSC 390. Internship
1-3 Credits
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 3 credits toward a degree. Graded S/U.
Prerequisite: consent of instructor.

RGSC 402. Seminar
1 Credit
Topics in range science. Oral and written reports.
Prerequisite: senior standing.

RGSC 406. Rangeland Team Competition
1 Credit
Description and characteristics of range plants. May be repeated for a maximum of 4 credits.

RGSC 440. Rangeland Resource Ecology
3 Credits
Prerequisite(s): Senior standing.

RGSC 440 L. Rangeland Resource Ecology Lab
1 Credit
Living and nonliving factors of the range environment, the life forms and role of range plants and animals on succession and interactions in range ecosystems. Corequisite(s): RGSC 440.

RGSC 448. Problems
1-4 Credits (1-4)
Individual investigation in a specific area of range science. Maximum of 4 credits per semester and a grand total of 6 credits. Consent of Instructor required.

RGSC 452. Vegetation Measurements for Rangeland Assessment
4 Credits (2+4P)
Sampling principles, sampling design, and measurement methods used to quantify vegetation attributes and to assess the structure and function of rangeland ecosystems. Laboratory emphasizes practical field techniques, quantitative analysis, and interpretation of results.
Prerequisite(s): RGSC 294 and A ST 311.

RGSC 458. Livestock Behavior, Welfare and Handling
3 Credits (2+3P)
Principles of animal behavior and evaluation of management practices on animal welfare in confined and rangeland livestock operations. Low stress livestock handling techniques. Design of livestock handling facilities. Crosslisted with: ANSC 458
Prerequisite(s): RGSC 294 or ANSC 100.

RGSC 460. Rangeland and Natural Resource Planning and Management
4 Credits (3+3P)
Planning and problem solving in rangeland and natural resource management. Public land planning and policy. Application of land management principles to resolve rangeland, riparian and habitat issues.
Prerequisite(s): Senior or graduate student standing.

RGSC 509. Approaches to Rangeland Research
3 Credits
Experimental design and statistical analysis of experimental results.
Prerequisite(s): A ST 505 or consent of instructor.

RGSC 513. Advanced Rangeland Ecology
3 Credits
Overview of the current state of knowledge in selected areas of rangeland ecology, with emphasis on currently developing ideas and issues relevant to rangeland management.
Prerequisite(s): RGSC 440 or equivalent.

RGSC 515. Graduate Seminar
1 Credit
Current topics. Graded S/U.

RGSC 516. Arid Land Management
3 Credits
Survey of seminal and current literature dealing with management of arid and semiarid lands including soil-plant-animal interactions, plant community ecology, arid land assessment methods, and arid land hydrology.

RGSC 518. Watershed Methods and Management
3 Credits
Management of rangeland and forest watersheds with emphasis on the hydrologic cycle and land use effects on runoff and water quality. Hydrologic monitoring methods problem sets required for graduate credit.
RGSC 520. Arid Land Plant Herbivore Interactions  
3 Credits  
Survey of seminal and current literature dealing with plant- and animal-related factors that influence herbivory patterns in arid landscapes. Although ungulate herbivory is a central focus of the course, the role of plant defenses in deterring both vertebrate and invertebrate herbivores is discussed in detail.

RGSC 525. Advanced Rangeland Restoration Ecology  
3 Credits  
Principles and practices of vegetation management and ecological restoration. Course emphasizes problems associated with rangeland degradation, and implementation of rangeland restoration and improvements. Research paper required for graduate credit.

RGSC 550. Special Topics  
1-4 Credits  
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

RGSC 557. Advanced Grass Taxonomy and Identification  
3 Credits  
Taxonomy of grasses; grass anatomy, variation in reproductive structures, and identification of grasses by sight and through the use of dichotomous keys. Additional writing and grass identification assignments are required for graduate credit.

RGSC 598. Special Research Program  
1-4 Credits  
Individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

RGSC 599. Master's Thesis  
15 Credits  

RGSC 600. Doctoral Research  
1-15 Credits  

RGSC 616. Advanced Arid Land Management  
3 Credits  
In depth discussion of seminal and current literature dealing with management of arid and semiarid lands including land tenure systems, soil-plant-animal interactions (emphasis on livestock grazing), plant community ecology and assessment methods, and arid land hydrology.

RGSC 620. Advanced Arid Land Plant-Herbivore Interactions  
3 Credits  
In depth discussion of seminal work dealing with plant- and animal-related factors that influence herbivory patterns in arid landscapes. Although ungulate herbivory is a central focus of the course, the role of plant defenses in deterring both vertebrate and invertebrate herbivores is discussed in detail.

RGSC 698. Special Research Programs  
1-4 Credits (1-4)  
Advanced individual investigations, either analytical or experimental. Maximum of 4 credits per semester. No more than 6 credits toward a degree. Consent of Instructor required.

RGSC 700. Doctoral Dissertation  
15 Credits  
RXPP 606. Pathophysiology for Psychologists I
3 Credits
This course is an introduction to human clinical physical assessment, history taking, charting, and laboratory testing and neuroimaging. An important emphasis is in functional neuroanatomy and diagnosis and assessment of neurological disorders; role of different components of human nervous system in health and disease; stroke, seizures, and movement disorders (chorea, athetosis, dystonias, dyskinesias, Parkinsonism, akathesia, iatrogenic neurological disorders). Doctorate in Psychology required. Restricted to: RXPP majors.

RXPP 607. Pathophysiology for Psychologists II
3 Credits
Physical assessment and pathophysiology of the cardiovascular system is studied in depth: structure and function of the heart and major blood vessels; innervation of the heart and vessels; electrocardiogram; components of blood; lymphatics; and physical assessment of cardiac function. The physical assessment and pathophysiology of eyes, ears, nose, and the immune system are studied in depth; anatomy and physiology of special senses; assessment of cranial nerves and sensory function; immune function and psychoimmunology. The physical examination and pathophysiology of the chest and pulmonary system and its relationship to the cardiac system is also studied. Doctorate in Psychology required. Restricted to: RXPP majors.

RXPP 608. PSYCH PATHOPHYS III
3 Credits
This course continues with an in-depth study of the chest and pulmonary system: pulmonary function and assessment; respiratory exchange and respiratory involvement in acid: base regulation, disorders of respiratory function. The physical assessment of pathophysiology of the gastrointestinal system is discussed in depth: digestion, absorption and excretion of drugs and nutrients from the GI system; disorders of GI function; hepatic function; innervation of GI tract; endocrine and exocrine functions of GI system; physical assessment of GI function. The functions and pathophysiology of the male and female reproductive system, endocrine system, and renal system are discussed as they relate to psychopharmacology. Doctorate of Psychology required. Restricted to: RXPP majors.

RXPP 609. Psychopharmacological Treatment in Special Populations I
3 Credits
The psychopharmacology of several special populations are discussed in detail in this course. Geriatric psychopharmacology includes: geriatric physiology; cardiac, renal, hepatic changes with aging; pharmacokinetics/dynamics in the elderly; cognition enhancers in Alzheimer’s and other dementias. Special treatment of personality disorders, eating disorders, the importance of racial, ethnic, and gender differences and culturally sensitive practice is presented with applications. Pain management psychopharmacology is over-viewed, including: pharmacology of opioid and non-opioid analgesics; pain syndromes; acute and chronic pain; headache; pharmacological and non-pharmacological approaches to pain management; pharmacology and actions of abused substances: acute effects, withdrawal, biochemistry of tolerance and dependence, brain central reward pathways. Doctorate in Psychology required. Restricted to: RXPP majors.

RXPP 610. Psychopharmacological Treatment in Special Populations II
3 Credits
The pathophysiology and treatment of substance use disorders from a biopsychosocial model is presented. Issues of medical comorbidity are studied: psychopharmacological treatment in the medically compromised patient, including case studies and review of comprehensive treatment models; mental disorders due to a general medical condition and/or adverse drug reactions; and referral practices to specialists. Diagnostic rating scales and psychiatric instruments of use to the prescribing psychologist are presented. The course ends with an integration of psychotherapy and pharmacotherapy, including ethical issues such as the right to refuse treatment, treatment compliance/adherence, risk management, and the role of the medical psychologist in the modern, integrated healthcare system. Doctorate in Psychology required. Restricted to: RXPP majors.

RXPP 611. Supervised Experience in Psychopharmacology I
1-3 Credits (1-3)
In this applied course, students employ their knowledge of psychopharmacology in treatment setting. Students will participate in the treatment of 50 patients for a minimum of 200 hours under the supervision of a physician. Number of credits taken to be determined in consultation with RXPP Training Director. Maximum of 3 credit hours required by degree program. Doctorate in Psychology required. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: RXPP majors. S/U Grading (S/U, Audit).

RXPP 612. Supervised Experience in Psychopharmacology II
1-3 Credits (1-3)
Continuation and completion of supervised experience in RXPP 611. Students will participate in the treatment of 50 additional patients for a minimum of 200 hours under the supervision of a physician. The RXPP 611/612 sequence must be completed no sooner than three months and no later than three years from initiation. Number of credit hours taken to be determined in consultation with RXPP Training Director. Maximum of 3 credit hours required by degree program. Doctorate in Psychology required. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: RXPP majors. S/U Grading (S/U, Audit).

S WK-SOCIAL WORK (S WK)
S WK 221G. Introduction to Social Welfare
3 Credits
A broad overview of current social problems and the role of social agencies and community members in addressing these problems.

S WK 251. Women’s Issues in Social Work
3 Credits
Examines gender-specific social problems and their identification and resolution through the use of social agencies and community resources. Community Colleges only.

S WK 253. Case Management
3 Credits
Introduction to case management for social- and human-services workers. Overview of typical duties and responsibilities of a case manager, including setting goals, performing assessments, writing progress notes, and linking clients with other resources in the community. Recommended for students considering a career in social work or human services. Community Colleges only.

Prerequisites: PSY 201G and S WK 221G.
S WK 300. Social Work Practice Skills
3 Credits
Introduction to generalist social work practice. Interpersonal skills, values, and ethics required in the helping relationship. Taught in a small-group format. May be repeated up to 3 credits. Restricted to: S WK majors. Restricted to Las Cruces campus only.

S WK 301. Orientation to Field
1 Credit
This course will provide an orientation to requirements for a social work field practicum and to establish the transfer of learning between classroom instruction and future practicum skill application. Restricted to: S WK majors.
Corequisite(s): S WK 300.

S WK 309. Sociocultural Concepts
3 Credits
Theoretical and sociohistorical perspectives on racism, sexism, ageism, heterosexism, classism, ableism, and other forms of discrimination and oppression. Cultural diversity, strengths, and Southwest and border issues are examined.

S WK 311. Human Behavior and the Social Environment I
3 Credits
Major theories of human behavior and the life span from conception to adolescence. Restricted to: S WK majors.
Corequisite(s): S WK 309.

S WK 312. Human Behavior and the Social Environment II
3 Credits
Continuation of S WK 311. Major theories of human behavior and the life span from young adulthood through old age. Restricted to: S WK majors.
Prerequisite(s): S WK 311.

S WK 313. Social Work Practice with Individuals
3 Credits
Generalist social work practice theory and skills in engagement, information gathering, assessments, planning, interventions, evaluation, and termination with individual client systems. Restricted to: S WK majors.
Prerequisite(s): S WK 300.

S WK 315. Social Work Practice with Families
3 Credits
Generalist social work practice theory and skills in engagement, information gathering, assessments, planning, interventions, evaluation, and termination with multicultural family systems. Restricted to: S WK majors.
Prerequisite(s): S WK 300.
Corequisite(s): S WK 313.

S WK 316. Social Work Research
3 Credits
This undergraduate course is designed to prepare students to be effective consumers of research and to evaluate their own practice. Students will learn to read, critically evaluate and use the research of others to select interventions that are based on evidence of effectiveness. Students will demonstrate the knowledge, values and skills to be critical consumers of research for effective and ethical practice as well as possess the basic skills necessary to evaluate their own social work professional practice. May be repeated up to 3 credits. Restricted to: Restricted to Social Work majors.
Prerequisite(s): STAT 251G, STAT 271G or A ST 251G.

S WK 331V. Introduction to Social Policy: History
3 Credits
Historical overview of the economic, political, and cultural impact on social welfare policy, institutions, and professions with international content.

S WK 401. Field Experience I
3 Credits
This course is a social work practicum at a university approved agency. This course focuses on generalist social work practice. At this level students are expected to assume substantive responsibility for carrying out social work activities at the beginning level of social work practice.
• Students are given the opportunity to observe and assume social work activities in direct and indirect practice under close supervision.
• These field work opportunities enable students to apply and integrate previous and current semester learning.
   - Opportunities will be available for students to develop knowledge of professional practice at multiple system levels and with a variety of cultural, ethnic, racial, gender and age groups.
   - Students in this Field Practicum Course are required to take a Field Seminar that will provide the students the opportunity to discuss the integration of academic and practice experience learning. Restricted to: S WK majors. S/U Grading (S/U, Audit).
Corequisite(s): S WK 412.

S WK 403. Social Work Practicum II
3 Credits
This course is a social work practicum at a university approved agency. This course focuses on generalist social work practice. At this level students are expected to assume substantive responsibility for carrying out social work activities at the beginning level of social work practice.
• Students are given the opportunity to observe and assume social work activities in direct and indirect practice under close supervision.
• These field work opportunities enable students to apply and integrate previous and current semester learning.
   - Opportunities will be available for students to develop knowledge of professional practice at multiple system levels and with a variety of cultural, ethnic, racial, gender and age groups.
   - Students in this Field Practicum Course are required to take a Field Seminar that will provide the students the opportunity to discuss the integration of academic and practice experience learning. Restricted to: S WK majors.
Corequisite(s): SWK 419.

S WK 405. Service Learning
3 Credits
This course introduces students to field work as an essential component of social work education. Students are required to provide a minimum of 40 hours of service to a human services agency. This course will focus on the connection between coursework, field work, the NASW Code of Ethics and skills needed to work with people.
Prerequisite(s): S WK 301, S WK 313.

S WK 412. Practicum Seminar I
3 Credits
This practicum seminar course must be taken with SWK 401 to provide students who are enrolled in the field practicum course the opportunity to discuss and reflect on social work knowledge, values and skills as they interact with clients in their practicum placement.
• Students will have an opportunity to present a case and discuss how they are able to integrate the nine social work competencies.
• The seminar will provide opportunities to integrate previous and current semester learning.
Corequisite(s): S WK 401.
S WK 415. Generalist Social Work Practice with Organizations and Communities
3 Credits
This course focuses on generalist social work values, knowledge and skills regarding practice with larger systems. Course content will include theories of community and organizational assessment and intervention. Strategies for advocacy and change, leadership for community and organizational change. May be repeated up to 3 credits.
Prerequisite(s): S WK 300, S WK 313, S WK 315.
Corequisite(s): S WK 417.

S WK 416. Generalist Social Work Practice with Groups
3 Credits
Generalist social work practice skills with group client systems focusing on the planned change process and the empowerment of oppressed populations. May be repeated up to 3 credits. Restricted to: S WK majors.
Prerequisite(s): SWK 415.

3 Credits
Policy practice related to the formation of current social welfare policies that promote social and economic justice. Emphasis is on the development and influences of social policy, policy analysis, and the policy change process. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: S WK majors.

S WK 418. Professionalism in the Field of Social Work
3 Credits
This course is designed to prepare you to develop professional skills, knowledge, awareness and boundaries as a social worker as you get ready to enter the field practicum. May be repeated up to 3 credits. Restricted to: S WK majors.
Corequisite(s): S WK 419.

S WK 419. Practicum Seminar II
3 Credits
This practicum seminar course must be taken with S WK 403 to provide students who are enrolled in the field practicum course the opportunity to discuss and reflect on social work knowledge, values and skills as they interact with clients in their practicum placement. • Students will have an opportunity to present a case and discuss how they are able to integrate the nine social work competencies. • The seminar will provide opportunities to integrate previous and current semester learning. May be repeated up to 3 credits. Restricted to: S WK majors.
Corequisite(s): S WK 403.

S WK 443. Family and Child Welfare Practice
3 Credits
Current issues and interventions in child protection, foster care, family preservation and support, family reunification, adoption and permanency planning. Cannot receive credit for S WK 443 and M SW 543.

S WK 447. Identifying Mental Health Concerns
3 Credits
This course is designed to advance students' knowledge and professional skills for addressing mental health concerns in social work practice at the bachelor's level. Students will learn to identify major mental health concerns across the life span. Culturally competent practices are considered in regard to various mental health concerns. Restricted to: SWK majors.

S WK 449. Independent Study
1-6 Credits
Individual studies directed by consenting faculty with the prior approval of the department head.
Prerequisite: majors or consent of instructor.

S WK 490. Family and Child Welfare Policy
3 Credits
This course is designed to provide students with an understanding of the history and evolution of child welfare policies, initiatives and factors that influence advocacy and practices within the child welfare system. Child welfare policies and services specific to the state of New Mexico are infused throughout the course. Taught with MSW 590. Students enrolled in S WK 490 will not receive credit MSW 590. Students enrolled in S WK 490 will not receive credit MSW 590.

S WK 497. Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be used as a mandatory practice elective. Restricted to: S WK majors.
Prerequisite(s): Junior or above standing, majors or consent of instructor.

SMET-SCIENCE/MATH/ENG/TECH (SMET)

SMET 101. Introduction to Science, Mathematics, Engineering, and Technology
1 Credit
An introductory course for science, mathematics, engineering, or technology students, emphasizing introduction to their disciplines. Development of critical thinking and academic success skills for technical disciplines, as well as degree planning for the major. Consent of Instructor required.

SMET 102. Introduction to Engineering Design
1 Credit
Fundamental concepts of engineering design developed through analysis of case studies and hands-on design projects. Consent of instructor required.

SMET 201. Research for Visiting Community College Students
1 Credit
Research experience for visiting community college students. Consent of instructor required. Restricted to: Main campus only.

SMET 301. Undergraduate Research Assistantship
0.5 Credits
Undergraduate research experience in science, technology, engineering, and mathematics Consent of instructor required. Graded: S/U.

SOC-SOCIOLOGY (SOC)

SOC 101G. Introductory Sociology
3 Credits
Introduction to social theory, research, methods of analysis, contemporary issues in historical and cross-cultural contexts. Covers groups, deviance, inequality, family, gender, social change, and collective behavior.
SOC 201G. Contemporary Social Problems
3 Credits
Introduction to the fundamentals of social analysis through the analysis of contemporary American social problems. Emphasis on methods of analysis and cross-national comparisons showing that the social problems studied are common to all societies. Covers racism, violence, poverty, crime, health care, and substance abuse.

SOC 258. Current Issues in Marriage and Family
3 Credits
Examination of contemporary American family life, including courtship, marriage, divorce, and child rearing. Community Colleges only.

SOC 262. Issues in Death and Dying
3 Credits
Major personal and social issues related to the process of dying in our culture. Community Colleges only.

SOC 263. Human Sexuality
3 Credits
Introduction to cultural and personal aspects of human intimacy, sexuality and the life cycle, sexual variation, and sexually transmitted diseases. Community Colleges only.

SOC 269. Sexualities and Society
3 Credits
Examines various sexualities from a sociological perspective. Topics include sexual identity, intimate relationships, sexual desire, sexual behavior, the sex industry, and the politics of sexuality. Discussion of selected topics is grounded in both macro and micro sociological viewpoints. Restricted to: Main campus only.

SOC 273. Sex and Gender
3 Credits
Analysis of changes, behaviors, and stereotypes of women and men in contemporary Western societies. Same as W S 273.

SOC 330V. Introduction to Religious Studies
3 Credits
Provides an overview of old and new methods and theories for the study of religion. Exposure to the ways groups of people in diverse cultural systems construct and change their religious traditions to serve practical and meaningful ends. Same as ANTH 330V and HIST 330V.

SOC 336V. Sociology of Pop Culture
3 Credits
This course will provide students with a sociological look at creation, distribution, and effects of popular culture that have shaped, preserved, and conveyed distorted images of social class, race, gender and history to unwary consumers.

SOC 350. Sociological Foundations
3 Credits
Focus is on becoming a sociologist including career opportunities, thinking critically about society, and conducting sociological inquiry. Emphasis is on identifying and using resources available to sociologists, communication skills for sociologists and acquisition of basic analytic techniques. Restricted to BA Sociology majors.
Prerequisite(s): SOC 101G or consent of instructor.

SOC 351. Sociological Theory
3 Credits
Analysis of the main historical themes underlying contemporary sociological theory. May be repeated up to 3 credits.
Prerequisite(s): SOC 101G.

SOC 352. Social Research: Methods
3 Credits
An introduction to research design and data collection strategies commonly employed in the social sciences. Topics include experiments, survey research and various other quantitative and qualitative methods. May be repeated up to 3 credits.
Prerequisite(s): SOC 101G.

SOC 353. Sociological Research: Analysis
3 Credits
Elementary data analysis class emphasizing descriptive and inferential statistical techniques commonly employed in the social sciences. Topics range from one variable analysis through regression and correlation analysis of two variables. May be repeated up to 3 credits.
Prerequisite(s): SOC 101G.

SOC 357. Gender and Society
3 Credits
Overview of issues related to gender, including how gender is constructed and reproduced in our society. Gender is examined from social psychological and institutional perspectives. Same as W S 357.

SOC 359. Sociology of the Family
3 Credits
Family patterns, dynamics, and processes in North American and other contemporary families. Emphasis on diversity.

SOC 360V. Introduction to Population Studies
3 Credits
Determinants and consequences of changes in fertility, mortality and migration patterns. Introduction to techniques of demographic analysis. Focus on U.S. and world population issues and their relation to social, cultural, and economic systems.

SOC 361V. Social Issues in the Rural Americas
3 Credits
Same as ANTH 361V.

3 Credits
Identification and analysis of the causes and consequences of social issues in urban environments including poverty, crime, terrorism, urban social policy, suburban flight, disinvestment, and deindustrialization. Special emphasis on global forces affecting global urban environments around the world.

SOC 365. Environmental Sociology
3 Credits
Societal responses to environmental problems including social adjustments to natural and technological hazards, socio-cultural aspects of technological risk and impact assessment, and emergence of environmental social movements.

SOC 371. Race and Ethnic Relations
3 Credits
Dynamics of racial prejudice and patterns of racial and ethnic interaction in the United States.

SOC 374V. Comparative Family Systems
3 Credits
A comparative analysis of family forms and characteristics in various societies. An examination of the diversity of family practices among ethnic and class groups in the United States. Same as W S 374G.
SOC 375. Social Inequality
3 Credits
Analysis of the social distinctions arising from sex, age, occupation, and ethnicity. Emphasis on indicators of social class and patterns of social mobility.

SOC 376V. Social Change
3 Credits
Explanations of autonomous and directed social change as occurring at the individual, organizational, societal, and international levels. Case studies from around the world.

SOC 381. Individual and Society
3 Credits
Ways people influence each other and the mutual interaction of the individual and society. Topics include attitudes, attitude change, conformity, liking and friendship patterns.

SOC 390. Sociology of Childhood
3 Credits
This course examines theories, methods, and empirical research in several areas of the sociology of childhood. Major themes are: (1) how social structure constrains children's lives, (2) how children negotiate, share, and create culture, and (3) how children's experiences vary within and across societies.

SOC 391. Crime and Society
3 Credits
Analysis of crime at the interpersonal, organizational, and social structure levels in society. Exploration of contemporary images of crime in mass media. Examination of connections between race, class, gender, and crime in U.S. society.

