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 279  Introduction to Higher Mathematics  3
MATH 280  Introduction to Linear Algebra  3

Total Credits  17

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

Select one from the following:

FIN 326  Business Risk Management  3
FIN 323  Life/Health/Employee Benefits  3
FIN 324  Property and Liability Insurance  3

Insurance Electives
Select 6 credits from the following:

FIN 303V  Personal Financial Planning and Investing in a Global Economy  3
or FIN 421  Personal Financial Planning for Professionals  3
FIN 323  Life/Health/Employee Benefits  3
FIN 324  Property and Liability Insurance  3
FIN 391  Finance Internship and Cooperative Education I  3

Second Language Requirement: (not required)

Total Credits  51

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.

Second Language Requirement
For the Bachelor of Science with a major in Mathematics with a Concentration in Actuarial Science and Insurance, there is no second language requirement for the degree.

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 331  Introduction to Modern Algebra  3
or MATH 332  Introduction to Analysis  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: 1

MATH 300  Readings  3
MATH 313  Fundamentals of Algebra and Geometry I  3
MATH 316  Calculus with Hands-on Applications  3
MATH 400  Undergraduate Research  3

Select at least 6 credits of approved additional upper-division courses prefixed MATH or STAT, excluding the following: 2

MATH 300  Readings  3
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: 3 Examples of acceptable clusters:

Signals
Select 9 credits from the following:
E E 112  Embedded Systems
E E 230  AC Circuit Analysis and Introduction to Power Systems
E E 320  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 112  Embedded Systems
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

Operations Research
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

Computer Systems
C S 172  Computer Science I
Select 9 credits from the following:
C S 271  Object Oriented Programming
or C S 272  Introduction to Data Structures
C S 371  Software Development
C S 372  Data Structures and Algorithms

Select 6-7 credits from the following:
C S 370  Compilers and Automata Theory
C S 474  Operating Systems I
C S 475  Artificial Intelligence I
C S 476  Computer Graphics I
C S 482  Database Management Systems I
C S 484  Computer Networks I
C S 485  User Interface Design

Second Language Requirement: (not required)
Total Credits 36

Mathematics - Bachelor of Science

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.

3 Students may propose clusters subject to departmental approval. A cluster must contain either C S 172 Computer Science I or E E 112 Embedded Systems. A major or minor in any of the following fields (along with C S 172 Computer Science I or E E 112 Embedded Systems) 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.

Second Language Requirement
For the Bachelor of Science with a major in Mathematics with a Concentration in Applied Mathematics, there is no second language requirement for the degree.

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
MATH 331  Introduction to Modern Algebra 3
MATH 332  Introduction to Analysis 3

Departmental Electives
Select at least 18 additional upper-division credits of approved courses prefixed MATH or STAT, excluding: 4
MATH 300  Readings 3
MATH 313  Fundamentals of Algebra and Geometry I 3
MATH 316  Calculus with Hands-on Applications 3
MATH 400  Undergraduate Research 3
MATH 459  Survey of Geometry 3
STAT 400  Undergraduate Research 3

Nondepartmental Requirements for the Major 5
C S 172  Computer Science I 4
C S 272  Introduction to Data Structures 4

Second Language Requirement: (required- see below)
Total Credits 32

4 MATH 401 Special Topics must be approved by the department for credit towards the major. At least 12 of the MATH and STAT credits must be numbered higher than 400.
A grade of C- or better must be earned.

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)

Second Language Requirement
For the Bachelor of Science in Mathematics with a Concentration in General Mathematics there is a two year second language requirement, the student must do one of the following:

Option 1:
Complete one of the following sequences:

<table>
<thead>
<tr>
<th>Course</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHIN 111</td>
<td>Elementary Chinese I</td>
</tr>
<tr>
<td>&amp; CHIN 112</td>
<td>and Elementary Chinese II</td>
</tr>
<tr>
<td>&amp; CHIN 211</td>
<td>and Intermediate Chinese I</td>
</tr>
<tr>
<td>&amp; CHIN 212</td>
<td>and Intermediate Chinese II</td>
</tr>
<tr>
<td>FREN 111</td>
<td>Elementary French I</td>
</tr>
<tr>
<td>&amp; FREN 112</td>
<td>and Elementary French II</td>
</tr>
<tr>
<td>&amp; FREN 211</td>
<td>and Intermediate French I</td>
</tr>
<tr>
<td>&amp; FREN 212</td>
<td>and Intermediate French II</td>
</tr>
<tr>
<td>GER 111</td>
<td>Elementary German I</td>
</tr>
<tr>
<td>&amp; GER 112</td>
<td>and Elementary German II</td>
</tr>
<tr>
<td>&amp; GER 211</td>
<td>and Intermediate German I</td>
</tr>
<tr>
<td>&amp; GER 212</td>
<td>and Intermediate German II</td>
</tr>
<tr>
<td>JPNS 111</td>
<td>Elementary Japanese I</td>
</tr>
<tr>
<td>&amp; JPNS 112</td>
<td>and Elementary Japanese II</td>
</tr>
<tr>
<td>&amp; JPNS 211</td>
<td>and Intermediate Japanese I</td>
</tr>
<tr>
<td>&amp; JPNS 212</td>
<td>and Intermediate Japanese II</td>
</tr>
<tr>
<td>SPAN 111</td>
<td>Elementary Spanish I</td>
</tr>
<tr>
<td>&amp; SPAN 112</td>
<td>and Elementary Spanish II</td>
</tr>
<tr>
<td>&amp; SPAN 211</td>
<td>and Intermediate Spanish I</td>
</tr>
<tr>
<td>&amp; SPAN 212</td>
<td>and Intermediate Spanish II</td>
</tr>
<tr>
<td>PORT 213</td>
<td>Portuguese for Romance Language Students I</td>
</tr>
<tr>
<td>&amp; PORT 214</td>
<td>and Portuguese for Romance Language Students II</td>
</tr>
</tbody>
</table>

For Heritage Speakers:

<table>
<thead>
<tr>
<th>Course</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN 113</td>
<td>Spanish for Heritage Learners I</td>
</tr>
<tr>
<td>&amp; SPAN 213</td>
<td>and Spanish for Heritage Learners II</td>
</tr>
<tr>
<td>&amp; SPAN 214</td>
<td>and Spanish for Heritage Learners III</td>
</tr>
</tbody>
</table>

Option 2:
Complete two semesters of American Sign Language (with a C- or better):

<table>
<thead>
<tr>
<th>Course</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>C D 374</td>
<td>American Sign Language I</td>
</tr>
<tr>
<td>C D 375</td>
<td>American Sign Language II</td>
</tr>
<tr>
<td>C D 476</td>
<td>American Sign Language III</td>
</tr>
</tbody>
</table>

Option 3:
Challenge the 212 level for the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHIN 212</td>
<td>Intermediate Chinese II</td>
</tr>
<tr>
<td>or FREN 212</td>
<td>Intermediate French II</td>
</tr>
<tr>
<td>or GER 212</td>
<td>Intermediate German II</td>
</tr>
<tr>
<td>or JPNS 212</td>
<td>Intermediate Japanese II</td>
</tr>
<tr>
<td>or SPAN 212</td>
<td>Intermediate Spanish II</td>
</tr>
</tbody>
</table>

OR

Challenge the 214 level for the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>PORT 214</td>
<td>Portuguese for Romance Language Students II</td>
</tr>
<tr>
<td>or SPAN 214</td>
<td>Spanish for Heritage Learners III</td>
</tr>
</tbody>
</table>

Option 4:
Pass a three-credit, upper-division course (numbered 300 or above) taught in a second language by the department of Languages and Linguistics.

Option 5:
Obtain college certification of completion of three years of a second language at the high school level with a grade of C- or higher in the second-year level.

Option 6:
By obtaining certification of a working knowledge of a Native American language from the American Indian program director.

Option 7:
By obtaining, 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.

Option 8:
In the case of a foreign student who is required to take the TOEFL exam admission, the dean will automatically waive the second language requirement.