SOC 392. Juvenile Delinquency
3 Credits
Nature, extent, and causes of juvenile delinquency; juvenile justice; modern methods of treatment; programs of prevention.

SOC 393. Youth and Society
3 Credits
Comparative historical analysis of social, economic and cultural forces affecting young people. Emphasis on organizational and institutional effects on the well being of children and young adults.

SOC 394V. Sports and Society: A Global Perspective
3 Credits
A critical examination of sports in a global context, emphasizing the social and cultural factors that shape the world of sports and the consequences of sports for societies. Course examines issues of social inequality, violence, media and corporate influence, religion and sports, and the student-athlete experience.

SOC 401. Introduction to Sociological Practice
3 Credits
The application of sociological theory and research method. May be taught as service learning course. May be repeated up to 3 credits. Restricted to: SOC majors.
Prerequisite(s): SOC 101G, senior standing or consent of instructor.

SOC 409. COMMUNITY DEVELOPMENT
3 Credits
This is a holistic view of community development with an emphasis upon how economic development efforts can become more inclusive and sustainable. Topics include examining what 'community' means, community development versus economic development, and alternative economic activities.
Prerequisite(s): SOC 101G.

SOC 430. Social Movement Theory
3 Credits
Overview of key theories in past and present social movement research. Includes a focus on rational or spontaneous choice theories, resource mobilization, and new social movement theories. Theoretical perspectives focus on analyses of case studies including women's movement, civil rights, and environmental movements.

SOC 448. Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

SOC 449. Directed Readings
1-3 Credits
Individual readings or research for either majors or nonmajors. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

SOC 457. Gender, Science, and Technology
3 Credits
How gender, science and technology are interrelated social constructions. Science and technology are examined as social institutions. Explanations for different rates of participation based on race, class and gender are explored. Same as: W S 467.

SOC 458V. Comparative Global Family Systems
3 Credits
The study of families around the world. The comparison will include how capitalism and power differentials have affected the course of family history, gender relations, and family life today.

SOC 459. Advanced Issues in Sex and Gender
3 Credits
Comprehensive examination of current gender identity and gender stratification issues. Same as W S 459.

SOC 460. Sociology of Religion
3 Credits
Examination of religion in its social context to understand the intricate relations of religion, culture and U.S. society. Recommended preparatory courses: SOC 101G, SOC 273, SOC 376, ANTH 125G.

SOC 464. Human Society and the Environment
3 Credits
This course explores the relationship between human societies and the natural environment, with an emphasis on both sustainable human and environmental relationships.
Prerequisite(s): SOC 101G.

SOC 465V. Environmental Sociology
3 Credits
Advanced examination of societal responses to environmental problems including social adjustments to natural and technological hazards, sociocultural aspects of technological risk and impact assessment, and emergence of environmental social movements.

SOC 470. Sociology of Latinos/as in the United States
3 Credits
In-depth examination and comparative analysis of political and economic issues affecting Latino/a culture and behavior. Includes the Chicano/a and larger Latino/a movements, the border, immigration, language policies, education, religion, labor, and Latina women's issues. Recommended preparatory courses: SOC 101G, SOC 270, SOC 371, or HIST 367.
SOC 471. Advanced Race and Ethnic Relations
3 Credits
In-depth analysis of the dynamics of prejudice, discrimination, and patterns of intergroup interaction in the U.S.

SOC 473. INTERNATIONAL MIGRATION
3 Credits
This course examines international migration as a social process, focusing on the American experience. Students will examine historical and comparative literature on immigration that puts contemporary questions about policy and immigrant assimilation into a broader sociological perspective.
Prerequisite(s): SOC 101G.

SOC 474. Sociology of Organizations
3 Credits
Sociological models of formal organizations relevant to business, education, government, healthcare, military, and religion. Focus on internal organizational structure and dynamics plus the reciprocal relationship between organizations and their operating environment.

SOC 477. Sociology of Education
3 Credits
Socio-political and economic factors that shape the structure and operation of educational institutions in modern complex societies. Socio-historical development of the school as a microcosm of society, with examples from American and other school systems.

SOC 479. Sociology Perspectives on the U.S.-Mexico Border
3 Credits
Theoretical perspectives and current research on the U.S.-Mexico border region, including topics such as migration, identity, health, gender, and environment.

SOC 480. Diversity in Alternative Families
3 Credits
Cross-cultural examination of diversity among and within families: analysis of family diversity includes consideration of the theoretical frameworks, ideological commitments, personal experiences, and methodological approaches to examine family life.

SOC 481. Social Deviance
3 Credits
Theoretical approaches to the study of social deviance with emphasis on critical theories. Exploration of forms of deviance in society. Examination of social construction of deviance within mass media and systems of social control.

SOC 482. Advanced Individual and Society
3 Credits
Examines reciprocal relationship between individual and society. Topics include socialization, social influence and persuasion, group structure and performance, altruism, aggression, interpersonal attraction, group cohesion and conformity, and inter-group conflict.

SOC 486. Power and Politics in America
3 Credits
This course provides an introduction to the study of Political Sociology with a focus on the United States. Political Sociology studies the social bases of politics and political systems and facilitates the understanding of the processes and consequences of power distributions in the United States.
Prerequisite(s): SOC 101G.

SOC 489. Globalization
3 Credits
Analysis of the globalization process. Covers theories of globalization, the global economy, political globalization, global culture, transnational social movements, transnational migration and world labor market, global cities, and local-global linkages. Same as GOVT 469.

SOC 491. Criminological Theory
3 Credits
Schools of thought, contrasting approaches, and contemporary efforts in theory construction relevant to adult and juvenile offenders.

SOC 496. Internship
1-6 Credits
Supervised participation in an appropriate community setting. Taught with SOC 596. May be repeated up to 9 credits. Consent of Instructor required. S/U Grading (S/U, Audit).

SOC 501. Perspectives on Sociology
3 Credits
Overview of the field, subfields, and faculty available for students at NMSU. Emphasis on theories and research currently being developed in the Sociology program. Graded: S/U. May be repeated up to 3 credits. Restricted to: Soc majors. S/U Grading (S/U, Audit).

SOC 509. Advanced Seminar in Community Development
3 Credits
This is in an advanced seminar addressing a holistic view of community development with an emphasis upon how economic development efforts can become more inclusive and sustainable.
Prerequisite(s): Graduate student standing.

SOC 530. Advanced Social Movement Theory
3 Credits
Overview of key theories in past and present social movement research. Topics include a focus on rational or spontaneous choice theories, resource mobilization, and new social movement theories. Theoretical perspectives focus on analysis of case studies including women's movement, civil rights, and environmental movements.

SOC 548. Graduate Special Topics
3 Credits
Specific subjects to be announced in the Schedule of Classes.

SOC 549. Special Research Problems
1-3 Credits
Individual analytic or experimental investigations. May be repeated for a maximum of 6 credits.
Prerequisite: consent of instructor.

SOC 551. Issues in Advanced Quantitative Analysis
3 Credits
Advanced methods of sociological analysis are examined in detail. Restricted to: SOC majors.

SOC 552. Seminar in Classical Social Theory
3 Credits
Analysis of classical social thought within the discipline. Restricted to: SOC majors.

SOC 553. Seminar in Sociological Research
3 Credits
Exploration of research methods, issues, and practical application. May be repeated up to 3 credits. Restricted to: Soc majors.

SOC 558. Seminar: Sociology of the Family
3 Credits
The family in various societies; evolution of the American family.
SOC 559. Graduate Seminar in Sex and Gender
3 Credits
Comprehensive examination of current gender identity and gender stratification issues. Same as W S 559.

SOC 560. Advanced Sociology of Religion
3 Credits
Examination of religion in its social context to understand the intricate relations of religion, culture and U.S. society.

SOC 564. Seminar in Human Society and the Environment
3 Credits
This is an advanced seminar exploring the relationship between human societies and the natural environment, with an emphasis on both sustainable human and environmental relationships.
Prerequisite(s): Graduate Student Status.

SOC 566. Advanced Environmental Sociology
3 Credits
Advanced examination of societal responses to environmental problems including social adjustments to natural and technological hazards, sociocultural aspects of technological risk and impact assessment, and emergence of environmental social movements.

SOC 569. Advanced Issues in Sexualities
3 Credits
Various issues in sexualities are addressed through a wide range of theoretical and empirical sociological literatures that involve quantitative and qualitative data. Advanced examination of the ways in which sexuality is constituted in local, cultural and institutional environments.

SOC 570. Advanced Sociology of Latinos/as in the United States
3 Credits
In-depth examination and comparative analysis of political and economic issues affecting Latino/a culture and behavior. Topics include the Chicano/a and larger Latina/o movements, the border, immigration, language policies, education, religion, labor and Latina women’s issues.

SOC 571. Advanced Race and Ethnic Relations
3 Credits
In-depth analysis of the dynamics of prejudice/discrimination and patterns of intergroup interaction in the U.S.

SOC 572. Advanced Sociology of Medical Ethics
3 Credits
Major issues in the roles and relationships of health care providers and consumers, problems in communication, malpractice, patients rights, and ethics. Taught with SOC 472 with additional work required at the graduate level.

SOC 574. Sociology of Organizations
3 Credits
Sociological models of formal organizations relevant to business, education, government, healthcare, military, and religion. Focus on internal organizational structure and dynamics plus the reciprocal relationship between organizations and their operating environment.

SOC 575. Graduate Social Stratification
3 Credits
Advanced examination of theories of stratification and current methods of stratification research. Focus on differences by ethnicity, race, class and gender.

SOC 577. Advanced Sociology of Education
3 Credits
Socio-political and economic factors that shape the structure and operation of educational institutions in modern complex societies. Socio-historical development of the school as a microcosm of society, with examples from American and other school systems.

SOC 578. Advanced Sociology of Development and the World System
3 Credits
Sociological approach to development and the global system. Theories of development, and underdevelopment; world poverty/inequality; Latin America; Africa and Asia in comparative perspectives; transnational borders/U.S.-Mexico border; current topics. Same as GOVT 577.

SOC 579. Advanced Sociological Perspectives on the U.S.-Mexico Border
3 Credits
Theoretical perspectives and current research on U.S.-Mexico border region, including migration, identity, health, gender, and environment.

SOC 580. Diversity in Alternative Families
3 Credits
Cross-cultural examination of diversity among and within families: analysis of family diversity includes consideration of the theoretical frameworks, ideological commitments, personal experiences, and methodological approaches to examine family life.

SOC 582. Individual and Society
3 Credits
Examines reciprocal relationship between individual and society. Topics include socialization, social influence and persuasion, group structure and performance, altruism, aggression, interpersonal attraction, group cohesion and conformity, and intergroup conflict.

SOC 583. Symbolic Interaction
3 Credits
Examination of the interaction of self and the social order including society as process, the negotiation of social order, identity as a social product, role taking and the situated self, the social construction of reality with an emphasis on phenomology and ethnomet hodology.

SOC 586. Advanced Seminar in Power and Politics in the United States
3 Credits
This is an advanced seminar addressing the study of Political Sociology with a focus on the United States. Political Sociology studies the social bases of politics and political systems. It facilitates an understanding of the processes and consequences of power distributions in the United States.
Prerequisite(s): Graduate student standing.

SOC 587. Advanced International Migration
3 Credits
This course examines international migration as a social process, focusing on the American experience. Students will examine historical and comparative literature on immigration that puts contemporary questions about policy and immigrant assimilation into a broader sociological perspective.
Prerequisite(s): Graduate student standing.

SOC 589. Advanced Issues in Globalization
3 Credits
Analysis of the globalization process. Covers theories of globalization; global economy; political globalization; global culture; transnational social movements; transnational migration and world labor market; global cities; local-global linkages. Same as GOVT 569.
SOC 596. Internship
1-6 Credits
Supervised participation in appropriate occupational setting. May be repeated for a maximum of 12 credits. Taught with SOC 496 with additional work required at the graduate level.

SOC 599. Master's Thesis
6 Credits
Thesis. Consent of instructor required. Restricted to: Main campus only. Restricted to SOC majors.

SOIL-SOIL (SOIL)

SOIL 200. Special Topics
1-4 Credits
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

SOIL 252. Soils
3 Credits
Origin, classification, morphology, and physical, chemical, and biological properties of soils.
Prerequisite: CHEM 111G and CHEM 112G.

SOIL 252 L. Soils Laboratory
1 Credit
Morphological, chemical, physical and biological properties of soil in the laboratory and field.
Corequisite: SOIL 252.

SOIL 257. Introduction to Weather Science
4 Credits (3+3P)
Introduction to Earth's atmosphere and the dynamic world of weather as it happens. Working with current meteorological data delivered via the Internet and coordinated with learning investigations keyed to the current weather; and via study of select archives. Consent of instructor required.
Crosslisted with: GEOG 257 and AGRO 257.

SOIL 300. Special Topics
1-4 Credits
Specific subjects and credits announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

SOIL 312. Soil Management and Fertility
3 Credits
Management, conservation, and fertility of soils; physical conditions affecting growth, nutrition, and plant production.
Prerequisite: SOIL 252.
Corequisite: SOIL 312L.

SOIL 312 L. Soil Management and Fertility Lab
1 Credit
Hands-on experience. Includes field trips, videos, calculations, visiting lecturers and other lab activities as possible.
Prerequisite: SOIL 252.
Corequisite: SOIL 312.

SOIL 350. Soils and Land Use
3 Credits (2+2P)
Relationship of soils to the limitations and potentials of land use. Emphasis on soil interpretations and soils as a resource in urban, rural, and recreational development. Same as PLAN 350.

SOIL 357. Climatology
3 Credits
Elements and controls of climate. Energy and hydrologic cycles, general circulation, climate classification, distribution of climate types, microscale effects, applications. Same as AGRO/GEOG 357.
Prerequisites: MATH 120.

SOIL 370. Environmental Soil Science
3 Credits
Continuation of SOIL 252 that emphasizes soil properties and processes that directly relate to environmental pollution problems. Same as E S 370.
Prerequisite: SOIL 252.

SOIL 391. Internship
1-6 Credits (1-6)
Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 6 credits toward a degree. Consent of Instructor required. S/U Grading (S/U, Audit).

SOIL 424. Soil Chemistry
3 Credits
Basic elements of soil chemistry including clay mineralogy, cation and anion exchange and the chemistry of problem (acid, saline and flooded) soils. Credit not given for both SOIL 424 and SOIL 479.
Prerequisite(s): SOIL 252L or CHEM 111G and 112G.

SOIL 447. Seminar
1 Credit
Organization, preparation, and presentation of current topics in agronomy, horticulture, and soil science. Same as AGRO/HORT 447.

SOIL 449. Special Problems
1-3 Credits
Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and a grand total of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

SOIL 450. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits towards a degree. May be repeated up to 9 credits. Consent of Instructor required.

SOIL 456. Irrigation and Drainage
3 Credits
Principles and practices required for irrigation to exist as a permanent economy. Equipment and methods for measurement and control of water.

SOIL 472. Soil Morphology and Classification
4 Credits (2+2P)
Terminology used to describe soils. Soil classification systems of the world with emphasis on systems used in the United States. Theory of classification and taxonomy as applied to soils. Same as GEOG 472.
Prerequisite: SOIL 252.

SOIL 476. Soil Microbiology
3 Credits
Nature and physiology of soil microorganisms, how they affect plant growth and recycle nutrients. Land farming, bioremediation and other environmental problems as influenced by soil microorganisms. SOIL 252 and BIOL 311 recommended. Same as BIOL 476.
SOIL 476 L. Soil Microbiology Laboratory  
1 Credit  
Enumeration of soil microorganisms, their activities, and transformations they mediate. Same as BIOL 476L.  
Prerequisites: SOIL 476 or concurrent enrollment.

SOIL 477. Environmental Soil Physics  
3 Credits  
A description of the physical characteristics of porous media including soil. Examination of processes describing the transport of water, chemicals, heat and gases through porous media with application to environmental quality, waste management, and crop production.

SOIL 477 L. Environmental Soil Physics Laboratory  
1 Credit  
Concurrent enrollment with SOIL 477 recommended. Hands on experience with techniques for characterizing soil physical properties such as particle size distribution, bulk density, water retention, hydraulic conductivity and solute transport. Demonstrations of field and laboratory techniques for measuring moisture content, soil water potential, gas/air flow and thermal conductivity.  
Prerequisite: SOIL 252.

SOIL 479. Environmental Soil Chemistry  
3 Credits  
Basic elements of soil chemistry including discussion of clay mineralogy, cation and anion exchange and the chemistry of problem (acid, saline and flooded) soils. Credit not given for both SOIL 424 and SOIL 479.  
Prerequisite(s): SOIL 252L or CHEM 111G and 112G.

SOIL 485. Materials from Biorenewable Resources  
3 Credits  
Types, sources, composition and properties of biomass. Production, processing, and applications of biomass materials with energy, water, cost, sustainability, and waste management considerations. Crosslisted with: AGRO 485, HORT 486, E S 485 and CHME 485.  
Prerequisite(s): CHEM 211 or CHEM 313 or permission of instructor.

SOIL 500. Special Topics  
1-4 Credits  
Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

SOIL 505. Research Orientation  
4 Credits (3+2P)  
Training in writing research proposals, presentation of research results, and interpretation of research results. Crosslisted with: AGRO 505 and HORT 505

SOIL 514. Soil-Plant Relationships  
3 Credits  
Physical, chemical, and biological soil environment as it affects plant and crop growth. Same as AGRO/HORT 514.  
Prerequisites: BIOL 314, SOIL 252.

SOIL 525. Scientific Writing- How to be a Productive and Effective Writer  
1-3 Credits (1-3)  
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review Crosslisted with: AGRO 525, AGRO 625, HORT 525, HORT 625, SOIL 625 and EPWS 525.

SOIL 590. Graduate Seminar  
1 Credit  
Current research discussions presented by master level graduate students. Not more than one credit toward the degree. Same as AGRO/HORT 590. Crosslisted with: AGRO 590 and HORT 590.

SOIL 596. Masters Proposal  
1 Credit  
Current research proposal written by masters level graduate students. Consent of Instructor required. Crosslisted with: AGRO 596, E S 596, GENE 596 and HORT 596. Restricted to: Masters HORT; Masters PLEN majors.  
Corequisite(s): Master level graduate students.

SOIL 597. University Teaching Experience  
1-3 Credits (1-3)  
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student’s lectures. Consent of instructor required. Crosslisted with: AGRO 597 and HORT 597

SOIL 598. Special Research Programs  
1-6 Credits  
Individual investigations, either analytical or experimental. Maximum of 6 credits per semester. No more than 9 credits toward a degree.

SOIL 600. Doctoral Research  
1-15 Credits  
Research.

SOIL 625. Scientific Writing- How to be a Productive and Effective Writer  
1-3 Credits (1-3)  
Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Students in the 625 course will be required to perform additional research than those students in the 525 cross-listing Crosslisted with: AGRO 525, HORT 525 and EPWS 525.

SOIL 630. Advanced Soil Classification  
3 Credits  
Philosophy and organization of various soil classification systems, some international in scope, with emphasis on the new USDA system and classroom and field experience in using this system.  
Prerequisite: SOIL 472 or consent of instructor.

SOIL 640. Advanced Soil Microbiology  
3 Credits  
Advanced topics in soil microbiology and biochemistry, including carbon cycling, nitrogen cycling, humus formation and nature, and microbial-plant root interactions. Consent of instructor required.

SOIL 650. Advanced Topics  
1-3 Credits  
Colloquium on contemporary topics associated with agriculture, environmental science and engineering. Multidisciplinary topics will be chosen to encourage participation of students from diverse disciplines. May be repeated for a maximum of 9 credits.  
Prerequisite: consent of instructor.
SOIL 655. Moisture Heat Contaminant Transport Modeling
3 Credits
Provides clear coverage of the basic principles of heat, moisture and contaminant transport through porous media, and a step-by-step guidance and hands on application on the use of some spreadsheet based and physically based one and two-dimensional transport models. A similar course does not exist in the college for students that can encourage them to pursue modeling as a means of solving vadose zone and groundwater contamination and remediation problems. Consent of instructor required. Pre/Corequisite(s): Graduate student with at least two 400.

SOIL 694. Doctoral Seminar
1 Credit
Current research discussions presented by doctoral level graduate students. Not more than 2 credits toward the degree. Same as AGRO 694. Prerequisite: doctoral level graduate students.

SOIL 696. Doctoral Proposal
1 Credit
Current research proposal written by doctoral level graduate students. Not more than 1 credit toward the degree. Same as AGRO 696. Prerequisite: doctoral level graduate students.

SOIL 697. University Teaching Experience
1-3 Credits (1-3)
Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ES course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student's lectures. Consent of instructor required. Crosslisted with: AGRO 697 and HORT 697

SOIL 698. Topics in Agronomy
1-6 Credits
Topics of current interest, designated by title and credit. Maximum of 6 credits per semester. No more than 9 credits toward a degree.

SP M-SPORTS MEDICINE (SP M)

SP M 190. Introduction to Athletic Training
3 Credits
Introduction to the principles of athletic training.

SP M 191. Medical Terminology
3 Credits
Study of the structure of medical language with emphasis on sports medicine-related terminology. To include analysis and interpretation of medical documentation. Restricted to: Las Cruces campus only.

SP M 200. CAREER PREPARATION
1 Credit
From concept to implementation: Career exploration, setting up degree plans, finding graduate programs, developing professional resumes, writing letters of application, seeking letters of recommendation, and interview preparation. May be repeated up to 3 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

SP M 214. Medical Documentation
3 Credits
Study of the recognition, evaluation, management, and treatment of non-orthopedic medical conditions that affect the physically active population. Consent of Instructor required. Restricted to: SP M and Kinesiology Majors majors. Restricted to Las Cruces campus only. Prerequisite(s): SP M 190, 191 and 271/271L.

SP M 223. Exploring Extreme Human Performance
3 Credits
A reading, writing and documentary based course studying human's quest and the related sacrifices associated with participating in extreme performance activities such as the Olympics, wakeboarding, snowboarding, military special forces, ultra-run events, marathons, etc. Consent of Instructor required. Restricted to Las Cruces campus only.

SP M 250. Emergency Response in Sports Medicine
2 Credits
Designed to provide knowledge and experience in emergency care procedures, blood borne pathogens, and first aid. Students will receive certification in CPR/AED for the Professional Rescuer and in First Aid, upon successful completion of course. May be repeated up to 2 credits. Restricted to Las Cruces campus only. Prerequisite(s): Consent of instructor.

SP M 271. Anatomy & Physiology I
3 Credits
Detailed study of the structure and function of the human musculoskeletal, cardiovascular, respiratory, and peripheral nervous systems. Designed specifically for students interested in allied health professions. Restricted to Las Cruces campus only.

SP M 271 L. Anatomy and Physiology Laboratory
1 Credit
Compliment to SP M 271. Students will engage in activities designed to enhance appreciation of the anatomical structures related to the content areas for SP M 271. Restricted to Las Cruces campus only.

SP M 272. Clinical Practicum I
2 Credits
Introduction to the clinical aspects of the athletic training education program. Must maintain at least 3.0 GPA. May be repeated up to 4 credits. Consent of Instructor required. Restricted to: SP M majors. Restricted to Las Cruces campus only.

SP M 273. Clinical Practicum II
3 Credits
Athletic training psycho-motor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M majors. Restricted to Las Cruces campus only.

SP M 275 L. A & P LAB PE/DANCE
1 Credit
Practical laboratory involving the kinematic and kinesthetic aspects of Human Anatomy and Physiology as it applied to Physical Education and Dance Restricted to: Physical Education and Dance. Not acceptable for Kinesiology Majors majors. Restricted to Las Cruces campus only. Prerequisite(s): SP M 271.

SP M 290. General Medical Conditions
3 Credits
Study of the recognition, evaluation, management, and treatment of non-orthopedic medical conditions that affect the physically active population. Consent of Instructor required. Restricted to: SP M and Kinesiology Majors majors. Restricted to Las Cruces campus only. Prerequisite(s): SP M 190, 191 and 271/271L.
SP M 303. Health and Exercise Psychology
3 Credits
The course examines the reciprocal relationship among physical activity, exercise behavior, and psychological determinants associated with adopting and maintaining an exercise program. Topics include theories of behavioral change, exercise psychology interventions, the benefits/pitfalls of exercise, and psychological factors influencing patient rehabilitation.
Prerequisite(s): GPA of 2.75.

SP M 304. Psychology of Sport
3 Credits
Development of coaching techniques to enhance sport performance based on understanding and use of psychological principles.
Prerequisite(s): GPA of 2.75.

SP M 305. Applied Biomechanics
3 Credits
The application of anatomical, mechanical and electrical concepts to better understand the fundamental nature of human movement.
Prerequisite(s): SP M 271 GPA of 2.75.

SP M 305 L. Applied Biomechanics Laboratory
1 Credit
This course serves to provide an introduction to human movement and its analysis. The conceptual framework of the course will allow for the application of anatomical, mechanical, and electrical concepts in order to better understand the fundamental nature of movement.
Prerequisite(s): SP M 271; GPA 2.75.

SP M 307. Pathophysiology and Human Function(s)
3 Credits
Students will discuss basic concepts of pathophysiology such as inflammation & repair, infectious diseases, neoplasms, and diseases of specific physiological systems. In addition, students will discuss a variety of case studies, and in so doing will be able to relate pathophysiologic conditions to symptoms, activity restrictions and disability.
Prerequisite(s): SP M 271; SP M 271L; SP M 308, GPA 2.75.

SP M 308. Exercise Physiology
3 Credits (2+2P)
Basic physiological principles as they apply to exercise and fitness programs. Laboratory experiences included. GPA of 2.75.
Prerequisite(s): SP M 271 or PE P 208.

SP M 309. Neurophysiology and Human Function
3 Credits
Students will discuss neurological control of human movement. Topics will include central and peripheral nervous system functions, with particular emphasis given to somatosensory afferent and motor efferent control. In addition, students will develop an understanding of the techniques employed to assess neurologic function in various patient populations.
Prerequisite(s): SP M 271; SP M 271L; SP M 308; and GPA of 2.75.

SP M 310. Orthopedic Examination, Evaluation and Diagnosis of Lower Extremity Injuries
4 Credits
Examines normal human anatomy, mechanisms of athletic injury, and deviation from normal anatomy following athletic injury to the lower extremity. Must maintain at least 3.0 GPA. Consent of Instructor required. Restricted to: SP M and KINES majors.

SP M 319. Lifetime Activities
2 Credits
Knowledge and skills with weight training, cardiovascular exercise, Tai Chi, Pilates, and other lifetime activities related to the promotion of health/fitness through a lifespan.

SP M 320 L. Palpation and Anatomical Kinesiology Laboratory
2 Credits
Practical hands-on clinical laboratory introducing techniques necessary for physiological and functional kinematic evaluation of human function. May be repeated up to 2 credits.
Prerequisite(s): SP M 271, SP M 271L, GPA 2.75.

SP M 324. Introduction to Exercise Science: Exercise Physiology and Biomechanics
3 Credits
This course serves to provide a broad introduction to both the physiology of exercise and the mechanics of human movement. The conceptual framework of the course will allow for the development of a broad knowledge base regarding these concepts and the latter portions of the course will focus on real world application of the concepts. Consent of Instructor required.
Prerequisite(s): SP M 271 Anatomy and Physiology I.

SP M 330. Exercise Testing and Prescription
4 Credits
This combined lecture and lab class introduces students to the scientific basis for and principles of exercise testing and prescription. The focus is on basic approaches to exercise testing and prescription for healthy adults, while application to some special populations with chronic disease will be discussed. GPA of 2.75.
Prerequisite(s): SP M 271 and SP M 308 or consent of instructor.

SP M 341. Motor Development
3 Credits
Covers development of motor skills from infancy through maturity. Focus on the principles of motor development, early motor behavior, stage theory, and assessment. Field experiences will augment lecture and readings. May be repeated up to 3 credits. Consent of Instructor required.

SP M 342. Motor Learning
3 Credits
An examination of the theoretical foundations and related literature that underlie the learning, performing, and retention of motor skills with implications for effective teaching and coaching. May be repeated up to 3 credits.
Prerequisite(s): GPA of 2.5.

SP M 371. Anatomy and Physiology II
3 Credits
Detailed study of the structure and function of the human endocrine, immune, digestive, reproductive, integumentary, central nervous and renal systems. Designed specifically for students interested in allied health professions. GPA of 2.75.
Prerequisite(s): SP M 271G or consent of instructor.

SP M 371 L. Anatomy and Physiology II Lab
1 Credit
The students will develop skills in palpating various bony landmarks as well as origins and insertions of major soft tissues. In addition, problem based learning scenarios will be used to complement the SP M 371 lecture material and thereby further students understanding of certain physiologic systems including neural, digestive, reproductive, endocrine, and integumentary.
Prerequisite(s): SP M 271; SPM 271 L; GPA 2.75.
SP M 372. Clinical Practicum III
3 Credits
Athletic training psychomotor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M and KINES majors.

SP M 373. Clinical Practicum IV
3 Credits
Athletic training psychomotor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M majors.

SP M 375. Therapeutic Modalities
4 Credits
The physiological effects, indications, contraindication, dosage, and maintenance of therapeutic modalities related to the treatment of athletic or activity-related injuries. May be repeated up to 4 credits. Consent of Instructor required. Must maintain 2.75 GPA. Restricted to: SP M, KIN majors.
Prerequisite(s): Consent of Instructor, SP M 271.

SP M 409. Clinical Biomechanics
3 Credits
The application of biomechanical analysis of human movement as it relates to clinical proficiencies through the use of anatomical, mechanical and electrical concepts.
Prerequisite(s): SPM 271, GPA 3.0.
Corequisite(s): SP M 409 L.

SP M 409 L. Clinical Biomechanics Laboratory
1 Credit
Laboratory experiments and biomechanical analysis of human movement as they relate to clinical proficiencies through the use of anatomical, mechanical and electrical concepts.
Prerequisite(s): SP M 271, SP M 409, GPA 3.0.
Corequisite(s): SP M 409.

SP M 410. Orthopedic Examination, Evaluation and Diagnosis of Upper Extremity Injuries
4 Credits
Examines normal human anatomy, mechanisms of athletic injury, and deviation from normal anatom following athletic injury to the upper extremity. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M and KINES majors.

SP M 411. Pharmacology in Athletic Training
2 Credits
An introduction to general medical conditions and pharmacological applications in the athletic training setting. Emphasis on the laws governing the development and distribution, indications, contraindications, precautions, and interactions of prescription and over-the-counter medications. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M and KINES majors.

SP M 412. Inferential Statistics in Sport and Exercise Science
3 Credits
Statistical concepts and methods basic to experiential research to include normal distribution, z-tests, t-tests, analysis of variance and regression analysis. An understanding of sport and exercise science theory is required for students enrolling in this course. Restricted to: KIN, SP M majors.
Prerequisite(s): GPA of 2.75; or consent of instructor.

SP M 413. Statistical Application in Sports and Exercise Science
3 Credits
An introduction to descriptive statistics and the interpretation of data in the solution of problems in sport and exercise related research. GPA 2.75.
Prerequisite(s): Junior or senior standing.

SP M 415. Therapeutic Exercise
3 Credits
The physiological effects, indications, contraindications, dosage, and maintenance of therapeutic modalities related to the treatment of athletic or activity-related injuries. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: SP M and KINES majors.

SP M 420. Orthopedic Examination, Evaluation and Diagnosis of Core, Spine and Head Injuries
3 Credits
Advanced clinical assessment techniques and applications. Must maintain at least a 3.0 GPA. Consent of Instructor required. Restricted to: SP M majors.

SP M 422. Clinical Practicum V
3 Credits
Athletic training psychomotor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Must maintain a 3.0 GPA. Consent of Instructor required. Restricted to: ATEP, SP M majors.

SP M 423. Clinical Practicum VI
3 Credits
Athletic training psycho-motor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Students might complete a general medical rotation with this course. Consent of Instructor required. Restricted to: SP M majors.

SP M 424. Clinical Practicum VII
3 Credits
Athletic training psychomotor skills are enhanced and assessed by a preceptor during clinical rotations. Emphasis is on competencies and proficiencies previously instructed in didactic courses. Students might complete a general medical rotation with this course. Must maintain 2.8 GPA. Consent of Instructor required. Restricted to: ATEP, SP M majors.

SP M 425. Organization and Administration in Athletic Training
3 Credits
An introduction to management, leadership, financial strategies, professional development and legal issues related to the athletic training setting. Must maintain 3.0 GPA. Consent of Instructor required. Restricted to: SP M majors.

SP M 445. Internship
6,12 Credits (6,12P)
A full-time internship in an approved wellness, fitness, athletic or recreation program with experience in all phases of management and operation. Field instructor supervision. This internship may require relocation to a site outside of the Las Cruces area. May be repeated up to 12 credits. Consent of Instructor required. Restricted to: Kinesiology Majors majors. S/U Grading (S/U, Audit).
Prerequisite(s): Senior standing, GPA of 2.75, completion of all major courses.
SP M 451. Advanced Exercise Physiology
3 Credits
Detailed study of the integrated response of neuromuscular, cardiovascular, and respiratory systems to acute and chronic exercise, nutrition, and environmental conditions with a strong emphasis on laboratory experiences. GPA of 2.75.
Prerequisite(s): SP M 271 and SP M 308 or consent of instructor.

SP M 456. Exercise for Special Populations
3 Credits
Fundamentals of kinesiology adapted for adults with various diseases and disabilities. Focus will be on the application of exercise assessment and prescription for selected conditions.
Prerequisite(s): SP M 308 and SP M 330; GPA of 2.75.

SP M 458. Physical Dimensions of Aging
3 Credits
This course introduces students to physical, physiological, social, mental, and emotional aspects of human aging. Age-related changes in human function are discussed the context of applied healthcare settings, and the implications for appropriate physical activity and functional independence. GPA of 2.75.
Prerequisite(s): SP M 308.

SP M 460. Principles of Strength and Conditioning
3 Credits
Application of research, theory, and methods of high-intensity, resistive overload training. Performance-specific topics include management, nutrition. GPA of 2.75.
Prerequisite(s): SP M 308.

SP M 460 L. Principles of Strength and Conditioning Laboratory
1 Credit
An applied examination of the theory, principles, rules and regulations associated with various strength and conditioning exercises to include but not limited to Olympic lifting, powerlifting, bodybuilding, plyometrics, speed, agility and speed-endurance development. Lab required for Kinesiology majors. GPA of 2.75.
Prerequisite(s): SP M 308.

SP M 465. Ethics and Legal Issues in Athletic Training
3 Credits
Examination of the legal and ethical issues associated with the practice of athletic training and other healthcare fields. Must maintain a 3.0 GPA. May be repeated up to 3 credits. Consent of Instructor required. Restricted to: SP M majors.

SP M 498. Advanced Athletic Training I
1-3 Credits (1-3)
Advanced clinical experiences and education in athletic training. Assessment of Athletic Training Program clinical proficiencies as described by the National Athletic Trainer’s Association Education Council. Consent of Instructor required.

SP M 499. Problems
1-3 Credits
Problems in athletic training and independent work in their solutions. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Junior or Senior status; Consent of ATEP director.

SP M 504. Psychology of Sport
3 Credits
Development of coaching techniques to enhance sport performance based on understanding and use of psychological principles. Same as SP M 304 with additional requirements for graduate credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor.

SP M 508. Applied Biomechanics
3 Credits
The application of anatomical, mechanical and electrical concepts to better understand the fundamental nature of human movement. Same as SP M 305 with additional requirements for graduate credits Consent of Instructor required.
Prerequisite(s): Consent of instructor.

SP M 509. Clinical Biomechanics
3 Credits
The application biomechanical analysis of human movement as it relates to clinical proficiencies through the use of anatomical, mechanical and electrical concepts. Same as SP M 409 with additional requirements for graduate credits Consent of Instructor required.
Prerequisite(s): Consent of instructor.

SP M 510. Graduate Athletic Training Seminar I
1-3 Credits (1-3)
Advanced seminar topics in athletic training. Students will explore generalized topics within the field of athletic training under the direct supervision of a Commission on Accreditation of Athletic Training Education (CAATE) accredited Athletic Training Program. Students may engage in teaching and research opportunities in unique areas. Students may explore athletic training topics within the classroom or independently through designated resources Consent of Instructor required.

SP M 511. Graduate Athletic Training I
1-3 Credits (1-3)
Advanced clinical experiences and education in athletic training. Students will examine topics in athletic training in conjunction with faculty members within the Commission on the Accreditation of Athletic Training Education (CAATE) Athletic Training Program at New Mexico State University. Assessment of Athletic Training Program clinical proficiencies as described by the National Athletic Trainers’ Association Education Council. Consent of Instructor required.

SP M 512. Inferential Statistics in Sports and Exercise Science
3 Credits
Statistical concepts and methods basic to experiential research to include normal distribution, z-tests, t-tests, analysis of variance and regression analysis. An understanding of sport and exercise science theory is required for students enrolling in this course. Same as SP M 412 with additional requirements for graduate credit Consent of Instructor required.
Prerequisite(s): Consent of Instructor.
SP M 513. Graduate Athletic Training Seminar II  
1-3 Credits (1-3)  
Advanced seminar topics in athletic training. Students will explore more specialized topics within the field of athletic training under the direct supervision of a Commission on Accreditation of Athletic Training Education (CAATE) accredited Athletic Training Program. Students should be prepared to further explore topics previously covered in SP M 512 (Graduate Athletic Training Seminar I). Students may engage in teaching and research opportunities in unique areas. Students may explore athletic training topics within the classroom or independently through designated resources. Consent of Instructor required.

SP M 514. Graduate Athletic Training Research I  
1-3 Credits (1-3)  
Advanced research topics in athletic training. Students will explore research and evidence based practices within the field of athletic training. Students will work under the direct supervision of a Commission on Accreditation of Athletic Training Education (CAATE) accredited Athletic Training Program faculty member. Students should be prepared to further explore research topics within a specific discipline with the intent of disseminating and sharing information with the athletic training community. Topics previously covered in SP M 512 (Graduate Athletic Training Seminar I). Students may engage in research projects in unique areas Consent of Instructor required.

SP M 515. Graduate Athletic Training II  
3 Credits  
Advanced clinical experiences and education in athletic training. Assessment of Athletic Training Program clinical proficiencies as described by the National Athletic Trainers’ Association Education Council. Consent of Instructor required.

SP M 545. Skill Acquisition and Performance  
3 Credits  
Behavioral and physiological examination factors that influence the acquisition and performance of motor skills. May be repeated up to 3 credits. Consent of Instructor required. Crosslisted with: SP M 342.

SP M 551. Advanced Exercise Physiology  
3 Credits  
Detailed study of the integrated response of neuromuscular, cardiovascular and respiratory systems to acute and chronic exercise, nutrition and environmental conditions with a strong emphasis on laboratory experience. Consent of Instructor required.

SP M 556. Exercise for Special Populations  
3 Credits  
Fundamentals of kinesiology adapted for adults with various diseases and disabilities. Focus will be on the application of exercise prescription and prescription for selected conditions. Taught with PE P 456 with additional work required at the graduate level. Consent of Instructor required.

SP M 558. Physical Dimensions of Aging  
3 Credits  
This course introduces graduate students to physical, physiological, social, mental, and emotional aspects of human aging. Age-related changes in human function are discussed in the context of applied healthcare settings, and the implications for appropriate physical activity and functional independence. Graduate students in this course are expected to participate in organizing and leading some of the class discussions and assisting in the identification of appropriate materials for the course. Consent of Instructor required.

SP M 560. Principles of Strength and Conditioning  
3 Credits  
Application of research, theory, and methods of high-intensity, resistance training. Performance-specific topics include management, nutrition, exercise prescription, periodization, lifting techniques, testing, and evaluation. Course will emphasize standards set forth by the National Strength and Conditioning Association preparing students interested in sitting for the NSCA certification examinations. Consent of Instructor required.

SP M 597. Project  
1-12 Credits (1-12)  
Selected projects for doctoral students. May be repeated up to 12 credits. Consent of Instructor required.

SP M 600. Kinesiology Research  
1-3 Credits (1-3)  
Research to be conducted under the direction of a Kinesiology faculty member. May be repeated up to 15 credits. Consent of Instructor required.

SP M 608. Cardiovascular Physiology  
3 Credits  
This graduate level course provides an in-depth study of cardiovascular structure and function. The course assumes that students have a strong background in human physiology. Topics include, but are not limited to: cellular structure of the heart and vascular system; cardiac function, including electrophysiology of the heart; vascular function; neurohumoral control of the heart and circulation, organ blood flow, exchange function of the microcirculation; the impact of common cardiovascular diseases on cardiovascular structure and function, and cardiovascular adaptations to chronic exercise.

SP M 660. Designing Resistance Training Program  
3 Credits  
Detailed study of the physiological concepts associated with designing resistance-training programs for children, women, seniors, athletic performance and rehabilitation.

SP M 665. Skeletal Muscle: Structure and Function  
3 Credits  
Basic muscle morphology and physiology with molecular and cellular adaptations in skeletal muscle as consequences to varying exercise regimens.

SP M 700. Doctoral Dissertation  
1-18 Credits (1-18)  
Doctoral Dissertation hours to be conducted under the direction of a Kinesiology Faculty. May be repeated up to 18 credits. Consent of Instructor required. Thesis/Dissertation Grading.

SPAN-SPANISH (SPAN)  
SPAN 101. Beginning Spanish Conversation  
3 Credits  
Beginning conversation and intensive oral practice for non-degree seeking students, and SPAN 111 and SPAN 112 students who desire additional conversational practice. This course does not count toward the NMSU second language requirement and is not open to native Spanish speakers without permission of instructor. Restricted to: Community colleges.
SPAN 111. Elementary Spanish I
4 Credits (4)
Spanish for beginners. Speaking and writing common interactions in predictable settings using basic vocabulary and verb tenses. Communicate in Spanish both orally and in writing sufficiently well so as to be able to make yourself understood by native speakers accustomed to dealing with non-native speakers. In spontaneous conversation and in writing, students will be able to produce a few sentences. Prerequisite(s): Not open to Spanish-speaking students except by consent of instructor. Prerequisite: language placement and/or consent by departmental examination.
SPAN 112. Elementary Spanish II
4 Credits (4)
Spanish for beginners. Speaking and writing common interactions in predictable settings using basic vocabulary and verb tenses, including talking about events in the past and possible recommendations for the future. Communicate in Spanish both orally and in writing sufficiently well so as to be able to make yourself understood by native speakers accustomed to dealing with non-native speakers. In spontaneous conversation and in writing, students will be able to produce a variety of sentences and form context appropriate to open-ended questions. Prerequisite(s): Not open to Spanish-speaking students except by consent of instructor. Prerequisite: language placement and/or assessment by departmental examination or consent of instructor.
SPAN 113. Spanish for Heritage Learners I
3 Credits
Emphasis on development of heritage Spanish language skills learned at home and/or in the community. Covers listening comprehension, development of vocabulary and cultural activities to help strengthen heritage language and culture. Students who have previously earned a C or better in SPAN 111 or SPAN 112 may not receive credit for this course.
SPAN 115. Elementary Spanish I for Hotel, Restaurant and Tourism Managers
4 Credits
Beginning Spanish for HRTM majors only. Will count towards HRTM degree language requirement. Does not count towards language requirement for other majors. Restricted to: Main campus only. Restricted to HRTM majors.
SPAN 211. Intermediate Spanish I
3 Credits (3)
Speaking, reading and writing. Not open to Spanish-speaking students except by consent of instructor. Prerequisite: language placement and assessment by departmental examination or C or better in SPAN 112.
SPAN 212. Intermediate Spanish II
3 Credits (3)
Speaking, reading and writing. Not open to Spanish-speaking students except by consent of instructor. Prerequisite: language placement and assessment by departmental examination or C or better in SPAN 211.
SPAN 213. Spanish for Heritage Learners II
3 Credits
Emphasis on development of heritage language skills learned at home and/or in the community. Covers spoken Spanish, reading activities and grammar skills to build on existing knowledge of the language.
SPAN 214. Spanish for Heritage Learners III
3 Credits
Continued development of heritage Spanish language skills learned at home and/or in the community. Emphasis on reading, writing and critical thinking skills. Review of grammar points will also be stressed in preparation for upper level courses.
SPAN 305. Topics in Hispanic Civilization
3 Credits (3)
Group study of selected topics focusing on Hispanic culture and civilization. Topics announced in the Schedule of Classes. May be repeated for a maximum of 6 credits. Prerequisite: SPAN 212 or SPAN 214 or consent of instructor.
SPAN 306. Special Topics
3 Credits
Group study of Spanish for specialized purposes (e.g. court interpreting, professional language for bilingual teachers, technical writing for the business community). Course subtitled in the Schedule of Classes. May be repeated for a maximum of 12 credits. Prerequisite: SPAN 212 or SPAN 214 or consent of instructor.
SPAN 312. Grammar for Heritage/Native Speakers of Spanish
3 Credits
For students who have been exposed to Spanish at home or in the community. Review of grammatical concepts and analysis of both spoken and written Spanish. Students cannot receive credit for both SPAN 312 and SPAN 313. Prerequisite(s): SPAN 214 or consent of instructor.
SPAN 313. Spanish Grammar
3 Credits
A review of the rules of Spanish grammar. Students cannot receive credit for both SPAN 312 and SPAN 313. Prerequisite: SPAN 212 or SPAN 214 or consent of instructor.
SPAN 314. Spanish Composition
3 Credits
Development of written Spanish skills. Students cannot receive credit for both SPAN 312 and SPAN 313. Prerequisite: SPAN 312 or SPAN 313.
SPAN 315. Composition for Heritage/Native Speakers of Spanish
3 Credits
Discussions of history, and current political and cultural topics pertaining to the Hispanic world. Emphasis on development of writing skills in formal Spanish. Students cannot receive credit for both SPAN 314 and SPAN 315. Fulfills departmental requirement for SPAN 314. Prerequisite(s): SPAN 312 or SPAN 313.
SPAN 325. Advanced Conversation
3 Credits (3)
Intensive oral practice. Not open to heritage/native speakers of Spanish. Prerequisite(s): SPAN 212 or consent of instructor.
SPAN 327. Spanish in the Community
3 Credits
Emphasis on use of Spanish outside the classroom in the local communities. Activities include but are not limited to oral histories, language mentoring in schools, assisting with cultural activities and language research. Prerequisite(s): Basic communicative fluency in Spanish as determined by departmental advisor.
SPAN 340. Introduction to Spanish Linguistics
3 Credits
General aspects of Spanish linguistics: traditional, descriptive, historical and dialectal.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 350. Introduction to Chicano Studies
3 Credits
Covers Mexican-American life including language, history, education, politics and literature.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 352. Spanish in Social Contexts
3 Credits
The study of Spanish in the contexts of the societies in which it is spoken.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 353. Spanglish
3 Credits
Covers lexical borrowing, code choice, language loss and maintenance, and bilingual cognition.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 360. Introduction to Latin American Studies
3 Credits
Offers an introduction to topics in Latin American Studies including language, culture, literature, history, sociology and anthropology. Course is taught in English. Spanish majors and minors may receive credit towards degree requirements by submitting course work in Spanish (SPAN 312 or SPAN 313 recommended for SPAN majors or minors).

SPAN 361. US-Mexico Border Culture- Literature and/or Culture
3 Credits
Study of major authors and/or cultural trends in the U.S.-Mexico border. Selected subject to be identified by subtitle in the Schedule of Classes. May be repeated up to 6 credits.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 363. US-Hispanic Culture
3 Credits
Study of major artistic and cultural trends among US-Hispanics. Selected topics to be identified by subtitle in the Schedule of Classes. May be repeated for a total of 6 credits under a different subtitle.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 364V. Culture and Civilization of Mexico
3 Credits
Familiarization with culture, civilization and regions of Mexico. History, geography, art, literature, folklore, customs, economics and politics of each region. Impact of Mexican culture and civilization on the Southwest United States. Taught in English. Does not satisfy Arts and Sciences second language requirement.

SPAN 365V. Culture and Civilization of Spanish America
3 Credits
Familiarization with culture, civilization and regions of Spanish America. Study of history, geography, art, literature, folklore, customs, economics and politics of each region. Impact of Spanish American culture and civilization on the Southwest United States. Taught in English. Does not satisfy College of Arts and Sciences second language requirement.

SPAN 380. Introduction to Hispanic Literature
3 Credits
Works in Spanish, all genres and periods. How to read literature in all forms.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 385. Introduction to Chicano/US-Mexican Literature
3 Credits
Introduction to the study of major works by Chicano/US-Mexican authors.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 388. Contemporary Hispanic Literature
3 Credits
Study of Peninsular and Spanish-American literature from the 20th century to the present.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 393. Introduction to Translation and Interpretation
3 Credits
General aspects of translation and interpretation from English to Spanish and Spanish to English. Selected subject to be identified by subtitle in the Schedule of Classes. May be repeated up to 6 credits.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 399. Independent Studies in Literature, Language, or Culture
1-3 Credits
Individualized, self-paced projects for advanced students. Students must present formal proposal of study. May be repeated for a maximum of 6 credits.
Prerequisite: SPAN 312 and SPAN 313.

SPAN 410. Mitos y Leyendas Indigenas
3 Credits
Survey in Spanish language of indigenous poetry, myths and legends from Pre-Columbian times to present.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 411. Creative Writing
3 Credits
Creative writing in Spanish.
Prerequisite(s): SPAN 314 or SPAN 315 and SPAN 380.

SPAN 412. Spanish-American Poetry
3 Credits
Study of major works by Spanish-American poets.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 413. Mexican Literature
3 Credits
Study of major works by Mexican authors.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 415. Spanish-American Women Writers
3 Credits
All genres of Spanish-American literature written by women.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 416. Nineteenth Century Spanish-American Literature
3 Credits
Study of major works by Spanish-American authors of the 19th century.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 418. Spanish-American Short Story
3 Credits
Study of major short stories by Spanish-American authors.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 419. Spanish American Drama
3 Credits
Study of major works by Spanish-American dramatists.
Prerequisite(s): SPAN 312 or SPAN 313.
SPAN 420. Hispanic Micro Fiction
3 Credits
Study of micro fiction works by Hispanic Authors and creative writing workshop related to micro fiction.
Prerequisite(s): SPAN 314 or SPAN 315 and SPAN 380.

SPAN 421. Culture and Literature of New Mexico
3 Credits
The study of the development and flourishing of New Mexican culture and literature.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 422. Literature of the Mexican Revolution
3 Credits
Study of Mexican authors dealing with the Mexican Revolution.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 424. Post-Modern Hispanic Literature
3 Credits
The study of Post-Modern experimental literary genres, from Post-boom to the present.
Prerequisite(s): SPAN 314 or SPAN 315.

SPAN 425. Conquest, Colonial and Indigenous Literatures
3 Credits
The study of literary and cultural works of the Spaniard Conquest and Latin American Indigenous cultures.
Prerequisite(s): SPAN 314 or SPAN 315.

SPAN 426. Spanish-American Novel
3 Credits
Study of major works by Spanish-American novelists.
Prerequisite: SPAN 312 or SPAN 313.

SPAN 427. Chicano Literature
3 Credits
Study of Chicano/US-Mexican authors.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 428. U.S. Latino Culture and Literature
3 Credits
The study of major works by Latino writers in the U.S.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 429. Topics in Applied Spanish Linguistics
3 Credits
Group study of selected topics to be identified by subtitle in the Schedule of Classes. May be repeated once under different subtitle for a maximum of 6 credits.
Prerequisite: SPAN 340.

SPAN 445. Dialectos del Espanol
3 Credits
In-depth exploration of Spanish dialects including their formal characteristics, historical formation and regional variation.
Prerequisite(s): SPAN 340 or SPAN 461.

SPAN 447. Hispanic Film
3 Credits
Study of major films from Spain and Spanish-America. Restricted to: Main campus only.

SPAN 448. U.S.-Hispanic Film
3 Credits
Study of major films about and/or by Hispanics of the U.S. Restricted to: Main campus only.

SPAN 449. Special Problems
1-3 Credits
Directed reading for graduate students in their specific fields to satisfy language requirement for master’s or doctoral programs. May be repeated for a maximum of 6 credits.

SPAN 450. Mexican Cultures
3 Credits
Different aspects of Mexican Culture. Selected topic to be identified by subtitle in the Schedule of Classes. May be repeated for a total of 6 credits under a different subtitle.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 451. Hispanic Cultures
3 Credits
Issues in Hispanic cultures of the U.S., Spanish-America and Spain. Also focuses on U.S.-Mexico border culture. Selected topics to be identified by subtitle in the Schedule of Classes. May be repeated up to 6 credits.
Prerequisite(s): SPAN 314 or SPAN 315.

SPAN 457. Strategies for Teaching Spanish for Heritage/Native Speakers
3 Credits
Overview of the main theories, research, pedagogical approaches, assessment and practice concerning the teaching of Spanish to heritage learners and native speakers. Taught with SPAN 597.
Prerequisite(s): SPAN 314 or SPAN 315.

SPAN 460. Spanish Language Acquisition
3 Credits
Research and theories of acquisition of Spanish as a first or second language.
Prerequisite: LING 200 or SPAN 340, or consent of instructor.

SPAN 461. Introduction to Spanish Phonetics
3 Credits
An introduction to Spanish phonetics including basic dialectal variation and comparison with English.
Prerequisite: SPAN 340.

SPAN 470. Methods for Teaching Literature to Spanish Heritage Learners
3 Credits
Current methods for teaching literature to Spanish for Heritage Learners (SHL).
Prerequisite(s): SPAN 314 or SPAN 315 and SPAN 380.

SPAN 490. Special Topics
3 Credits
Selected topic to be identified by subtitle in the Schedule of Classes. May be repeated up to 6 credits.
Prerequisite(s): SPAN 312 or SPAN 313.

SPAN 491. History of the Spanish Language
3 Credits
The development of Spanish from its origins.
Prerequisite(s): SPAN 340.

SPAN 492. Structure of Spanish
3 Credits
Topics in Spanish linguistics including phonology, morphology, syntax and semantics.
Prerequisite(s): SPAN 314 or SPAN 315 or SPAN 340.

SPAN 493. Studies in U.S. Spanish
3 Credits
Linguistic issues and studies of U.S. Spanish-speaking communities. Taught with SPAN 593.
Prerequisite(s): SPAN 340.
SPAN 500. Methods of Research and Literary Criticism
3 Credits
Advanced methods of research and literary criticism.

SPAN 507. Technology Enhanced Language Learning
3 Credits
Strategies for enhancing language learning with emerging technologies. Course is taught in Spanish.

SPAN 508. Teaching Literature with Technology
3 Credits
Strategies and techniques for enhancing the teaching of all literature genres using emerging technologies. Course is taught in Spanish. Co/
Prerequisite(s): SPAN 507, and/or consent of instructor.

SPAN 509. Teaching Culture with Technology
3 Credits
Strategies and techniques for enhancing the teaching of culture using emerging technologies. Course is taught in Spanish. Co/
Prerequisite(s): SPAN 507, and/or consent of instructor.

SPAN 510. Assessing the National Standards
3 Credits
Analysis of the National Standards for Foreign Language Learning (the 5 Cs) in the 21st Century. Course will also cover the Integrated Performance Assessment as applied to the national standards. Other assessments will be reviewed to evaluate effectiveness in all levels of Spanish language classrooms.

SPAN 512. Contemporary Spanish-American Poetry
3 Credits
Readings and interpretation of Spanish-American poetry from the 20th century to the present.

SPAN 520. Hispanic Micro Fiction
3 Credits
Advanced study of micro fiction works by Hispanic Authors and creative writing workshop related to micro fiction.

SPAN 521. Advanced Culture and Literature of New Mexico
3 Credits
The advanced study of the development and flourishing of New Mexican culture and literature.

SPAN 528. Advanced U.S. Latino Culture and Literature
3 Credits
The advanced study of major works by Latino writers in the U.S.

SPAN 540. Introduccion a la Linguistica
3 Credits
Introduces students to the foundational topics of linguistic study with particular reference given to the Spanish language: properties of language and communication, morphology, syntax, phonetics, phonology, language variation and change.
Prerequisite(s): Eligibility to take graduate level courses.

SPAN 545. Advanced Dialectos del Espanol
3 Credits
Advanced research of Spanish dialects including their formal characteristics, historical formation and regional variation.

SPAN 547. Advanced Hispanic Film
3 Credits
Advanced study of major films from Spain and Spanish-America. Restricted to: Main campus only.

SPAN 548. Advanced U.S.-Hispanic Film
3 Credits
Advanced study of major films about and/or by Hispanics of the U.S. Restricted to: Main campus only.

SPAN 551. Advanced Hispanic Cultures
3 Credits
Advanced study on Hispanic cultures of the U.S., Spanish-America and/or Spain. Selected topic to be identified by subtitle. Taught with SPAN 451. May be repeated up to 6 credits.

SPAN 552. Advanced Literature of the Mexican Revolution
3 Credits
Study of Mexican authors dealing with the Mexican Revolution. Restricted to: Main campus only.

SPAN 555. Advanced Conquest, Colonial and Indigenous Literatures
3 Credits
The advanced study of literary and cultural works of the Spaniard Conquest and Latin American Indigenous cultures.

SPAN 556. Advanced 19-Century Spanish-American Literature
3 Credits
Study of major works by Spanish-American authors of the 19th century.

SPAN 558. Bilinguismo
3 Credits
Examines the topics of bilingualism from a psycholinguistic perspective including the development of the bilingual brain, lexical acquisition, retrieval and storage, and experimental techniques in measuring language competence.
Prerequisite(s): SPAN 540 or consent of instructor.

SPAN 560. Advanced Spanish Language Acquisition
3 Credits
Advanced research and theories of acquisition of Spanish as a first or second language.
Prerequisite(s): SPAN 540.

SPAN 561. Advanced Spanish Phonetics
3 Credits
Advanced study of Spanish phonetics, including basic dialectal variation and comparisons with English.

SPAN 562. Advanced Spanish Phonology
3 Credits
An advanced formal examination of the sound system of Spanish including formal characterizations, dialectal variation and laboratory data.

SPAN 563. Advanced Study in Mexican Literature
3 Credits
Mexican literature from the Pre-Columbian period to the present.

SPAN 564. Advanced Post-Modern Hispanic Literature
3 Credits
The advanced study of Post-Modern experimental literary genres, from Post-boom to the present.

SPAN 566. Contemporary Spanish-American Novel
3 Credits
The Spanish-American novel from the 20th century to the present.

SPAN 567. Advanced Study in Chicano Literature
3 Credits
Study of all genres of Chicano literature.
SPAN 570. Advanced Study in Technical Translation
3 Credits
Translation of a variety of non-literary texts from English to Spanish and from Spanish to English. Course is taught in Spanish.

SPAN 573. Advanced Study in Creative Writing
3 Credits
Advanced creative writing in Spanish.

SPAN 580. Research Methodology in Spanish Linguistics
3 Credits
Study and practical application of techniques in linguistic research.

SPAN 581. Advanced Hispanic Modernism and Avant-Garde Literature
3 Credits
The advanced study of major prose works by Latin American Modernist and Avant-Garde authors.

SPAN 583. Advanced Study in Spanish-American Women Writers
3 Credits
All genres of Spanish-American literature written by women. Research paper required.

SPAN 584. Spanish Morphosyntax
3 Credits
Examination of the morphological and syntactic structure of the Spanish language as well as their interaction. Practical applications are also explored.

SPAN 585. Language Assessment
3 Credits
Introduces students to theoretical principles of and analytical techniques for language assessment. Students will learn to critically analyze existing language assessment measures and will develop, pilot test and analyze measures of their own.
Prerequisite(s): SPAN 540 or SPAN 560 or SPAN 580 or consent of instructor.

SPAN 586. Contemporary Spanish-American Essay
3 Credits
Main currents in the Spanish-American thought from the 20th century to the present.

SPAN 587. Contemporary Spanish-American Short Story
3 Credits
The Spanish-American short story from the 20th century to the present.

SPAN 588. Contemporary Spanish-American Drama
3 Credits
The Spanish-American drama from the 20th century to the present.

SPAN 589. Spanish Sociolinguistics
3 Credits
Relationship between language and society in the Spanish-speaking world.

SPAN 590. Advanced Special Topics
3 Credits (3)
Specific subject to be announced in the Schedule of Classes. May be repeated up to 6 credits.

SPAN 591. Advanced Study in History of the Spanish Language
3 Credits
The development of Spanish from its origins.

SPAN 592. Advanced Structure of Spanish
3 Credits
Advanced study of Spanish linguistics topics such as phonology, morphology, syntax and semantics.

SPAN 593. Advanced Studies in U.S. Spanish
3 Credits
Linguistic issues and advanced studies of U.S. Spanish-speaking communities. Taught with SPAN 493.

SPAN 594. Theory and Methodology of Spanish Pedagogy
3 Credits
Advanced studies in current theories and methodologies of Spanish language pedagogy. Taught as a practicum.

SPAN 597. Advanced Strategies for Teaching Spanish for Heritage/Native Speakers
3 Credits
Advanced overview of the main theories, research, pedagogical approaches, assessment and practice concerning the teaching of Spanish to heritage learners and native speakers.

SPAN 598. Independent Reading, Research, and/or Creative Writing
1-3 Credits
Individual study of selected readings and problems; or individual research, either analytical or experimental, or creative writing. May be repeated for unlimited credits.

SPAN 599. Master's Thesis
15 Credits
Thesis.

SPCD-ENGLISH AS A SECOND LNG (SPCD)

SPCD 108. Intermediate ESL Listening and Speaking
3 Credits
Development of listening and speaking skills with attention to pronunciation. Emphasis on conversation and oral practice appropriate to an academic setting. Graded S/U.
Prerequisites: placement based on English language screening test, and either a minimum TOEFL score of 500 or consent of instructor.

SPCD 110. Intermediate ESL Composition and Grammar Review
3 Credits
Development of fluent academic writing skills, with an emphasis on grammar review for editing purposes.
Prerequisite(s): Placement based on English language screening test, and either a minimum TOEFL score of 500 or consent of instructor.

SPCD 111G. Advanced ESL Composition
4 Credits
Academic writing, including library research papers and the issue of plagiarism, for students with nonnative English. (SPCD 111G is substituted for ENGL 111G for international students whose native language is not English.) Restricted to: Main campus only.
Prerequisite(s): Placement based on English language screening test, and either a minimum TOEFL score of 500 or consent of instructor; or successful completion of SPCD 110.

SPCD 458. Advanced Speaking and Listening for International Graduate Students
3 Credits
Advanced speaking and listening skills for active participation at the graduate level. Emphasis on pronunciation and individual goal setting. Includes a theoretical component involving library research or preparation and presentation of a teaching unit. Graded S/U, RR.
Prerequisites: placement and 530 TOEFL or consent of instructor.
SPCD 470. Scholarly Writing for International Graduate Students
3 Credits
Instruction and practice in writing major academic genres, including experimental, descriptive, and problem-solution research reports, proposals, and library referenced papers. Main campus only. Graded S/U.
Prerequisites: placement based on English language screening test or successful completion of SPCD 110; a minimum TOEFL score of 500 or consent of instructor; and successful completion of SPCD 108/490 where indicated by placement.

SPED-SPECIAL EDUCATION (SPED)

SPED 201. Topics
3 Credits
Offered under various subtitles that indicate the subject matter to be covered. May be repeated 3 times for a maximum of 9 credits.

SPED 202. Culture, Learning and Academic Achievement in a Diverse Society
3 Credits
Development of culturally responsive learning strategies, skills and utilization of support services, to enhance academic achievement. Restricted to: Main campus only.

SPED 210. Introduction to Special Education
3 Credits
For paraprofessional students who will be working with a teacher in a Special Education classroom. This class will provide an overview of characteristics of children with special needs, legal issues, framework of effective instruction and a variety of practical teaching and learning strategies that are relevant to the tasks and academic demands required in inclusive classrooms.

SPED 350. Introduction to Special Education in a Diverse Society
3 Credits
Characteristics, identification, and educational needs of exceptional learners. Attention is given to the various types of programs serving exceptional learners. Designed for all professional personnel who work with exceptional learners.

SPED 353. Introduction to Bilingual/Multicultural Special Education
3 Credits
Introduction to issues related to the provision of services to culturally and linguistically diverse students with exceptionalities. Same as BIL 355.

SPED 360. Elementary Curriculum, Methods, and Materials for Special Education in a Diverse Society
3 Credits
Curriculum theory and development for special education programs. Various teaching methods utilized with elementary exceptional learners and techniques involved in identifying, adapting, and developing materials will be addressed.

SPED 406. High Incidence Disabilities in a Diverse Society
3 Credits
Examines those areas of disability that most frequently occur in the special education population, including mental retardation, learning disabilities, communication disorders, and behavioral and emotional disorders.

SPED 407. Low Incidence Disabilities in a Diverse Society
3 Credits
Examines those disabilities that occur less frequently in the special education population, including hearing loss, visual disorders, autism, and other severe manifestations.

SPED 409. Reading for Elementary Exceptional Learners in a Diverse Society, K-6
3 Credits
Emphasizes reading diagnosis and materials for students with special developmental and learning problems. Taught with SPED 509.

SPED 411. Reading for Elementary Exceptional Learners in a Diverse Society, 7-12
3 Credits
Extends information covered in SPED 509, which covers grades K-6. Strategies and materials are addressed.

SPED 450. Working with Young Children with Special Needs, Ages 3-8
3 Credits
Addresses competencies for working with young children with exceptionalities, ages three-eight, and their families. Public school, private school, Head Start and other models are included. Taught with SPED 550.
Prerequisite(s): SPED 350 or equivalent.

SPED 451. Assessment of Young Children, Birth-Eight
3 Credits
Covers instruments and procedures for assessing young children and their families in order to determine atypical development. Screening, diagnosis, program planning, placement and evaluation issues are covered. Same as SPED 551.
Prerequisite: SPED 450.

SPED 452. Foundations of Visual Impairment
3 Credits
This course provides an overview of the history and theory of teaching students with visual impairments, including those with additional disabilities. The impact of educational, legislative, and societal trends on the psychosocial adjustment, quality of life, and post-school outcomes of individuals with visual impairments is explored. Taught with SPED 532 and SPED 632. Consent of Instructor required.

SPED 453. Functional Implications of Low Vision
3 Credits
This course examines the structure and function of the visual system in relation to associated diseases and syndromes with an emphasis on measuring functional vision and determining appropriate educational adaptations. Taught with SPED 533 and SPED 633.

SPED 454. Strategies for Teaching Students with Visual and Multiple Impairments
3 Credits
This course defines the roles and responsibilities of the teacher of students with visual impairments as part of the transdisciplinary team that serves students with visual impairments and additional disabilities. Emphasis is on assessment, curricula (both academic and functional), communication, behavior management, assistive technologies, inclusion, transition, and independent living. Taught with SPED 534 and SPED 634.
Prerequisite(s): SPED 453.

SPED 455. Braille I: Literacy for Students with Visual Impairments
3 Credits
This course facilitates an in-depth study of the Uncontracted and Contracted Literary Braille codes as well as methods of teaching pre-braille, braille reading, and braille writing skills to tactual learners. Taught with SPED 536 and SPED 636.
SPED 457. Braille II: Literacy Skills for Students with Visual Impairments  
3 Credits  
This course facilitates an in-depth study of the Nemeth Braille Code for Mathematics and Science Notation as well as instructional strategies for using the abacus and developing numeracy. Specialized braille codes for computers, music, and foreign languages will be introduced. Taught with SPED 538 and SPED 638.  
Prerequisite(s): SPED 455 or SPED 536 or SPED 636 or Consent of Instructor.  

SPED 458. Intellectual Disabilities in a Diverse Society: An Introduction  
3 Credits  
Dealing with history, philosophy, goals and objectives, classification, and characteristics of intellectual disabilities. Taught with SPED 558 and SPED 658 with differentiated assignments. Consent of instructor required. Restricted to SPED majors.  
Prerequisite(s): SPED 350 or SPED 500 or consent of instructor.  

SPED 459. Classroom Management for Diverse Learners  
3 Credits  
Behavior-change strategies for exceptional learners.  

SPED 460. Strategies for Teaching Students with Visual Impairments  
3 Credits  
This course covers individualized educational programming in both the core and expanded core curriculums for children and youth with visual impairments with an emphasis on assessment, curricular adaptations, IFSP/IEP/ITP planning, and evidence-based practices. Taught with SPED 539 and SPED 639. Consent of Instructor required. Restricted to: SPED majors.  
Prerequisite(s): SPED 453, SPED 455, SPED 457 or Consent of Instructor.  

SPED 463. Introduction to Assessment of Diverse Exceptional Learners  
3 Credits  
Theory and use of norm and criterion-referenced instruments and learning theories in the classroom; planning of prescriptive instructional programs.  

SPED 466. The Learning Disabled Student in a Diverse Society  
3 Credits  
Current definitions, conceptualizations, and techniques. Taught with SPED 566 SPED 666 with differentiated assignments. Restricted to SPED majors.  
Prerequisite(s): SPED 350 or 500 or consent of instructor.  

SPED 467. Behavior Disorders in a Diverse Society  
3 Credits  
An in-depth study of the classification, characteristics, educational needs, and professional literature regarding individuals with behavior disorders. Taught with SPED 567 and SPED 667 with differentiated assignments. Restricted to SPED majors.  
Prerequisite(s): SPED 350 or SPED 500 or consent of instructor.  

SPED 470. Life Span Development and Transition in a Diverse Society  
3 Credits  
Special problems associated with transitions over the life span, with emphasis on adolescent and adult needs. Attention to service approaches for public schools, sheltered workshops, residential hospitals, and group homes.  

SPED 480. Secondary Curriculum, Methods, and Materials for Special Education in a Diverse Society  
3 Credits  
Curriculum theory and development for elementary special education programs. Various teaching methods utilized with secondary exceptional learners and techniques for identifying, adapting, and developing materials will be addressed. Taught with SPED 580.  

SPED 481. Practicum in Education, Equity and Cultural Diversity  
3 Credits  
This is a supervised experience in providing special education services to local preK-12 students. In the context of the public school classroom, teacher candidates are guided to apply content knowledge from the seminar meetings and from prior coursework. Restricted to: SPED majors.  
Prerequisite(s): SPED 350 and SPED 360 or consent of instructor.  

SPED 482. Student Teaching SPED  
12 Credits  
Supervised teaching in a special education classroom and participation in a required seminar. Restricted to: SPED majors.  
Prerequisite(s): SPED 481 and admission to student teaching.  

SPED 483. Early Childhood SPED Student Teaching  
6 Credits  
A student teaching experience designed for students studying early childhood special education. Restricted to majors. Same as SPED 583.  
Prerequisites: SPED 281 and admission to student teaching.  

SPED 485. Introduction to Autism  
3 Credits  
This course will provide an overview of autism spectrum disorders as a triad of impairments, including historical and theoretical perspectives, assessment issues, characteristics of autism, intervention programs, and family issues. Taught with SPED 585 and SPED 685.  

SPED 486. Behavior and Autism  
3 Credits  
This course will cover the first of the triad of impairments. Students will gain an understanding of the behaviors of children with autism. Students will examine several behavior management philosophies and research based interventions and how they can be applied in the educational setting. Attention will also be given to play skills. The family perspective and participation in the proactive behavior management process will be incorporated throughout the course. Taught with SPED 586 and SPED 686 with differentiated assignments.  
Prerequisite(s)/Corequisite(s): SPED 485 or SPED 585 or SPED 685.  

SPED 487. Social Skills and Autism  
3 Credits  
This course will cover the second of the triad of impairments. As a blend of researched based models and evidenced based practical applications, students will gain an understanding of the social skill deficits often associated with autism spectrum disorders. Review a variety of social cognition theories and explore effective social skill interventions for children functioning at a variety of levels along the autism spectrum. Taught with SPED 587 and SPED 687 with differentiated assignments.  
Prerequisite(s)/Corequisite(s): SPED 485 or SPED 585 or SPED 685.
SPED 488. Communication and Autism
3 Credits
This course will cover the third of the triad of impairments. Students will gain an overview of communication characteristics and difficulties often associated with autism spectrum disorders. Review current tools and strategies used to assess speech, language, and interaction skills. Use assessment results to identify needs and implement appropriate interventions. Explore a variety of intervention strategies aimed at building receptive, expressive, and pragmatic language of children functioning at a variety of levels along the autism spectrum. Taught with SPED 588 and SPED 688 with differentiated assignments.
Prerequisite(s): SPED485 or SPED585 or SPED685.

SPED 489. Topics
3 Credits
Offered under various subtitles which indicate the subject matter to be covered. May be repeated 3 times for a maximum of 9 credits.

SPED 495. Directed Study courses in Special Education
1-3 Credits
Each course shall be identified by a qualifying subtitle. A maximum of 3 credits per semester and a grand total of 9 credits.

SPED 500. Introduction to Special Education in a Diverse Society
3 Credits
This course introduces the field of special education to regular educators.

SPED 501. Topics in Special Education
1-3 Credits
Offered under various subtitles which indicate the subject matter to be covered. Maximum of 6 credits, 3 credits per semester.

SPED 502. Problems
1-3 Credits
Offered under various subtitles which indicate the subject matter to be covered. Maximum of 6 credits, 3 credits per semester.

SPED 503. Contemporary Development
1-3 Credits
Offered under various subtitles which indicate the subject matter to be covered. Maximum of 6 credits, 3 credits per semester.

SPED 504. Introduction to Assessment of Diverse Exceptional Learners
3 Credits
Required for students seeking licensure at graduate level. Theory and use of norm-and criterion-referenced instruments and learning theories in the classroom; planning of prescriptive instructional programs with differentiated assignments for graduate students. Crosslisted with: SPED 463. Restricted to: SPED majors.

SPED 506. High Incidence Disabilities in a Diverse Society
3 Credits
Examines those areas of disability that most frequently occur in the special education population, including mental retardation, learning disabilities, communication disorders, and behavioral and emotional disorders.

SPED 507. Low Incidence Disabilities in a Diverse Society
3 Credits
Examines those disabilities that occur less frequently in the special education population, including hearing loss, visual disorders, autism, and other severe manifestations. Taught with SPED 607 with differentiated assignments.

SPED 508. Nature and Needs of Gifted Learners
3 Credits (3)
An introductory course in the education of gifted students. The course provides an overview of the current and historical issues in the field. The intellectual, social, emotional, development, and educational characteristics of gifted students are introduced. Appropriate educational opportunities and programming are discussed. Issues in identification of the gifted, special gifted populations, and current research are reviewed. Taught with SPED 608

SPED 509. Reading for Elementary Exceptional Learners in a Diverse Society, K-6
3 Credits
Emphasizes reading diagnosis and materials for students with special developmental and learning problems. Taught with SPED 409.

SPED 510. Current Issues in Special Education for Teaching in Culturally Responsive Society
3 Credits
Theoretical and empirical bases for special education practices. Skill development in critical thinking, reading, and writing in relation to contemporary problems. Taught with SPED 610.

SPED 511. Reading for Secondary Exceptional Learners in a Diverse Society, 7-12
3 Credits

SPED 512. Curriculum for Gifted Learners
3 Credits (3)
This course focuses upon the development of appropriate curriculum, courses, and units for gifted learners. Taught with SPED 612.

SPED 513. Current Research in Special Education
3 Credits
Current investigations and research techniques.

SPED 514. Twice Exceptional and Special Populations of Gifted Learners
3 Credits (3)
This course is designed for all professional personnel who work with students who are gifted. It focuses on special populations of gifted learners who possess unique characteristics and needs. Emphases are placed on issues related to the characteristics, identification, and development of appropriate educational services for twice exceptional and special populations of gifted learners. Taught with SPED 614

SPED 516. Strategies for Teaching Gifted Learners
3 Credits (3)
This course comprehensively reviews teaching-learning models that can be used in the development and implementation of a curriculum for gifted students. The field of gifted education has seen new program models developed, more research accomplished, and new materials published, and this class examines these changes. Taught with SPED 616

SPED 519. School Interventions and Organization in a Diverse Society
3 Credits
Introduces public school organization and laws and the psychosociological perspective of education. Curriculum and theory, teaching methods and materials will be presented and operationalized through a psycho-educational point of view. Restricted to majors. Taught with SPED 619.
SPED 520. Reading Disabilities Structure of Language
3 Credits
The purpose of this course is to introduce the student to the structure of language, including phonology, morphology, syntax, semantics, and to orthography. In addition, students in this course will study each area of language and able to use this information in analyzing the process of reading and writing.

SPED 521. Intervention Techniques for Reading Disabilities
3 Credits
This course focuses on the systematic and explicit teaching of reading and writing skills. Included will be a summation of the most current reading research and its relevance to the field.

SPED 522. Practicum in Reading Disabilities
3 Credits
Supervised experience in assessing a student with reading disability, developing and intervention plan, and implementing and monitoring the interventions across time.

SPED 523. Advanced Curriculum for Diverse Exceptional Learners
3 Credits
Strategies for developing curricula appropriate to handicapped and gifted learners.
Prerequisite: SPED 360 or consent of instructor.

SPED 524. Foundations of Visual Impairment
3 Credits
This course provides an overview of the history and theory of teaching students with visual impairments, including those with additional disabilities. The impact of educational, legislative, and societal trends on the psychosocial adjustment, quality of life, and post-school outcomes of individuals with visual impairments is explored. Taught with SPED 452 and SPED 632 with differentiated assignment.

SPED 525. Functional Implications of Low Vision
3 Credits
This course examines the structure and function of the visual system in relation to associated diseases and syndromes with an emphasis on measuring functional vision and determining appropriate educational adaptations. Taught with SPED 453 and SPED 633.

SPED 526. Strategies for Teaching Students with Visual and Multisensory Impairments
3 Credits
This course defines the roles and responsibilities of the teacher of students with visual impairments as part of the transdisciplinary team that serves students with visual impairments and additional disabilities. Emphasis is on assessment, curricula (both academic and functional), communication, behavior management, assistive technologies, inclusion, transition, and independent living. Taught with SPED 454 and SPED 634.
Prerequisite(s): SPED 533.

SPED 527. Braille I: Literacy for Students with Visual Impairments
3 Credits
This course facilitates an in depth study of the Uncontracted and Contracted Literary Braille codes as well as methods of teaching pre-braille, braille reading, and braille writing skills to tactual learners. Taught with SPED 455 and SPED 636.

SPED 528. Braille II: Numeracy for Students with Visual Impairments
3 Credits
This course facilitates an indepth study of the Nemeth Braille Code for Mathematics and Science Notation as well as instructional strategies for using the abacus and developing numeracy. Specialized braille codes for computers, music, and foreign languages will be introduced. Taught with SPED 457 and SPED 638 with differentiated assignments.
Prerequisite(s): SPED 455 or SPED 536 or SPED 636 consent of instructor.

SPED 529. Strategies for Teaching Students with Visual Impairments
3 Credits
This course covers individualized educational programming in both the core and expanded core curriculums for children and youth with visual impairments with an emphasis on assessment, curricular adaptions, IFSP/IEP/ITP planning, and evidence-based practices. Taught with 460 and SPED 639. Restricted to: SPED majors.
Prerequisite(s): SPED 533, SPED 536, SPED 538.

SPED 530. Assessment of Reading and Writing
3 Credits
Differential diagnosis of reading and writing disabilities is the focus of this course. Students will develop competencies to diagnose different types of reading problems, including dyslexia. Students will be taught how accurate differential diagnosis leads directly to targeted intervention.

SPED 531. Technology and Exceptionality in a Diverse Society
3 Credits
This class will address the unique educational needs of learners with exceptionalities, and will provide information and practice in addressing those needs through the use of technology-based interventions. Taught with SPED 645.

SPED 532. Field Experience in Education, Equity & Cultural Diversity
3 Credits
This is a supervised experience in providing special education services to local preK-12 students. In the context of the public school classroom, teacher candidates are guided to apply content knowledge from the seminar meetings and from prior coursework. This experience is designed for both the practicing general education classroom teacher pursuing special education licensure and for graduate teacher candidates pursuing initial special education licensure. Restricted to: SPED majors.
Prerequisite(s): SPED 350 and SPED 360, or SPED 500 and SPED 523, or consent of instructor.

SPED 533. Working with Young Children with Special Needs, Ages 3-8
3 Credits
Addresses competencies for working with young children with exceptionalities, ages three eight, and their families. Public school, private school, Head Start and other models are included. Same as ECED 550.

SPED 534. Assessment of Young Children, Birth Eight
3 Credits
Covers instruments and procedures for assessing young children and their families in order to determine atypical development. Screening, diagnosis, program planning, placement and evaluation issues are covered. Same as SPED 451.
Prerequisite: SPED 550 or equivalent, or consent of instructor.
SPED 552. Introduction to Orientation and Mobility
3 Credits
This course provides an overview of the history and theory of formalized orientation and mobility instruction as it relates to the ability to live independently. The impact of visual impairment and concomitant impairments on the development of spatial concepts and motor skills in relation to independent locomotion is emphasized. Topics covered include mobility aids; navigation, familiarization, and protective techniques; structured pre-cane assessment and instruction; the development and use of tactual maps; and the relationship of orientation and mobility to other areas of the expanded core curriculum. Consent of Instructor required. Restricted to: SPED majors.

SPED 553. Beginning Orientation and Mobility
3 Credits
This course provides an overview of the profession of orientation and mobility and how sensory, motor, and psychosocial function affects movement and spatial orientation. Consent of Instructor required. Restricted to: SPED majors.
Prerequisite(s): SPED 552.

SPED 554. Intermediate Orientation and Mobility
3 Credits
This course focuses on strategies and methods for conducting assessments and appropriately sequencing skill acquisition for learners across the lifespan who may or may not have additional disabilities. Adaptive technology and other aids that assist with travel in a variety of environmental conditions using different mobility systems will also be covered. Consent of Instructor required. Restricted to: SPED majors.
Prerequisite(s): SPED 553.

SPED 555. Advanced Orientation and Mobility
3 Credits
This course focuses on the development and monitoring of cane skills needed for safe and efficient travel in indoor, residential, and business districts, including the use of public transportation systems. Development, administration, and supervision of orientation and mobility services is also covered. Consent of Instructor required. Restricted to: SPED majors.
Prerequisite(s): SPED 554.

SPED 558. Intellectual Disabilities in a Diverse Society: An Introduction
3 Credits
Dealing with history, philosophy, goals and objectives, classification, and characteristics of intellectual disabilities. Same as SPED 458 and SPED 558 with differentiated assignments for graduate students. Consent of instructor required. Restricted to: SPED majors.
Prerequisite(s): SPED 350 or SPED 500.

SPED 559. Classroom Management for Diverse Learners
3 Credits
Behavior-change strategies for exceptional learners. Taught with SPED 459 with differentiated assignments for graduate students.

SPED 563. Assessment and Consultation for Exceptional Multicultural Populations
3 Credits
Covers formal and informal methods of assessment as well as consultation models for multicultural populations. Same as BIL 563, BIL 663, SPED 663.

SPED 566. The Learning Disabled Student in a Diverse Society
3 Credits
Current definitions, conceptualizations, and techniques. Taught with SPED 466 with differentiated assignments for graduate students. Restricted to SPED majors.
Prerequisite(s): SPED 350 or SPED 500.

SPED 567. Behavior Disorders in a Diverse Society
3 Credits
An in-depth study of the classification, characteristics, educational needs, and professional literature regarding individuals with behavior disorders. Taught with SPED 467 and SPED 667 with differentiated assignments. Restricted to SPED majors.
Prerequisite(s): SPED 350 or SPED 500 or consent of instructor.

SPED 570. Life Span Development and Transition in a Diverse Society
3 Credits
Covers special problems associated with transitions over the lifespan, with emphasis on adolescent and adult needs. Attention to service approaches for public schools, sheltered workshops, residential hospitals, and group homes. Taught with SPED 470.

SPED 580. Curriculum, Methods, and Materials for Secondary Special Education
3 Credits
Culminating course required for graduate level students seeking initial licensure. Restricted to: SPED majors.
Prerequisite(s): Bachelor s degree, SPED 548, and admission to student teaching.

SPED 582. Student Teaching SPED
12 Credits
Curriculum theory and development for elementary special education programs. Various teaching methods utilized with secondary exceptional learners and techniques for identifying, adapting, and developing materials will be addressed. Taught with SPED 480.

SPED 585. Introduction to Autism
3 Credits
This course will provide an overview of autism spectrum disorders as a triad of impairments, including historical and theoretical perspectives; assessment issues, characteristics of autism, intervention programs, and family issues. Taught with SPED 485 and SPED 685. Differentiated Assignments.

SPED 586. Behavior and Autism
3 Credits
This course will cover the first of the triad of impairments. Students will gain an understanding of the behaviors of children with autism. Students will examine several behavior management philosophies and research based interventions and how they can be applied in the educational setting. Attention will also be given to play skills. The family perspective and participation in the proactive behavior management process will be incorporated throughout the course. Taught with SPED 486 and SPED 686 with differentiated assignments.
Prerequisite(s): SPED 485 or SPED 585 or SPED 685.
SPED 587. Social Skills and Autism
3 Credits
This course will cover the second of the triad of impairments. As a blend of researched based models and evidenced based practical applications, students will gain an understanding of the social skill deficits often associated with autism spectrum disorders. Review a variety of social cognition theories and explore effective social skill interventions for children functioning at a variety of levels along the autism spectrum. Taught with SPED 487 and SPED 687 with differentiated assignments.
Prerequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 588. Communication and Autism
3 Credits
This course will cover the third of the triad of impairments. Students will gain an overview of communication characteristics and difficulties often associated with autism spectrum disorders. Review current tools and strategies used to assess speech, language, and interaction skills. Use assessment results to identify needs and implement appropriate interventions. Explore a variety of intervention strategies aimed at building receptive, expressive, and pragmatic language of children functioning at a variety of levels along the autism spectrum. Taught with SPED 488 and SPED 688 with differentiated assignments.
Prerequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 590. Masters Degree Seminar
3 Credits
Capstone review of current issues in special education. Each student will participate in a practice comprehensive oral exam.

SPED 598. Special Research Problems
1-3 Credits
Individual investigation either analytical or experimental. May be repeated for a maximum of 6 credits, 3 credits per semester.

SPED 599. Master’s Thesis
15 Credits
Thesis.

SPED 600. Doctoral Research
1-15 Credits
Research.

SPED 605. Independent Study Topics in Special Education
1-6 Credits
A problem and seminar course for those pursuing an advanced graduate degree. Each course to bear an appropriate subtitle.

SPED 606. High Incidence Disabilities in a Diverse Society
3 Credits
Examines those areas of disability that most frequently occur in the special education population, including mental retardation, learning disabilities, communication disorders, and behavioral and emotional disorders. Taught with SPED 506. Restricted to SPED and C D majors. Prerequisite: Master’s Degree.

SPED 607. Low Incidence Disabilities
3 Credits
Examines those disabilities that occur less frequently in the special education population, including hearing loss, visual disorders, autism, and other severe manifestations. Taught with SPED 507 with differentiated assignments.

SPED 608. Nature and Needs of Gifted Learners
3 Credits (3)
An introductory course in the education of gifted students. The course provides an overview of the current and historical issues in the field. The intellectual, social, emotional, development, and educational characteristics of gifted students are introduced. Appropriate educational opportunities and programming are discussed. Issues in identification of the gifted, special gifted populations, and current research are reviewed. Taught with SPED 508

SPED 610. Current Issues in Special Education for Teaching in a Culturally Responsive Society
3 Credits
Required for students seeking the Ed.D./Ph.D. Taught with SPED 510.

SPED 612. Curriculum for Gifted Learners
3 Credits (3)
This course focuses upon the development of appropriate curriculum, courses, and units for gifted learners. Taught with SPED 512

SPED 613. Current Research in Special Education
3 Credits
Required for students seeking the Ed.D./Ph.D. Restricted to majors. Same as SPED 513. Prerequisite: M.A. degree.

SPED 614. Twice Exceptional and Special Populations of Gifted Learners
3 Credits (3)
This course is designed for all professional personnel who work with students who are gifted. It focuses on special populations of gifted learners who possess unique characteristics and needs. Emphases are placed on issues related to the characteristics, identification, and development of appropriate educational services for twice exceptional and special populations of gifted learners. Taught with SPED 514

SPED 616. Strategies for Teaching Gifted Learners
3 Credits (3)
This course comprehensively reviews teaching-learning models that can be used in the development and implementation of a curriculum for gifted students. The field of gifted education has seen new program models developed, more research accomplished, and new materials published, and this class examines these changes. Taught with SPED 516.

SPED 619. School Intervention and Organization in a Diverse Society
3 Credits
Introduces public school organization and laws and the psychosocial perspective of education. Curriculum and theory, teaching methods and materials will be presented and operationalized through a psycho-educational point of view. Restricted to majors. Taught with SPED 519.

SPED 632. Foundations of Visual Impairment
3 Credits
This course provides an overview of the history and theory of teaching students with visual impairments, including those with additional disabilities. The impact of educational, legislative, and societal trends on the psychosocial adjustment, quality of life, and post-school outcomes of individuals with visual impairments is explored. Taught with SPED 452 and SPED 532.

SPED 633. Functional Implications of Low Vision
3 Credits
This course examines the structure and function of the visual system in relation to associated diseases and syndromes with an emphasis on measuring functional vision and determining appropriate educational adaptations. Taught with SPED 453 and SPED 533.
SPED 634. Strategies for Teaching Students with Visual and Multiple Impairments  
3 Credits  
This course defines the roles and responsibilities of the teacher of students with visual impairments as part of the transdisciplinary team that serves students with visual impairments and additional disabilities. Emphasis is on assessment, curricula (both academic and functional), communication, behavior management, assistive technologies, inclusion, transition, and independent living. Taught with SPED 454 and SPED 534.  
Prerequisite(s): SPED 633.

SPED 636. Braille I: Literacy for Students with Visual Impairments  
3 Credits  
This course facilitates an in-depth study of the Uncontracted and Contracted Literary Braille codes as well as methods of teaching pre-braille, braille reading, and braille writing skills to tactual learners. Taught with SPED 455 and SPED 536.

SPED 638. Braille II: Numeracy for Students with Visual Impairments  
3 Credits  
This course facilitates an in-depth study of the Nemeth Braille Code for Mathematics and Science Notation as well as instructional strategies for using the abacus and developing numeracy. Specialized braille codes for computers, music, and foreign languages will be introduced. Taught with SPED 457 and SPED 538.  
Prerequisite(s): SPED 455 or SPED 536 or SPED 636.

SPED 639. Strategies for Teaching Students with Visual Impairments  
3 Credits  
This course covers assessment, curricular adaptation's, knowledge of transition age, young children with multiple disabilities, and assistive technology. Taught with SPED 460 and SPED 539. Consent of instructor required. Restricted to: SPED majors.  
Prerequisite(s): SPED 633, SPED 636, SPED 638 or Consent of Instructor.

SPED 640. Internship in Special Education  
1-6 Credits  
Each course bears a qualifying subtitle. Maximum of 6 credits per semester.

SPED 645. Technology and Exceptionality in a Diverse Society  
3 Credits  
This class will address the unique educational needs of learners with exceptionalities, and will provide information and practice in addressing those needs through the use of technology-based interventions. Taught with SPED 545.

SPED 662. Elementary Curriculum Methods and Materials for Special Education in a Diverse Society  
3 Credits  
ESL and bilingual methods applied to bilingual exceptional students. Appropriate curriculum needs and materials development are also included. Taught with SPED 360, SPED 562.

SPED 685. Introduction to Autism  
3 Credits  
This course will provide an overview of autism spectrum disorders as a triad of impairments, including historical and theoretical perspectives, assessment issues, characteristics of autism, intervention programs, and family issues. Differentiated Assignments. Taught with SPED 585 and SPED 485.

SPED 686. Behavior and Autism  
3 Credits  
This course will cover the first of the triad of impairments. Students will gain an understanding of the behaviors of children with autism. Students will examine several behavior management philosophies and research based interventions and how they can be applied in the educational setting. Attention will also be given to play skills. The family perspective and participation in the proactive behavior management process will be incorporated throughout the course. Taught with SPED 486 and SPED 586 with differentiated assignments.  
Prerequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 687. Social Skills and Autism  
3 Credits  
This course will cover the second of the triad of impairments. As a blend of researched based models and evidenced based practical applications, students will gain an understanding of the social skill deficits often associated with autism spectrum disorders. Review a variety of social cognition theories and explore effective social skill interventions for children functioning at a variety of levels along the autism spectrum. Taught with SPED 487 and SPED 587 with differentiated assignments.  
Prerequisite(s)/Corequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 688. Communication and Autism  
3 Credits  
This course will cover the third of the triad of impairments. Students will gain an overview of communication characteristics and difficulties often associated with autism spectrum disorders. Review current tools and strategies used to assess speech, language, and interaction skills. Use assessment results to identify needs and implement appropriate interventions. Explore a variety of intervention strategies aimed at building receptive, expressive, and pragmatic language of children functioning at a variety of levels along the autism spectrum. Taught with SPED 488 and SPED 588 and differentiated assignments.  
Prerequisite(s): SPED 485 or SPED 585 or SPED 685.

SPED 690. Doctoral Seminar  
1-4 Credits (1-4)  
The seminar will engage doctoral students in scholarly dialogue and production. It will assist in preparing them for future careers in leadership roles. Same as CD 690.

SPED 698. Selected Topics in Special Education  
1-6 Credits  
Offered under various subtitles which indicate the subject matter to be covered. Maximum of 6 credits, 3 credits per semester.

SPED 700. Dissertation  
9 Credits  
Credit may be earned by students who have successfully completed their doctoral comprehensive exams and presented their dissertation proposals to their committees. At least 18 credits are required during the course of dissertation study. May be repeated for a maximum of 24 credits. Restricted to majors.

STAT-STATISTICS (STAT)

STAT 251G. Statistics for Business and the Behavioral Sciences  
3 Credits  
Techniques for describing and analyzing data; estimation, hypothesis testing, regression and correlation; basic concepts of statistical inference. Crosslisted with: A ST 251G.  
Prerequisite(s): C- or better in MATH 120.
STAT 271G. Statistics for Psychological Sciences
3 Credits
Techniques for describing and analyzing data; basic concepts of statistical inference; estimation, hypothesis testing, correlation, and analysis of variance.
Prerequisite(s): C- or better in MATH 120.

STAT 371. Statistics for Engineers and Scientists I
3 Credits
Modern probability and statistics with applications to the engineering sciences.
Prerequisite(s): C - or better in MATH 192.

STAT 400. Undergraduate Research
1-3 Credits
Arrangements must be made with supervising professor before registration. May be repeated for a maximum of 6 credits.

STAT 470. Probability: Theory and Applications
3 Credits
Basic probability distributions including binomial, normal; random variables, expectation; laws of large numbers; central limit theorem.
Prerequisite(s): C- or better in MATH 291 and C- or better in at least one-300 level Math course.

STAT 480. Statistics: Theory and Applications
3 Credits
Point and interval estimation; sufficiency; hypothesis testing; regression; analysis of variance; chi-square tests.
Prerequisite(s): C- or better in STAT 470.

STAT 515. Probability: Theory and Applications
3 Credits
Same as STAT 470 with additional work for graduate students.

STAT 525. Statistics: Theory and Applications
3 Credits
Same as STAT 480 with additional work for graduate students.

STAT 535. Elementary Stochastic Processes
3 Credits
Markov chains, Poisson processes, Brownian motion, branching processes, and queuing processes, with applications to the physical, biological, and social sciences.
Prerequisite: STAT 515 or consent of instructor.

STAT 540. Directed Reading
1-6 Credits
May be repeated for a maximum of 6 credits. Graded S/U.
Prerequisite: consent of instructor and graduate committee.

STAT 562. Foundations of Probability
3 Credits
Probability spaces, expectation and conditional expectation, limit theorems and laws of large numbers.
Prerequisite: MATH 593.

STAT 571. Continuous Multivariate Analysis
3 Credits
Theory and applications of the multivariate normal distribution.
Prerequisites: MATH 480 and STAT 525, or consent of instructor.

STAT 572. Linear Models
3 Credits
Core topics include distribution of quadratic forms, theory of regression, analysis of variance and covariance in linear models. Advanced topics chosen from random and mixed linear models, generalized linear, growth curve, and nonlinear models, quartile and copula regression. May be repeated up to 6 credits.
Prerequisite(s): STAT 571.

STAT 581. Advanced Theory of Statistics I
3 Credits
Testing hypotheses, probability and sufficiency, uniformly most powerful tests, unbiasedness, invariance, and minimax principle.
Prerequisite: STAT 525 or consent of instructor.

STAT 582. Advanced Theory of Statistics II
3 Credits
Estimation of parameters; unbiased estimators; equivariance; Bayes properties; large sample theory and optimality.
Prerequisite: STAT 581 or consent of instructor.

STAT 598. Special Research Problems
1-3 Credits
Individual investigations or consulting programs. Maximum of 3 credits.

SUR-SURVEYING (SUR)

SUR 101. Introduction to Surveying Engineering
1 Credit
Review and discussion of career paths open to surveying engineers. Restricted to: Main campus only.

SUR 201. GPS and Spatial Data Applications
3 Credits
Overview of spatial data applications based on GPS observations. Emphasis on positioning and navigation using code-phase techniques with handheld receivers. Use of coordinate systems. Students encouraged to have their own GPS handheld unit.

SUR 222. Plane Surveying
3 Credits (2+3P)
Theory and practice of geomatics as applied to plane surveying in the areas of linear measurements, angle measurements, area determination, differential and trigonometric leveling, and topographic mapping. May be repeated up to 3 credits. Crosslisted with: DRFT 222.
Prerequisite(s): MATH 190G.

SUR 264. Introduction to LIS
3 Credits (2+3P)
Introduction to land information systems. Land tenure systems, coordinate systems, computer methods. Pre/Corequisite(s): DRFT 109.

SUR 285. Precise Digital Mapping
3 Credits
Perform basic photogrammetric mapping, and create digital terrain models. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): SUR 222 or DRFT 222.

SUR 292. Public Land Survey System Boundaries
3 Credits (2+3P)
Detailed study of the U.S. Public Land Survey System Instructions with special emphasis on New Mexico. Sectionalized land subdivision, corner restoration, and field surveys. Field trips required.
Prerequisite: SUR 222.
SUR 312. Legal Principles and Boundary Law I
3 Credits
Legal principles of property boundary retracement, and rights-of-way. Systems of law and legal research. Principles of the U.S. Public Land Survey System and manual of Instructions May be repeated up to 3 credits.
Prerequisite(s): SUR 222 or DRFT 222.

SUR 322. Laser Scanning Mapping Technologies
3 Credits (2+2P)
Perform basic terrestrial & airborne LiDAR scan, LiDAR Technologies and Applications will include ranging technologies such as LiDAR, SAR, and Bathymetry, point cloud data management & extraction, scan registration and processing
Prerequisite(s): SUR 285.

SUR 328. Construction Surveying & Automation Technologies
3 Credits (2+3P)
Construction Surveying Principles: conventional and machine controlled. Layout alignments, grades, various infrastructure, buildings. Understand error identification, common quality control checks and blunder identification. May be repeated up to 3 credits.
Prerequisite(s): (SUR 222 or DRFT 222) and (MATH 191G or MATH 235).

SUR 330. Computer Applications of Surveying
3 Credits (2+3P)
Advanced application of concepts and tools used in the manipulation of geospatial data in a computer environment. Topics include the use of surveying-specific software applications for problem solving, analysis and generation of spatial data products. Advanced programming skills in a high level language are presented and applied.
Prerequisite(s): DRFT 109 AND SUR 222, and (MATH 191G or MATH 235) and (C S 187 or E T 262 or E E 161).

SUR 351. Introductory Spatial Data Adjustment I
3 Credits
Theory of observations/measurements, random error theory, applications of statistical data analysis in surveying, confidence intervals and statistical testing, propagation of random errors. May be repeated up to 3 credits.
Prerequisite(s): (SUR 222 or DRFT 222) and (MATH 191G or MATH 235) and (A ST 311G or STAT 251G).

SUR 361. Introduction to Geodesy/Geodetic Control Surveying
3 Credits (2+2P)
Horizontal and vertical control network design and consideration. May be repeated up to 3 credits.
Prerequisite(s): (SUR 222 or DRFT 222) and (MATH 191G or MATH 235).

SUR 370. Control Surveying
3 Credits (2+3P)
Prerequisite(s): SUR 222 and (MATH 191G or MATH 235G).

SUR 384. Surveying Practicum
1-3 Credits
Surveying practice under the direction of a licensed, professional land surveyor requiring 45 hours per credit as per a plan worked out between the student and the surveyor and approved by the Surveying Engineering faculty. Work must be certified by the licensed, professional land surveyor. Requires a written report by the student.
Prerequisites: SUR 222 and junior standing.

SUR 401. Ethics and Professionalism in Surveying and Mapping
3 Credits
Ethics as applied to the surveying profession. Includes case studies and problems.
Prerequisites: SUR 312, SUR 328, and senior standing.

SUR 412. Advanced Topics in Boundary Surveying
3 Credits (2+3P)
Advanced land boundary topics including water boundaries, mineral claims, Spanish and Mexican land grants, state and national boundaries.
Prerequisite: SUR 312.

SUR 450. Senior Project
1 Credit
Research project prepared by student. Includes class presentation. Students will learn how to research after the end of their formal education.
Prerequisite(s): Senior Standing.

SUR 451. Advanced Survey Measurements, Analysis, and Adjustments
3 Credits
Rigorous analysis of the theory of observations as applied to spatial data, application of least squares adjustments, ability to perform statistical analysis to determine accuracy of final product, constrained/free geospatial data integration, error ellipses, and pre-analysis of spatial data acquisition procedures. May be repeated up to 3 credits.
Prerequisite(s): SUR 351, (MATH 280 or MATH 480).

SUR 452. Spatial Data Integration and Analysis
3 Credits (2+2P)
Methodologies of geospatial data acquisition and integration, knowledge of applications the source data is intended for, accuracies of acquired spatial data, types and analysis of coordinate transformation models. Integrating datasets for routing analysis, location study analysis, land management and long range plans as well as existing needs related to connectivity and safety. May be repeated up to 3 credits.
Prerequisite(s): SUR 451.

SUR 461. GNSS Positioning
3 Credits (2+3P)
Logistics of GNSS data collection, the GPS signal, codes and biases, error sources, differences between relative and autonomous GNSS positioning, code phase carrier phase, DGPS static and RTK surveys. Geodetic and GPS standards and specifications GNSS data processing, network adjustments, and evaluation of spatial data accuracy practical applications of GNSS May be repeated up to 3 credits.
Prerequisite(s): SUR 361.

SUR 464. Legal Principles and Boundary Law II
3 Credits
Concepts of real property, land tenure and ethics, and land registration systems; the function and design of multipurpose cadastre and land information systems. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): SUR 312.

SUR 498. Emerging Technology in Geomatics
3 Credits
Hydrographic/Bathymetric, Altimetry, Space borne Imaging Systems, Mobile Mapping Systems, Mining and Agriculture Surveying Principles, and advanced ranging data acquisition systems. May be repeated up to 3 credits. Consent of Instructor required.
Prerequisite(s): Consent of instructor and senior standing.
SURG-SURGICAL TECHNOLOGY (SURG)

SURG 120. Surgical Technology Clinical I
2-4 Credits
This is a health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. This course is designed to prepare the student to enter the surgical environment. This course provides an introduction to the operating room, observation of surgical procedures, direct participation in the preoperative (pre-op, intra-op, post-op) preparation of individual cases and professional roles and responsibilities of individual members of the surgical team. Direct supervision is provided by the clinical professional. May be repeated up to 4 credits.
Prerequisite(s): Admission to Surgical Technology Program, BIOL 221, BIOL 225, BIOL 226, NURS 150.
Corequisite(s): SURG 140, SURG 145.

SURG 140. Introduction to Surgical Technology
4 Credits
This is an orientation to surgical technology theory, surgical pharmacology and anesthesia, technology sciences and patient care concepts and is designed to prepare the student to enter the surgical environment with entry-level knowledge necessary to understand patient responses to disease, illness, hospitalization, surgical procedures, commonly used pharmacological and anesthetic agents, and legal, moral, and ethical issues that could be encountered in the surgical environment. Restricted to Community Colleges campuses only.
Prerequisite(s): Admission to Surgical Technology Program; BIOL 221, BIOL 226, & NURS 150.

SURG 145. Fundamentals of Perioperative Concepts & Techniques
4-5 Credits (3+3P)
This is an in-depth coverage of perioperative concepts such as aseptic/sterile principles and practice, infectious processes, wound healing and creation and maintenance of the sterile field. This course is designed to prepare the student to enter the surgical environment with entry-level knowledge of aseptic technique principles and practices, the creation and maintenance of the sterile field including equipment, supplies and instrumentation, and basic care preparation and procedures. An introduction to diseases and disease processes that may be displayed by the surgical patient and the patient’s bodily responses to disease are also included. May be repeated up to 5 credits.
Prerequisite(s): Admission to Surgical Technology Program, BIOL 221, BIOL 225, BIOL 226, & NURS 150.

SURG 150. Surgical Procedures I
4-5 Credits (3-5+3P)
This course is an introduction to surgical procedures and its related pathologies. Emphasis on surgical procedures related to thoracic, peripheral vascular, plastic/reconstructive, ophthalmology, cardiac and neurological surgical specialties incorporating instruments. The course is designed to prepare the student to function actively in the surgical environment with entry-level knowledge of more complex surgical procedures. This course expands the basic foundation principles and combines the study of common surgical procedures to include anatomy, physiology, and pathophysiology. Specific patient care concepts, medications, instrumentation, equipment, supplies, and complications related to specific surgical procedures will be discussed. Realities of clinical practice and concepts of death and dying will also be discussed. Admission to Surgical Technology Program necessary to enroll in the course. Restricted to Community Colleges campuses only.
Prerequisite(s): SURG 140, SURG 145, and SURG 120.

SURG 155. Pharmacology for the Surgical Technology
3 Credits
This is an orientation to surgical pharmacology and anesthesia and is designed to prepare the student to enter the surgical environment with knowledge necessary to categorize the classification of drugs, calculate drug dosages and identify the therapeutic use, routes of administration, indications, contraindications and adverse effects of pharmacologic agents used in the perioperative setting. This course is the foundation for the acquisition of program specific competencies as identified by the AST Core Curriculum. Restricted to Carlsbad campus only.

SURG 160. Surgical Procedures II
4 Credits
This an introduction to surgical procedures and related pathologies. Emphasis on surgical procedures related to thoracic, peripheral vascular, plastic/reconstructive, ophthalmology, cardiac and neurological surgical specialties incorporating instruments. The course is designed to prepare the student to function actively in the surgical environment with entry-level knowledge of more complex surgical procedures. This course expands the basic foundation principles and combines the study of complex surgical procedures to include anatomy, physiology, and pathophysiology. Specific patient care concepts, medications, instrumentation, equipment, supplies, and complications related to specific surgical procedures will be discussed. Realities of clinical practice and concepts of death and dying will also be discussed. Admission to Surgical Technology Program necessary to enroll in the course. Restricted to Community Colleges campuses only.
Prerequisite(s): SURG 150, SURG 260.

SURG 230. Professional Readiness
2-3 Credits (2-3)
This course transitions the student into professional readiness for employment, professional readiness for attaining certification and professional readiness for maintaining certification status. May be repeated up to 3 credits. Admission to Surgical Technology Program necessary to enroll in the course.
Prerequisite(s): SURG 140, SURG 145, SURG 120, SURG 150, SURG 260.
Corequisite(s): SURG 160, SURG 265.

SURG 260. Surgical Technology Clinical II
4 Credits
This is a health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. Direct supervision is provided by the clinical professional. This course is designed to provide the student the opportunity to function actively in the role as a surgical technologist and health care team member in a clinical setting under the direct supervision of faculty and health care staff. Applications of basic principles and practices combined with a supervised clinical experience participating in common surgical procedures is the focus. Admission to Surgical Technology Program necessary to enroll in the course. Restricted to Community Colleges campuses only.
Prerequisite(s): SURG 120, SURG 140, & SURG 145.
SURG 265. Surgical Technology Clinical III
3-7 Credits
This is a health-related work-based learning experience that enables the student to apply specialized occupational theory, skills, and concepts. This course is designed to provide the student the opportunity to function actively in the role of a surgical technologist and health care team member in a clinical setting under the direct supervision of faculty and health care staff. Refinement and application of basic principles and practices combined with entry-level employment competency expectations is the focus. Preparation for the National Certification Examination for Surgical Technologists is also included. May be repeated up to 7 credits. Admission to Surgical Technology Program necessary to enroll in the course.
Prerequisite(s): SURG 260.

TCEN-ENVIRONMENTAL/ENERGY TECH (TCEN)

TCEN 101. Energy for the Next Generation
3 Credits (2+2P)
This course will survey a broad range of sources of energy, types of energy, energy storage, and the forms of energy. Students will be exposed to theory in the classroom, laboratory exercises, and field trips to provide them with a solid foundation for all subsequent energy related environmental courses. Crosslisted with: OETS 101.
Prerequisite(s)/Corequisite(s): OETS 118 or MATH 120. Restricted to: Community Colleges only.

TCEN 105. Building Analyst I
3 Credits (2+2P)
This course is designed to provide the foundational knowledge and expertise necessary for the energy auditor and home performance contractor. Crosslisted with: OETS 105. Restricted to: Community Colleges only.

TCEN 106. Building Analyst II
3 Credits (2+2P)
Designed to prepare the student for the BPI Building Analyst Certification. This course will walk the student through the hands-on process of conducting visual building inspections, diagnostic testing, identifying improvement opportunities, documenting a home's performance and preparing a scope of work. Crosslisted with: OETS106.
Prerequisite(s)/Corequisite(s): TCEN 105 or OETS 105. Restricted to: Community Colleges only.

TCEN 110. Photovoltaic Application
4 Credits (3+2P)
This course will provide an introduction to Photovoltaic (PV) installation. The course will provide instruction on site selection, prep, installation, and maintenance for photovoltaic applications. Students that complete the course and have the opportunity to take the entry level exam with the North American Board of Certified Energy Practitioners (NABCEP) en route to becoming Certified Installers. Crosslisted with: OETS110.
Prerequisite(s)/Corequisite(s): TCEN 101 or OETS 101. Restricted to: Community Colleges only.

TCEN 111. Basic Electrical Principles I, DC Circuits
4 Credits (3+2P)
Course begins with the basics of electricity and DC circuits. Includes categorization of material properties within conductors, semiconductors, and insulators. Gradual progression tackles more complex topics like DC circuit analysis of series and parallel circuits, including Kirchhoff's laws, Thevenin's & Norton's theorems, and superposition. Finally DC combination circuits, magnetism and electromagnetism, generators and motors are covered. Emphasis on safety throughout. May be repeated up to 4 credits.
Prerequisite(s)/Corequisite(s): OETS 104 or MATH 120. Restricted to Community Colleges campuses only.

TCEN 112. PV Power Generation Design Fundamentals
3 Credits (2+2P)
A study of photo voltaic design basics, photo voltaic (PV) Cells, modules, and system components; electrical circuits; grid-tied/grid-interactive PV system design and sizing for use on homes; solar electric products and applications; and understanding energy conversion from sunlight to electricity, and working with solar conversion equipment. Pre/ May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): TCEN 111 and (OETS 104 or MATH 120). Restricted to Community Colleges campuses only.

TCEN 113. OSHA 10 Hour Construction Hazard Identifications
1 Credit
Intended for entry-level participants to provide instruction on a variety of construction safety and health standards. Topics include Introduction to OSHA, Electrical, Ladder, Excavation, Scaffold, and Forklift Hazards, Fall Protection, Materials Handling, Personnel Protective Equipment and Confined Space Entry Hazards. Meets OSHA 10-Hour Requirements.

TCEN 115. Wind Power Generation Design Fundamentals
3 Credits (2+2P)
Course covers wind turbine module descriptions and functions and wind system installation, operation, and troubleshooting. Additional topics include wind energy harvesting and the conversion process from the generator system to electricity. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): TCEN 111 and (OETS 104 or MATH 120). Restricted to Community Colleges campuses only.

TCEN 121. Basic Electrical Principles II, AC Circuits
4 Credits (3+2P)
Course begins with an overview of the primary components of AC circuits, such as resistors, inductors, rectifiers, transformers and capacitors, and then gradually introduces new, more complicated topics like applying AC principles in power generation and generators, motors, parallel and combination circuits, troubleshooting and evaluation of circuit conditions. May be repeated up to 4 credits.
Prerequisite(s)/Corequisite(s): TCEN 111 and (OETS 104 or MATH 120). Restricted to Community Colleges campuses only.

TCEN 130. Introduction to Biomass/Biogas
3 Credits (2+2P)
Introduction to utilization of renewable biological wastes including crops for production of fuels. Anaerobic digester, gasification, pyrolysis, combustion and fermentation will be covered.
Prerequisite(s)/Corequisite(s): TCEN 101 or OETS 101. Restricted to: Community Colleges only.
TCEN 140. Biofuel Science
3 Credits (2+2P)
Fundamentals of basic organic chemistry and biochemistry applied to biofuel synthesis. Students will also be introduced to concept of conservation of matter and chemical reactions. Restricted to: Community Colleges only.

TCEN 156. Building Envelope
3 Credits (2+2P)
Designed to prepare the student for the BPI Building Envelope Certification. This course will provide the principles behind building performance testing and the purpose of completing a comprehensive energy audit. Through lecture and subsequent field training, the student will learn how to use building diagnostics to develop a prescriptive plan for enhancing comfort, health & safety, building durability, and energy savings. The student will learn how to outline the follow-up process required after completion of the retrofit. Crosslisted with: OETS156.
Prerequisite(s): TCEN 106 or OETS 106.

TCEN 180. Bio-diesel and Bio-ethanol Production
4 Credits (2+4P)
Overview of the production of biofuels. Students will be introduced to current biofuel production processes, transesterification, hydrolysis and fermentation reactions, distillation, and laboratory synthesis of biofuels and engine performance tests. Restricted to: Community Colleges only.
Prerequisite(s): TCEN 140.

TCEN 205. NEC for Alternative Energy
4 Credits (2+4P)
This hands-on course will cover the National Electrical Code specifics concerning photovoltaic installation. Also code compliant wiring of basic electrical systems will be covered. Existing installations will be visited and studied. Restricted to: Community Colleges only.
Prerequisite(s): TCEN 101 and ELT 105.

TCEN 210. Solar Thermal
4 Credits (2+4P)
The purpose of this course is for students to learn to install solar thermal collectors for several applications, including domestic hot water, pool heating, and space heating. Students will be able to identify types of systems and components, adapt a system design, conduct a site assessment, install solar collectors, install components, install control systems, perform a system checkout, and maintain and troubleshoot a solar thermal system. Restricted to: Community Colleges only.
Prerequisite(s): TCEN 101 or OETS 101.

TCEN 215. Fluid Thermal Systems
4 Credits (2+4P)
Fluid properties and measurement, piping and tubing standards, pumps and operation. Restricted to: Community Colleges only.
Prerequisite(s): PHYS 110G or PHYS 211G.

TCEN 220. Cooperative Experience
1-3 Credits (1-3)
Supervised cooperative work program. Student is employed in an approved occupation and supervised and rated by the employer and instructor. May be repeated up to 6 credits. Consent of Instructor required.
Prerequisite(s)/Corequisite(s): MAT 235. Prerequisite(s): TCEN 180.
Restricted to: TCEN majors. S/U Grading (S/U, Audit). Restricted to: Community Colleges only.

TCEN 221. Roofing Materials and Methods
3 Credits (2+2P)
Covers application techniques and estimation of asphalt and wood roofing products and accessories including gutters and flashing. Presents roof penetration, roof loading issues, and energy system installation requirements for mounting photo voltaic or solar thermal systems.
Prerequisite(s): TCEN 112.

TCEN 222. Photo Voltic Grid Tie Installation
4 Credits (3+2P)
This is a more advanced course culminating in a PV system-to-grid connection. This course includes gathering site specific data, design, wire type and sizing specific to project, installation of all solar modules and balance of system (BOS)components, and grounding and bonding of system components, all in accordance with the latest NEC. Upon project design approval a system will be commissioned for the grid. Decommissioning will commence after measurements and troubleshooting as directed by the instructor. May be repeated up to 4 credits.
Prerequisite(s)/Corequisite(s): TCEN 121 and TCEN 223. Prerequisite(s): TCEN 111 and TCEN 112. Restricted to Community Colleges campuses only.

TCEN 223. Photo Voltic National Electrical Code Principles
2 Credits (2+1P)
Focuses on all sections of the National Electrical Code and local code requirements applicable to photo voltaic electrical installation. A partial list of areas covered is chapters one through four and section 690, "Solar Photovoltaic Systems" of the National Electrical Code. Pre:
Prerequisite(s): TCEN 112.
Corequisite(s): TCEN 222.

TCEN 224. Field Experience
1-3 Credits (1-3)
Student will collaborate with instructor in proposing, defining, implementing, and analyzing outcomes of a project in the Environmental and Energy fields of study. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: TCEN majors. Restricted to: Community Colleges only.

TCEN 240. Renewables and Sustainability
3 Credits
Various renewable energy technologies and sustainable design practices will be introduced. Restricted to: Community Colleges only.
Prerequisite(s): TCEN 101 or OETS 101.

TCEN 241. Solar Thermal SHW Principles/Installation and Maintenance
3 Credits (2+2P)
Course presents the theory, installation, operation, and maintenance of solar hot water (SHW) systems. Topics include the types of systems to choose, the costs associated with SHW installation and operation, system sizing requirements, batteries and battery chemistry. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): OETS 104 or MATH 120.
TCEN 246. Building Weatherization & Auditor Fundamentals
3 Credits
Course provides information on how to locate air leaks and identify heat losses or gains through specific testing. Students will learn how to inspect and evaluate building envelopes, mechanical systems, and ventilation systems to determine the safety and energy consumption for each system. May be repeated up to 3 credits. Restricted to Community Colleges campuses only.
Prerequisite(s): TCEN 113 and OETS 104.
Corequisite(s): TCEN 221.

TCEN 250. Photo Voltaic System Integrator Fundamentals
3 Credits
Teaches the student project management fundamentals for working with homeowners, businesses, government, contractors, and manufacturers to design, build, and install complete alternative energy systems. Covers photovoltaic, small wind, and micro-hydro system designing, permitting, budgeting, and cost estimating requirements. Pre/ Consent of Instructor required. Restricted to Community Colleges campuses only.
Prerequisite(s): E T 125.
Corequisite(s): TCEN 222.

TCEN 251. Advanced Photo Voltaic On/Off Grid Installation
3 Credits (2+2P)
Photo Voltaic advanced topics to include panel racking and installation, battery storage, charge controllers, mechanical integration of arrays on buildings, and key elements involved in choosing a mounting system. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): TCEN 222. Restricted to Community Colleges campuses only.

TCEN 252. NABCEP Entry-Level Exam Review
1 Credit
Course presents knowledge, key terms, and concepts of photovoltaic systems and solar hot water systems as related to the NABCEP Entry-level exam. This exam is for those wanting to enter the workforce in either solar thermal or solar PV. Scheduling and taking the exam is the responsibility of the student. May be repeated up to 1 credits. Consent of Instructor required.
Prerequisite(s)/Corequisite(s): TCEN 253. Prerequisite(s): TCEN 222. Restricted to Community Colleges campuses only.

TCEN 253. Renewable Energy System Troubleshooting and Maintenance
3 Credits (2+2P)
Covers wind, solar and solar thermal system troubleshooting and maintenance topics to include equipment, electrical, and installation problem areas. May be repeated up to 3 credits.
Prerequisite(s)/Corequisite(s): TCEN 251. Prerequisite(s): TCEN 222. Restricted to Community Colleges campuses only.

TCEN 254. Renewable Energy Internship
2 Credits
Student will receive industry-related renewable energy experiences at an approved industry location. Typical areas of hands-on practices will be installing solar PV, solar hot-water systems, or wind energy systems. May be repeated up to 6 credits. Consent of Instructor required. Restricted to Community Colleges campuses only.
Prerequisite(s): TCEN 112 and 113 and 222.

THTR-THEATRE (THTR)

THTR 101G. The World of Theatre
3 Credits
An appreciation class introducing the non-major to all aspects of theatre, including its history, literature and professionals. Students attend and report on stage productions.

THTR 105. Acting for Non-Majors
3 Credits
An introduction to basic performance techniques for non-majors.

THTR 110. Beginning Acting
3 Credits
Basic understanding of self-expression through a variety of physical exercises, improvisation, and character study, culminating in scene or monologue work. Restricted to: THTR majors.

THTR 120. Stage Movement
3 Credits
Physical techniques for the actor to develop kinesthetic awareness and skills in characterization, archetypes, and stage combat. Restricted to: THTR majors.

THTR 130. The Art of Theatre
3 Credits
This course introduces the variety and scope of theatre professions, the value and goals of the theatre major and an analysis of the art form from script to stage. Restricted to: Required for THTR majors.

THTR 141. Introduction to Stagecraft
3 Credits
Basic techniques used in the construction of scenery, props, and sound. Lab required. Pre/Corequisite(s): THTR 141L.

THTR 142. Introduction to Costume Crafts
3 Credits
Common costume production techniques, including basic stitching, use of equipment, knowledge of available materials, dyeing, and 3-D. Pre/Corequisite(s): THTR 142L. Restricted to: THTR majors.

THTR 144. Running Crew I
2 Credits (1+2P)
Students learn about backstage and front of house production positions and work on a technical aspect of a production in a rehearsal and performance environment.

THTR 200. Theatre Workshop I
0.5 Credits
Required for all freshman and sophomore theatre majors, this course coordinates all processes within Theatre Arts, providing a forum for discussion and feedback. May be repeated up to 4 credits. Restricted to Las Cruces campus only.

THTR 210. Intermediate Acting: Scene Study and Monologues
3 Credits
Monologues and scene work, using character and script analysis. Pre/Corequisite(s): THTR 205. Prerequisite(s): THTR 110 with C- or above.
THTR 220. Vocal Production for the Actor  
3 Credits  
Exploration and development of the actor’s vocal instrument, including relaxation, projection, diction and articulation. May be repeated up to 3 credits. Restricted to: THTR majors.

THTR 222. Theatre Topics  
1-3 Credits (1-3)  
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 9 credits.

THTR 249. Running Crew II  
1 Credit  
Students work on a technical aspect of a production in a rehearsal and performance environment.

THTR 250. Introduction to Design  
3 Credits  
Introduction into our visual world via the language of designers, focusing on collaboration, creative thinking and presentation skills. The varied design professions in theatre and the performing arts will be explored. Restricted to: Required of all THTR Majors majors.

THTR 300. Theatre Workshop II  
0.5 Credits  
Required for all junior and senior theatre majors, this course coordinates all processes within Theatre Arts, providing a forum for discussion and feedback. May be repeated up to 4 credits. Restricted to Las Cruces campus only.

THTR 303. Theatre History I  
3 Credits  
History of theatre and drama from ancient Greece to the English Renaissance.

THTR 304. Theatre History II  
3 Credits  
History of theatre and drama from the Restoration to the 20th century. May be repeated up to 3 credits.

THTR 306. Screenwriting I  
3 Credits  
Same as CMI 309, ENGL 309. Consent of instructor required. Crosslisted with: CMI 309 and ENGL 309  
Prerequisite(s): ENGL/CMI 235.

THTR 307V. Society in Style: Fashion, History and Culture  
3 Credits  
History of clothing for theatrical purposes, origins and evolution of period clothing in relation to social, political, and aesthetic factors of different periods.

THTR 308. Creative Writing: Playwriting  
3 Credits  
Technique of one-act playwriting, and analysis of dramatic structure. Crosslisted with: ENGL 308  
Prerequisite(s): ENGL 111G.

THTR 310. Styles in Acting  
3 Credits  
Analysis of differing styles of acting through scene work representing various time periods and genres.  
Prerequisite(s): THTR 210.

THTR 311. Acting Shakespeare  
3 Credits  
Acting Shakespeare’s tragedies and comedies, including text work, scansion, movement, scene work, and monologues.  
Prerequisite(s): THTR 210.

THTR 313. Improvisation  
3 Credits  
Long and/or short form improvisation techniques in addition to a variety of exercises exploring terminology, character work and the elements of comedy.  
Prerequisite(s): THTR 105 or THTR 110.

THTR 314. Scene Study  
3 Credits  
Studio class focusing on scene work and acting processes.  
Prerequisite(s): THTR 210.

THTR 317. Musical Theatre  
3 Credits  
Acting class focused on developing and refining skills necessary for performing in musicals. Pre/ May be repeated up to 9 credits.  
Prerequisite(s)/Corequisite(s): THTR 210.

THTR 320. Auditioning and Marketing  
3 Credits  
Techniques for choosing and preparing effective monologues, cold and prepared readings, head shots and resumes, and interview skills.  
Prerequisite(s): THTR 210.

THTR 321V. Modern European Drama  
3 Credits  
Masterworks of European drama from the 19th century to the present. Crosslisted with: ENGL321V.

THTR 322. Dramatic Character  
3 Credits  
How characters have been created for the stage from the beginning of theatrical performances in ancient Greece to the present day. Exploring characterization related to dramatic structure, style, and genre, and how dramatic characters differ from those in literary fiction. May be repeated up to 3 credits. Crosslisted with: ENGL 322.

THTR 323. American Drama  
3 Credits  
Masterworks of American drama from the 20th century to the present. Crosslisted with: ENGL323.

THTR 329. Studies in Drama  
3 Credits  
Subtitles vary. Study of a group of related works of drama, theory, or theatre practice. Crosslisted with: ENGL329 and CMI329.

THTR 334. Introduction to Stage Makeup  
3 Credits  
Basic principles of stage makeup: straight, character, and specialty. Includes study of various products, methods of application, and the effects of lighting on makeup.

THTR 337. Independent Study  
1-3 Credits  
Students propose and design their own course not covered through regular course offerings under the guidance of faculty. May be repeated up to 6 credits. Consent of Instructor required.
THTR 341. Scene Painting
3 Credits
Use of historical painting techniques in a project-driven classroom. Projects include 2-D and 3-D work, color mixing and theory, painting scenery, and the use of paint for effects.
Prerequisite(s): THTR 141.

THTR 343. Costume Patternning
3 Credits
Basic techniques in the production of flat patterns for modern and period silhouettes including some draping techniques. Consent of Instructor required.

THTR 345. Costume Practicum
1 Credit
A practical course intended to provide students additional experience and greater responsibility within the workings of the Costume Shop. Pre/ Corequisite(s): THTR 142.

THTR 346. Scenic Practicum
1 Credit
A practical course intended to provide students additional experience and greater responsibility within the workings of the Scene Shop. Pre/ Corequisite(s): THTR 141.

THTR 347. Lighting Practicum
1 Credit
A practical course intended to provide students hands-on experience executing theatrical lighting.

THTR 348. Running Crew III
1 Credit
Students will work on a technical aspect of a production in a rehearsal and performance environment.
Prerequisite(s): THTR 149.

THTR 349. Running Crew IV
1 Credit
Students will work on a technical aspect of a production in a rehearsal and performance environment.
Prerequisite(s): THTR 149.

THTR 352. Costume Design
3 Credits
Basic principles of costume design, including script analysis, principles of design, drawing and painting.

THTR 353. Scene Design
3 Credits
Design for the performing arts. Basic design skills and projects to exercise those skills, history of design in the theatre and the designer’s role in the production process. Final project includes a finished scene design.
Prerequisite: THTR 141 or consent of instructor.

THTR 354. Sound Design
3 Credits
Hands-on training in theatrical sound design and implementation.

THTR 355. Lighting Design
3 Credits
Basic aspects of theatre lighting, including electricity, color theory, history, and types of lighting instruments.

THTR 356. Theatre Production
1-3 Credits
Participation in the production of theatrical performances by stage managing, acting, designing, dramaturgy, or directing. May be repeated for a maximum of 6 credits. Graded S/U.

THTR 357. Computer Scenographics
3 Credits
Project-oriented course teaching basic computer modeling skills. Projects focus on the creation of communication tools designers use in the theatrical process. Students will develop portfolios of completed projects. Consent of instructor required.
Prerequisite(s): THTR 352, THTR 353, or THTR 355.

THTR 360. Creative Drama
3 Credits (2+2P)
Methods of developing original dramatizations. Emphasis on curriculum problems and teaching techniques in elementary and secondary schools.

THTR 366. Summer Theatre
1-3 Credits
Experience in professional or academic summer theatre. May be repeated for a maximum of 3 credits. Graded: S/U. Restricted to THTR majors.
Prerequisite(s): Consent of department head.

THTR 384. Stage Management
3 Credits
Study of stage management techniques and their application to play production. A working knowledge of union rules, and the procedure to facilitate these through proper communication skills.

THTR 395. Directing I
3 Credits
Study and application of basic stage directing techniques.
Prerequisite(s): THTR 105 or THTR 110.

THTR 396. Theatre Management
3 Credits
Study of issues related to managing a theatre company and producing plays. May be repeated up to 3 credits.

THTR 408. Shakespeare I
3 Credits
Same as ENGL 408.

THTR 409. Shakespeare II
3 Credits
Same as ENGL 409.

THTR 410. Advanced Acting: Contemporary Methods
3 Credits
Acting techniques will be explored focusing on current trends in the profession, from Stanislavski, to Hagen to Meisner.
Prerequisite(s): THTR 205.

THTR 414. Collaborative Theatre-Making
3 Credits
This course introduces students to the techniques, skills and practice of the collaborative creation of new theatrical material.
Prerequisite(s): THTR 110.

THTR 417. Musical Theatre II
3 Credits
A continuation of THTR 317, allowing for more advanced musical theatre techniques.
Prerequisite(s): THTR 317.
THTR 430. Special Topics
1-3 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 9 credits.

THTR 435. Directed Reading
1-3 Credits
Directed individualized studies. May be repeated for a maximum of 3 credits.

THTR 439. Senior Seminar
3 Credits
Course preparing students for professions in and related to the theatre. Restricted to: THTR majors.

THTR 440. Senior Seminar Practicum
1 Credit
Capstone course preparing students to apply knowledge of theatre arts toward advanced training or career objectives in the discipline. Consent of instructor required. Pre/ Restricted to THTR majors.

THTR 450. The Michael Chekhov Acting Intensive
3 Credits
An intensive overview of the performance techniques attributed to Michael Chekhov, applied to theatrical scenes and presentations. May be repeated up to 6 credits. Consent of Instructor required.

THTR 457. Advanced Computer Scenographics
3 Credits
Project-oriented course for the advanced modeler. Projects focus on the creation of complex models, custom texturing and shading, virtual lighting, postproduction image work, and animation techniques. Students will develop digital portfolios. Prerequisite: THTR 357 and consent of instructor.

THTR 457. Directed Study
1-3 Credits (1-3)
For the highly motivated student. Independent projects and individual guidance. Graduate standing and consent of instructor required. May be repeated up to 6 credits.

TOX-TOXICOLOGY (TOX)

TOX 361. Basic Toxicology
3 Credits
Introduction to the principles of toxicology, discussion of toxic agents, environmental problems, testing procedures, and regulations. Prior course work in biology and chemistry recommended. BIOL 111G or BIOL 211G recommended. Same as E S 361. Prerequisite(s): CHEM 112G, CHEM 114 or CHEM 110G.

TOX 461. Toxicology I
3 Credits
Introduction to principles of toxicology. Restricted to: Main campus only. Crosslisted with: ANSC 461 Prerequisite(s): BIOL 111G or BIOL 211G, and CHEM 345.

TOX 598. Special Research Programs
1-3 Credits
Individual investigations, either analytical or experimental. Graded S/U.

UNIV-UNIVERSITY STUDIES (UNIV)

UNIV 101. Tutorial
1-3 Credits
Development of specific skills required for college courses, such as note-taking, listening, and test-taking. To be taken in conjunction with a regular designated college course. May be repeated for a maximum of 3 credits. Graded S/U.

UNIV 110. Personal Learning Skills I
1-3 Credits
Individualized programs for self-improvement in skill areas necessary for academic success in the university environment. Each course to bear an appropriate subtitle. May be repeated up to 3 credits. Graded S/U.

UNIV 112. Academic and Personal Effectiveness
2 Credits
Learn academic self-analysis skills through the application of study and learning techniques to current course demands. Exposure to a variety of topics which enhance university and life-long learning.

UNIV 113. Speed Reading
1 Credit
Introduction to strategies and techniques for increasing reading rate and comprehension related to academic areas.

UNIV 114. Financial Literacy Money Matters
2 Credits
This course will cover a variety of financial literacy topics ranging from budgeting to student loan repayment. This course is designed to assist students in becoming more financially literate. Restricted to Las Cruces campus only.

UNIV 115. Transition from Military to University
2 Credits
Making a positive transition from military to civilian life is key to success. This course will cover a variety of topics ranging from time management to critical thinking. This course is designed to assist military and veteran students in becoming more effective learners through self-awareness, effectiveness study & learning strategies, and interpersonal skills. Skills and techniques for managing military to civilian readjustment transition issues are discussed and examined. Restricted to Las Cruces campus only.

UNIV 116. Preparing for Cooperative Education & Internship
1 Credit
The Cooperative Education Course provides students with a comprehensive overview of career-related topics designed to assist with securing Cooperative Education and Internship employment. Students learn about philosophies and approaches to resumes, cover letters, interviewing, job searching, networking, and professionalism. A primary focus of the course is on experiential learning where students have opportunities to practice and implement course concepts including interviewing, networking, job searching, and document creation. In addition to exploring topics related to Cooperative Education and Internship, the course is designed to provide students with tools and strategies for successfully navigating the transition from student to employee. S/U Grading (S/U, Audit). Restricted to Las Cruces campus only.

UNIV 117. Diversity at the University
1 Credit
In this course students will engage in discussions about diversity at the university, what it means in today’s society and local community, and build on its complexity at NMSU. S/U Grading (S/U, Audit). Restricted to Las Cruces campus only.
UNIV 118. Career Explorations and Planning
1 Credit
This course is designed to increase the likelihood that individuals will successfully navigate the challenges they face when making college major and related career choices. Restricted to Las Cruces campus only.

UNIV 150. The Freshman Year Experience
3 Credits
An introduction to the university and its resources; emphasis on development of academic and personal skills that enable freshmen to become successful learners. Restricted to: Main campus only.
Prerequisite(s): Freshman Standing Only.

UNIV 161. NMSU Gospel Choir
1 Credit
Students will gain performance experience and exposure to urban contemporary gospel music. Open to all majors. May be taken for unlimited credit. Restricted to: Main campus only.

UNIV 300. Preparing for the Graduate Record Examination
1 Credit
Preparation for taking the Graduate Record Examination including review, test taking strategies and practice for the verbal, quantitative and analytical sections. Graded S/U.

UNIV 350. Peer Education
3 Credits
Overview of college student development theory and its application to college student learning and peer education. Supervised experience as a peer educator with training in structured group facilitation.
Prerequisite: consent of instructor.

UNIV 361. NMSU Gospel Choir
1 Credit
Students will gain performance experience and exposure to urban contemporary gospel music. Open to all majors. May be taken for unlimited credit.

UNIV 395. Independent Study
1-3 Credits
Individualized projects related to the field of learning assistance. May be repeated for a maximum of 3 credits.

UNIV 495. Independent Study
1-3 Credits (1-3)
Individualized projects related to the field of learning assistance. Taught with UNIV 395.

W S-WOMEN'S STUDIES (W S)

W S 201G. Introduction to Women's Studies
3 Credits
Analysis of the status of women in society today and history and consequences of gender stratification and inequality from the perspectives of sociology, anthropology, psychology, political science, and other sciences.

W S 202G. Representing Women Across Cultures
3 Credits
Historical and critical examination of women's contributions to the humanities, with emphasis on the issues of representation that have contributed to exclusion and marginalization of women and their achievements. Crosslisted with: HON 218

W S 273. Sex and Gender
3 Credits
Same as SOC 273.

W S 316. History of Women in the American West
3 Credits
Experiences and interactions among Native American, Spanish/Mexican, immigrant, and Anglo-American women in the American West from 1500 to the present. Same as HIST 316.

W S 325. Topics in Feminist Philosophy
3 Credits
Same as PHIL 325.

W S 345. Victimology
3 Credits
Same as C J 345.

W S 350. Special Topics
3 Credits
The topic of course will vary and will be indicated by subtitle. May be cross-listed with relevant courses at the 300-level from any specific department. May be repeated under different subtitle(s).

W S 356. Women and Politics
3 Credits
Political socialization of children; women's past and present participation in the public sphere; gender-related public policy issues.

W S 357. Gender and Society
3 Credits
Overview of issues related to gender including how gender is constructed and reproduced in our society. Gender is examined from social psychological and institutional perspectives. Same as SOC 357.

W S 359. Psychology of Women
3 Credits
Same as PSY 359.

W S 360. Masculinities Studies
3 Credits
Explores how contemporary American culture constructs manhood and masculinity. Interrogates ideas and enactments of masculinity, especially as they intersect with race/ethnicity, class, and sexuality. The class asks how sexuality, gender construction, and sex roles inform our understanding of masculinity, as well as how masculinity relates to social power.

W S 374V. Comparative Family Systems
3 Credits
Same as SOC 374V.

W S 380V. Women Writers
3 Credits
Same as ENGL 380V.

W S 381V. Women's Health Issues
3 Credits
Same as HL S 380V.

W S 382. Women in Mass Media
3 Credits
Same as JOUR 380.

W S 388. Women and Europe I
3 Credits
Same as HIST 388.

W S 397. Law and Sex
3 Credits
Sex-based discrimination and the impact of constitutional and statutory provisions and their judicial interpretations and executive orders and implementations. Same as GOVT 397.
W S 401. Women & Immigration
3 Credits (3)
Exploration of experiences of women immigrants as gender, race and class became increasingly important aspects of US immigration policies in the early 19th century. Explores role of gender in today's immigration experience.

W S 402. Transnational Feminisms
3 Credits (3)
Explores dimensions of gender, race, class, and sexuality in conjunction with nationalisms, anti-capitalist struggles, religious fundamentalism, militarism, globalization, eco-critique, and the politics of resistance and social movements.

W S 403. Gender & Horror
3 Credits (3)
Explores cultural anxieties and crises through the genre of horror as they relate to issues of gender, sexuality, feminism, and race. Traces ways horror films represent and reconfigure notions of sexuality and gender and ways they reinforce and/or challenge social norms.

W S 404. Arab-Muslim Feminisms
3 Credits
Develops a historical understanding of arab-muslim feminisms and homosexuality in Islam. Explores and uses critical feminist theories, language, and methods to counter interlocking discourses of Islamophobia, gendering, and homophobia affecting arab-muslim women.

W S 405. Alternative Genders and Sexualities
3 Credits
Introduces students to cultural study in the academic fields of Gay, Lesbian, Bisexual, Transgender (GLBT) and Queer Studies. Examines academic texts as well as literature and film from different historical moments and social/ global sites.

W S 406. Women and Human Rights
3 Credits
Analysis of human rights violations and injustices as they relate to the lives of girls and women. Examines international political, legal, economic and socio-cultural implications of violence that target women and girls. Focusing on different countries, discusses social, political, economic, and human rights.

W S 407. Gender and Graphic Narrative
3 Credits
Examines graphic novels that disrupt stereotypical ideas about genre, gender, race, class sexuality, as well as common notions about comics. Considers texts that address underrepresented experiences.

W S 408. Food and Representation
3 Credits
Examines contemporary food writing as a way to study identity, social structures, and notions of acceptability. Explores how constructions of food shape bodies, desires, and notions of belonging.

W S 411. Gender and Migration
3 Credits
Explores multiple experiences of forced migration and displacement. Examines violence, structural dislocation, neoliberalism, globalization, economic collapse and civil war. Discusses local, regional and global responses to creating meaningful change in communities most affected by migration.

W S 420. Girls, Women and Crime
3 Credits (3)
Critical social science analysis of concepts of violence and justice as experienced by women impacted by the criminal justice system. Restricted to C J, W S majors. Crosslisted with: C J 420

W S 422. Advanced Study in a Literary Form or Genre
3 Credits
Same as ENGL 422. May be repeated for a maximum of 6 credits.

W S 433. Women, Gender, and Culture
3 Credits
Same as ANTH 433.

W S 450. Special Topics
3 Credits
The topic of course will vary and will be indicated by subtitle. May be cross-listed with relevant courses at the 400-level from any specific department. May be repeated under different subtitle(s).

W S 451. Women's Studies Practicum
3 Credits
Supervised field work in community setting relating to women. May be repeated for a maximum of 6 credits.

W S 452. Girls, Women and Crime
3 Credits
Critical social science analysis of concepts of violence and justice as experienced by women impacted by the criminal justice system. Restricted to C J, W S majors. Crosslisted with: C J 420

W S 453. Women and Politics
3 Credits
Crosslisted with: GOVT 353

W S 454. Women Crossing Borders
3 Credits
Experiences of women who cross class, race, cultural, national, or sexual borders including theories regarding women's Interactions across borders. Emphasis will vary with professor and discipline.

W S 455. Feminist Research Methods
3 Credits
Feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work.

W S 459. Advanced Issues in Sex and Gender
3 Credits
Same as SOC 459.

W S 461. Women's Studies: Independent Study
3 Credits
Individual study of selected topic and writing of research paper. May be repeated for a maximum of 6 credits.

W S 465. Sex, Gender and the Body
3 Credits
Examines forces at work in defining and differentiating gender, race, sexuality. How ideas about what is ‘natural’ and ‘normal’ for men and women shifted over time. Considers different discourses shaping embodied experiences and categories of identity.

W S 468. Global Sexualities
3 Credits
Generates a global context to focus on sexual identity and orientation, sexual identity politics, romantic relationships, patterns of sexual behavior, sexual regulation and the impact of different cultures on individual sexualities. Taught with W S 568. Crosslisted with: SOC 468
W S 469. Gender and Sexuality in Hispanic Film
3 Credits
The study of gender and sexual orientation issues in relation to identity as portrayed in Hispanic cinema. Taught in Spanish but assignments accepted in English. Crosslisted with: SPAN 469

W S 471. Seminar in Feminist Theory
3 Credits
Current feminist theory. Topic changes by semester. Course subtitled in the Schedule of Classes. Prerequisite: None

W S 474. Gender in East Asian History
3 Credits
Same as HIST 474.

W S 481. Hate Crimes and Hate Groups
3 Credits
Explores the phenomenon of hate-motivated violence. Examines the hate crime laws, organized hate groups and social theories attempting to explain violent hate.

W S 482. Gender and Popular Culture
3 Credits
Intensive study of the representations of gender in popular culture. Examines the historical, aesthetic, and cultural contexts of these representation and the various critical and theoretical lenses we use to understand them. Repeatable under different subtitles. May be repeated up to 99 credits.

W S 484. Women’s Literature
3 Credits
Intensive study of literature by women, in particular historical, aesthetic, cultural, or intellectual contexts. Repeatable under different subtitles. Crosslisted with: ENGL 481

W S 501. Advanced Women & Immigration
3 Credits (3)
Advanced exploration of experiences of women immigrants as gender, race and class became increasingly important aspects of US immigration policies in the early 19th century. Explores role of gender in today’s immigration experience.

W S 502. Advanced Transnational Feminisms
3 Credits (3)
Advanced analysis of dimensions of gender, race, class, and sexuality in conjunction with nationalisms, anti-capitalist struggles, religious fundamentalism, militarism, globalization, eco-critique, and the politics of resistance and social movements.

W S 503. Advanced Gender & Horror
3 Credits (3)
Advanced analysis of anxieties and crises through the genre of horror as they relate to issues of gender, sexuality, feminism, and race. Traces ways horror films represent and reconfigure notions of sexuality and gender and ways they reinforce and/or challenge social norms.

W S 504. Advanced Arab-Muslim Feminisms
3 Credits
Advanced study of historical and contemporary arab-muslim feminisms and homosexuality in Islam. Explores and uses critical feminist theories, language, and methods to counter interlocking discourses of Islamophobia, gendering, and homophobia affecting arab-muslim women.

W S 505. Advanced Alternative Genders and Sexualities
3 Credits
Advanced study of the academic fields of Gay, Lesbian, Bisexual, Transgender (GLBT) and Queer Studies. Examines academic texts as well as literature and film from different historical moments and social/global sites.

W S 506. Advanced Women and Human Rights
3 Credits
Advanced analysis of human rights violations and injustices as they relate to the lives of girls and women. Intensive examination of international political, legal, economic and socio-cultural implications of violence that target women and girls. Focusing on different countries, explores social, political, economic, and human rights.

W S 507. Advanced Gender and Graphic Narrative
3 Credits
Advanced examination of graphic novels that disrupt stereotypical ideas about genre, gender, race, class sexuality, as well as common notions about comics. Considers texts that address underrepresented experiences.

W S 508. ADVANCED FOOD PRESENTATION
3 Credits
Advanced examination of contemporary food writing as a way to study identity, social structures, and notions of acceptability. Intensive exploration of how constructions of food shape bodies, desires, and notions of belonging.

W S 511. Advanced Gender and Migration
3 Credits
Advanced exploration of multiple experiences of forced migration and displacement. Intensive examination of violence, structural dislocation, neoliberalism, globalization, economic collapse and civil war. Discusses local, regional and global responses to creating meaningful change in communities most affected by migration.

W S 520. Advanced Girls, Women & Crime
3 Credits (3)
Advanced critical social science analysis of concepts of violence and justice as experienced by women impacted by the criminal justice system. Crosslisted with: CJ 520

W S 522. Graduate Study in a Literary Form or Genre
3 Credits
Same as ENGL 522.

W S 533. Advanced Issues in Women, Gender, and Culture
3 Credits
Same as ANTH 533.

W S 545. Advanced Victimology
3 Credits
Study of the risk factors in crime victimization, the impact of crimes upon victims, and the role of the victim in the criminal justice system, consideration of the impact of criminal justice policy on victim outcomes. Same as CJ 545.

W S 550. Special Topics
3 Credits
The topic of course will vary and will be indicated by subtitle. May be cross-listed with relevant courses at the 500-level from any specific department. May be repeated under different subtitle(s).
### W S 554. Advanced Issues in Women Crossing Borders
3 Credits
Experiences of women who cross class, race, cultural, national, or sexual borders including theories regarding women's interactions across borders.

### W S 555. Advanced Feminist Research Methods
3 Credits
Advanced feminist research practices and methodologies utilized in various disciplines. Definitions of research, what constitutes valid inquiry, how research can be feminist, and what it means to do interdisciplinary work.

### W S 561. Independent Graduate Research in Women's Studies
3 Credits
Individual study of selected topics and writing of a research paper. May be repeated for a maximum of 6 credits. Graded S/U.
Prerequisite: consent of instructor.

### W S 565. Advanced Sex, Gender & the Body
3 Credits (3)
Advanced examination of forces at work in defining and differentiating gender, race, sexuality. How ideas about what is 'natural' and 'normal' for men and women shifted over time. Considers different discourses shaping embodied experiences and categories of identity.

### W S 567. Global Sexualities
3 Credits
Generates a global context to focus on sexual identity and orientation, sexual identity politics, romantic relationships, patterns of sexual behavior, sexual regulation and the impact of different cultures on individual sexualities. Taught with W S 468. Crosslisted with: SOC 568

### WATR-WATER UTILITIES (WATR)

#### WATR 120. Introduction to Water Systems
3 Credits
Introduction to and theory of groundwater sources, production, treatment, and distribution.

#### WATR 130. Wastewater Collection and Basic Treatment Systems
3 Credits
Introduction to wastewater characteristics, collection, and basic treatment operations.

#### WATR 140. Applied Water and Wastewater Math I
3 Credits
Introduction to basic water and wastewater mathematics, flows through distribution networks and collection systems, and fundamentals of flow measurement.
Prerequisite: CCDM 114N or equivalent.

#### WATR 160. Systems Maintenance
4 Credits (2+4P)
Basic tools, equipment, maintenance schedules, chlorinator troubleshooting, and chlorine safety. Hands-on training with valves, pumps, meters and chlorination equipment.

#### WATR 165. Backflow Prevention
3 Credits (2+2P)
Theory of operation of backflow prevention devices and their application. Backflow devices including double check, reduced pressure, and pressure vacuum breakers will be tested for proper operation.
Prerequisites: WATR 120 and WATR 140, or consent of instructor.

#### WATR 175. Programmable Logic Controllers
2 Credits
This course will introduce students to electrical safety, theory, and the function, operations, programming and troubleshooting of the PLC controlling common electrical components utilized in control circuits associated with the water and wastewater industry. Restricted to: Community Colleges only.

#### WATR 180. Water Chemistry
3 Credits
Basic chemistry with applications to water and wastewater analysis.
Prerequisite: CCDM 114N or consent of instructor.

#### WATR 182. Water Chemistry Analysis
1 Credit
Beginning water and wastewater laboratory analysis including gravimetric, volumetric, and quality control techniques.
Prerequisite: CCDM 114N or equivalent or consent of instructor.

#### WATR 190. Water and Wastewater Microbiology
3 Credits
Overview of microorganisms associated with water and wastewater. Growth and reproduction, energy production, and methods of counting.
Prerequisite: WATR 130, WATR 180, or consent of instructor.

#### WATR 192. Water and Wastewater Microbiological Analysis
1 Credit
Introduction to water and wastewater treatment operational tests such as BODs, solids testing, activated sludge control tests, use of microscope, and bacteriological techniques.
Prerequisites: WATR 130 and WATR 182, or consent of instructor.
WATR 200. Internship
3-5 Credits
On-the-job training/work experience with municipalities or industries, working in water or wastewater treatment plants, high purity water plants, industrial waste plants, distribution systems, or wastewater collection systems. May be repeated up to 5 credits. Consent of Instructor required. Restricted to: Water Technology majors. S/U Grading (S/U, Audit). Restricted to Community Colleges campuses only.

WATR 220. Water Treatment Systems
3 Credits
Theory of water systems operation including surface water treatment, fluoridation, sodium zeolite softening, corrosion control, iron removal, various filtration methods, and overview of SDWA.
Prerequisites: WATR 180 and WATR 182 or consent of instructor.

WATR 222. Water Systems Operation
1 Credit
Operations of various water treatment systems including surface water treatment, sodium zeolite softeners, and various filtration methods.
Prerequisite: WATR 220 or consent of instructor.

WATR 230. Advanced Wastewater Treatment
4 Credits
Calculations and operations involved in wastewater and water reclamation plants.
Prerequisites: WATR 140, WATR 190, and WATR 192, or consent of instructor.

WATR 232. Wastewater Systems Operations
1 Credit
Operation of pretreatment, primary, and biological treatment units.
Prerequisite: WATR 230 or consent of instructor.

WATR 240. Advanced Water and Wastewater Math II
3 Credits (2+2P)
Prerequisites: WATR 140.

WATR 250. Municipal Systems Management
4 Credits
Management of water utility systems including laws, finance, records, and safety.
Prerequisites: WATR 120, WATR 130.

WATR 255. Special Individualized Problems in Water Technology
1-4 Credits
Individual studies in areas directly related to water technology.
Prerequisite: consent of instructor.

WATR 270. Special Topics
1-4 Credits
Specific subjects to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

WATR 275. Certification Review
3 Credits
Review of water and wastewater plant operations and laws in preparation for state certification exams.
Prerequisites: WATR 220, WATR 230, and WATR 240.

WATR 285. High Purity Water Treatment Systems
3 Credits
Principles of high purity water production including microfiltration, ultrafiltration, reverse osmosis, and deionization.
Prerequisite: WATR 220.

WATR 287. Advanced Water Chemistry Analysis
3 Credits
Sampling techniques, analysis, and evaluation of potable water contaminants using gravimetric, volumetric, spectrophotometric, and other instrumentation methods.
Prerequisite: WATR 285 or consent of instructor.

WATR 290. Advanced Wastewater Microbiology and Chemistry
3 Credits
Covers NPDES permits and DMR calculations and reporting; 503 sludge regs, including pathogen and vector attraction reduction and pollutants; wetlands, composting, and wastewater treatment ponds microbiology; activated sludge bulking and foaming microbiology and treatment; and use of selector to remove nutrients and prevent the growth of filamentous bacteria.
Prerequisite: WATR 190, WATR 192.

WATR 292. Advanced Wastewater Analysis
3 Credits
Covers sampling techniques, analysis, and evaluation of wastewater contaminants using gravimetric, volumetric, spectrophotometric, and other instrumentation methods.
Prerequisite: WATR 190 and WATR 192.

WELD-WELDING TECHNOLOGY (WELD)

WELD 100. Structural Welding I
6 Credits (3+3P)
Development of basic skills in SMAW, OFC, and OFW in accordance with the AWS entry-level welder program.

WELD 101. Fundamentals of Welding
3 Credits
Set-up and adjustment of ARC and oxyacetylene equipment. Welding safety procedures and terminology. Skill development in laying weld beads with various patterns, positions, and processes.

WELD 102. Welding Fundamentals
3 Credits (2+2P)
Survey of welding and cutting processes for nonmajors. Classroom instruction and laboratory work with OFC/OFW, SMAW, GMAW, FCAW, and plasma arc cutting.

WELD 105. Introduction to Welding
3 Credits
Welding practices, procedures, and terminology. Welding safety, equipment types, electrode types in usage, joint design and testing procedures.

WELD 110. Blueprint Reading (Welding)
3 Credits
Interpretation of prints related to welding. Emphasis on AWS standard symbols for welding, brazing, and nondestructive examination.

WELD 112. Professional Development and Leadership
1 Credit
As members and/or officers of various student professional organizations, students gain experience in leadership, team building, and community service. Students competing or participating in Skills USA are required to register for the course. May be repeated up to 6 credits. Consent of Instructor required. Restricted to: WELD majors. S/U Grading (S/U, Audit). Restricted to: Community Colleges only.
WELD 115. Structural Welding II  
6 Credits (3+6P) 
Continuation of WELD 100. Emphasis on AWS entry and advanced 
level welder skills with SMAW, including all-position welding with mild 
and stainless steel electrodes. Plasma arc and air-carbon arc cutting, 
metallurgy, heat treatment, and weld defects. 
Prerequisite: WELD 100.

WELD 120. Basic Metallurgy  
3 Credits  
Properties of ferrous and nonferrous materials. Service conditions and 
heat treatment of metals related to welding trade. 
Prerequisites: WELD 100 or consent of instructor.

WELD 125. Introduction to Pipe Welding  
3 Credits (2+2P)  
Pipe fit-up and welding techniques for pipe fitting and pipe weld joint 
using SMAW, GMAW, GTAW, and FCAW, 2G welding of pipe. Restricted to: 
Community Colleges only. 
Prerequisite(s): WELD 100, WELD 130, and WELD 140, or consent of 
instructor.

WELD 126. Industrial Pipe Welding  
3 Credits  
Enhancement of WELD 125. Development of more advanced pipe welding 
skills. 
Prerequisites: WELD 110, WELD 130 and WELD 140. 
Corequisite: WELD 125.

WELD 130. Introduction to GMAW MIG)  
3 Credits (2+2P)  
Development of basic skills with gas metal arc welding (MIG) in 
accordance with AWS entry-level welder objectives. Wire electrodes, 
shielding/purge gases, and modes of metal transfer.

WELD 140. Introduction to GTAW TIG)  
3 Credits (2+2P)  
Development for basic skills with gas tungsten arc welding (TIG) in 
accordance with AWS entry/advanced welder objectives. Welding mild 
steel, tungsten electrode preparation, filler wire selection, and equipment 
set-up.

WELD 150. Pipe Welding II  
3 Credits (2+2P)  
Continuation of WELD 125; with fillet and groove welded joints in a 
horizontal fixed and 45-degree fixed positions (5-F, 5-G, 6-F, 6-G). 
Prerequisite: WELD 125.

WELD 151. Industrial Pipe Welding II  
3 Credits  
Enhancement of WELD 150. Development of more advanced pipe welding 
skills. Emphasis on industry driven test. 
Prerequisites: WELD 125 and WELD 126. 
Corequisite: WELD 150.

WELD 160. Introduction to SAW and FCAW  
3 Credits (2+2P)  
Submerged arc and flux-cored arc welding. Demonstrations and practice 
with machine travel submerged arc welding (SAW), flux-cored arc welding 
(FCAW-G, FCAW-S) on mild steel plate and pipe. Restricted to: Community 
Colleges only.

WELD 170. Welded Fabrication  
3 Credits (1+4P)  
Development of fabrication skills including basic layout, measuring, and 
utilization of various welding processes including out-of-position welding. 
Use of common shop tools. 
Prerequisites: WELD 100, WELD 110, WELD 130, and OETS 104 or 
OETS 118.

WELD 180. GTAW II  
3 Credits (2+2P)  
Continuation of WELD 140. Development of more advanced GTAW skills. 
Emphasis on pipe welding with mild steel, stainless steel, and aluminum. 
Prerequisite: WELD 140 or consent of instructor.

WELD 190. Welded Art  
3 Credits (1+4P)  
Students explore the possibilities of welded art in the form of sculpture, 
jewelry, furniture and as a framework to support other art media. Offered 
as an elective for students who wish to create art using welding. 
Prerequisite: WELD 102 or consent of instructor.

WELD 205. Welding Equipment Maintenance  
3 Credits (2+2P)  
Hands-on experience in the maintenance and repair of welding 
equipment, including welding machines and associate shop equipment, 
as well as the development of preventative maintenance programs. Basic 
safety, including MSDS and Right-to-Know will be introduced. Restricted 
to: Community Colleges only. 
Prerequisite(s): WELD 100, WELD 130, WELD 140, WELD 160.

WELD 211. Welder Qualification  
6 Credits (3+6P)  
Laboratory and classroom instruction on AWS and ASME Welder 
Performance Qualification Tests. All position plate and pipe techniques 
and tests for SMAW, GMAW, GTAW, FCAW, and SAW. Nondestructive 
and destructive examination methods. Basics of welding codes. Restricted to 
majors. 
Prerequisites: OETS 104 or OETS 118; and WELD 100, WELD 110, 
WELD 120, WELD 130, WELD 140, WELD 160 and WELD 180 or consent of 
instructor.

WELD 221. Cooperative Experience I  
1-6 Credits  
Supervised cooperative work program. Student is employed in an 
approved occupation and supervised and rated by the employer and 
instructor. Student will meet in a weekly class. Graded S/U. Restricted to 
majors. 
Prerequisites: WELD 100 or WELD 101 and consent of instructor.

WELD 230. Weld Testing  
3 Credits (2+2P)  
Covers destructive and nondestructive examination methods used to 
test welds. Tensile, compression, bend, hardness, impact, visual, dye-
penetrant, magnetic particle, ultrasound, and radiographic methods of 
testing/examination. Restricted to: Community Colleges only. 
Prerequisite(s): WELD 100, WELD 130, WELD 140, WELD 211, and 
OETS 104, or consent of instructor.

WELD 255. Special Problems in Welding Technology  
1-6 Credits  
Individual studies in areas of welding technology. May be repeated for a 
maximum of 12 credits. 
Prerequisite: consent of instructor.
WERC 295. Special Topics
1-4 Credits
Topics to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

WERC-WASTE MGT EDU/RSRCH CONS (WERC)

WERC 300. Introduction to Pollution Prevention and Its Application
3 Credits
Investigates various approaches to industrial and domestic pollution prevention, waste minimization, and energy efficiency with emphasis on applications in the Southwest. Topics include: industrial case studies, energy conservation, environmental risk analysis, evaluating environmental performance, pollution prevention program development, training and education programs, funding sources, and economic impact.

WERC 312. Emergency Response to Hazardous Material Incidents
2 Credits
Same as E S 312, E T 312.

WERC 330. Environmental Management Seminar I
1 Credit
Survey of practical and new developments in environmental management field, hazardous and radioactive waste management, energy, water, and related health issues, provided through a series of guest lectures and reports about on-going research. Restricted to: Main campus only. Crosslisted with: C E 330, CH E 330, E E 330, E S 330, E T 330, I E 330 and M E 330

WERC 381. Renewable Energy Technologies
3 Credits (2+3P)
Renewable energy systems, including topics in thermal-solar, photovoltaic, wind, geothermal systems, and other current topics. Theory, practical applications, safety considerations and the economics of alternative renewable energy systems compared to conventional systems. Crosslisted with: E T 381
Prerequisite(s): MATH 121G.

WERC 382. Solar Energy Technologies
3 Credits (2+3P)
Solar energy technologies, including topics in passive, solar thermal, and photovoltaic systems. Theory, practical applications, safety considerations and the economics of solar renewable energy systems compared to conventional systems. Crosslisted with: E T 382
Prerequisite(s): MATH 121G.

WERC 384. Wind and Water Energy Technologies
3 Credits
Wind and Water energy technologies, including topics in small and large scale systems. Theory, practical applications, safety considerations and the economics of wind and water renewable energy systems compared to conventional systems. Same as E T 384.
Prerequisite: MATH 121G.

WERC 386. Sustainable Construction and Green Building Design
3 Credits
Sustainable Building materials, methods, and techniques including green architect and design, codes, standards and Specifications. Same as E T 386.
Prerequisite: MATH 121G.

WERC 430. Environmental Management Seminar II
1 Credit
Survey of practical and new developments in environmental management fields, hazardous and radioactive waste management, energy, water and related health issues, provided through a series of guest lectures and reports about ongoing research. Restricted to: Main campus only. Crosslisted with: C E 430, CH E 430, E E 430, E S 430, E T 430, I E 430 and M E 430

WERC 466. Fuel Cell and Hydrogen Technology
3 Credits
Same as CH E 466. Prerequisites: CHEM 111G and PHYS 215G

WERC 595. Special Topics
1-3 Credits
Lecture instruction on special topics such as energy, environment and economics. May be taken for a maximum of 6 credits. Prerequisite: consent of instructor.

WSAM-WATER SCIENCE & MGT (WSAM)

WSAM 589. Landscape Hydrology Modeling
3 Credits
Understand the landscape scale of hydrologic cycle and related hydrological processes. Quantitatively evaluate hydrological system components. Retrieve, visualize and model some of the physical processes using some of the available tools. Consent of Instructor required.

WSAM 599. Masters Thesis
1-15 Credits (1-15)

WSAM 605. Arid Land Water Resources
3 Credits (2+2P)
The course will cover various issues of relevance to water resources and water supply management within the Southwest US and other semiarid and arid regions. Discussions may include development and sustainability, climate change and drought, socioeconomic and cultural, and transboundary issues.

WSAM 610. Water and Sustainable Economic Development
3 Credits
For graduate students in the Water Science and Management or other research degree programs, use the water economics literature as a model for student research leading to an M.S. thesis or Ph.D. dissertation.

WSAM 700. Doctoral Dissertation
15 Credits (15)
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