PHYSICS - BACHELOR OF SCIENCE

A Bachelor of Science degree in physics at NMSU prepares a student well for graduate study in physics, astrophysics, or engineering or for a variety of careers in research and teaching. Students who plan to seek employment at the B.S. level are advised to take the concentration area curricula as part of their electives in addition to the general and departmental requirements. The program of study should be chosen by the student in consultation with a physics faculty advisor.

Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 120 credits with 48 credits in courses numbered 300/3000 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework. The Bachelor of Science degree in Physics is accredited by the Applied and Natural Science Accreditation Commission (ANSAC) of ABET, https://www.abet.org (https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.abet.org%2F&data=05%7C02%7Cgdmart%40nmsu.edu%7C1f05aec125ce44c5a30808dcf1f7ba03%7Ca3ec87a89fb84158ba8ff11ba%7C1%7C0%7C638651293476050792%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1ha%7C0%7C%7C%7C&sdata=AG9ueMYqrAq%2FxwaQB0jjK90WuBEVGL%2FpZHDfDccblm8%3D&reserved=0), under the General Criteria with no applicable program criteria.

Prefix	Title	Credits
General Education		
Area I: Communications		*10*
English Composition - Level 1 [1]		
English Composition - Level 2 [1]		
Oral Communication [1]		
Area II: Mathematics		
MATH 1511G	Calculus and Analytic Geometry I [2]	4
Area III/IV: Laboratory Sciences and Social/Behavioral Sciences		*10-11*
Area III: Laboratory Sciences Course (4 credits) [1,3]		
Area IV: Social/Behavioral Sciences Course (3 credits) [1]		
Either an Area III/IV: Laboratory Sciences Course or Social/Behavioral Sciences Course (4 or 3 credits) [1,3]		
Area V: Humanities [1]		*3*
Area VI: Creative and Fine Arts [1]		*3*
General Education Elective		
MATH 1521G	Calculus and Analytic Geometry II	4
or MATH 1521H	Calculus and Analytic Geometry II Honors	
Viewing A Wider World [4]		**6**
Departmental Requirements [5]		
PHYS 1111	Introductory Computational Physics	3
PHYS 2110 & 2110L	Mechanics and Experimental Mechanics	4
PHYS 2140 & 2140L	Electricity and Magnetism and Electricity & Magnetism Laboratory	4
PHYS 2120 & 2120L	Heat, Light, and Sound and Heat, Light, and Sound Laboratory	4
PHYS 315	Modern Physics	3
PHYS 325	Intermediate Experimental 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
Select an additional 6 credits in physics numbered 300 or above		6
Advanced Laboratory		
Select 3 credits from the following:		3
PHYS 471	Modern Experimental Optics	
PHYS 475	Advanced Laboratory Practices for Materials	
PHYS 493	Experimental Nuclear Physics	
Non-Departmental Requirements (in addition to Gen.Ed/VWW) [5]		
MATH 2530G	Calculus III	3
MATH 3160	Introduction to Ordinary Differential Equations	3
Select one of the following:		8
CHEM 1215G & CHEM 1225G	General Chemistry I Lecture and Laboratory for STEM Majors and General Chemistry II Lecture and Laboratory for STEM Majors	
CHEM 1216 & CHEM 1226	General Chemistry I Lecture and Laboratory for CHEM Majors and General Chemistry II Lecture and Laboratory for CHEM Majors	
Second Language Requirement: (required - see below)		**0-8**
Electives, to bring the total credits to 120 [5,6]		**6-15**
Total Credits		**120**

1. See the General Education (https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/) section of the catalog for a full list of courses.
2. MATH 1511G Calculus and Analytic Geometry I is required for the degree but students may need to take any prerequisites needed to enter MATH 1511G first.
3. See alternatives for meeting General Education requirements.
4. See the Viewing a Wider World (https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext) section of the catalog for a full list of courses
5. May not be taken S/U and must earn a grade of C- or better.
6. Approved physics and technical electives are decided by Physics Advisors.

Students who plan to pursue graduate study in physics or astrophysics are strongly advised to take one or more senior-level courses in nuclear physics, space physics, condensed matter physics, astronomy, or computational physics. Students who plan to seek employment at the B.S. level are advised to select one of the following emphasis areas: Applied Physics, Computational Physics, or Materials Science. The program of study should be chosen by the student in consultation with a physics faculty advisor. Some recommended courses are listed below.

Applied Physics: 12 credits of upper division E E, M E, or CSCI courses;

Computational Physics: CSCI 1110 Computer Science Principles, CSCI 1115G Modern Computing in Practice , MATH 1531, and PHYS 476;

Materials Science: 12 credits of upper-division courses selected from CHME 361, PHYS 450, PHYS 468, PHYS 471, PHYS 475, PHYS 488, and PHYS 489.

Second Language Requirement

For the Bachelor of Science in the Physics there is a one year second language requirement, the options to complete this requirement are listed below. The number of credits that a student needs to take may vary depending on what level they come in with. Please speak with an advisor for more information as to which courses you will need to take to fulfill the second language requirement for this degree.

Option 1:

Prefix	Title	Credits
Complete one of the following sequences:		
FREN 1110 & FREN 1120	French I and French II	8
GRMN 1110 & GRMN 1120	German I and German II	8
JAPN 1110 & JAPN 1120	Japanese I and Japanese II	8
SPAN 1110 & SPAN 1120	Spanish I and Spanish II	8
For Heritage Speakers:		
SPAN 1220	Spanish for Heritage Learners II	3
or SPAN 2210	Spanish for Heritage Learners III	
PORT 1110	Portuguese I	3
or PORT 1120	Portuguese II	

Option 2:

Prefix	Title	Credits
Complete the following sequence for American Sign Language (with a C- or better):		
SIGN 1110	American Sign Language I	3
SIGN 1120	American Sign Language II	3

Option 3:

Prefix	Title	Credits
Challenge the 1120 level for the following courses:		
FREN 1120	French II	4
or GRMN 1120	German II	
or JAPN 1120	Japanese II	
or SPAN 1120	Spanish II	
OR		
Challenge the 1110/1120/1220/2210 level for the following courses:		
PORT 1110	Portuguese I	3
or PORT 1120	Portuguese II	
or SPAN 1220	Spanish for Heritage Learners II	
or SPAN 2210	Spanish for Heritage Learners III	

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 two 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.

Dual Degree (BS/MS) Program

This program option is designed to provide a means for physics undergraduates to obtain an MS degree in physics after taking 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 electing this option will follow the regular undergraduate BS in physics curriculum, except that they are advised to take the advanced laboratory course at the 500-level to meet both the BS and MS degree requirements. They can also apply up to nine credits of their undergraduate courses numbered 450 and above and up to twelve credits total (including 500-level courses) towards their MS degree. 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 degree in Physics.

A Suggested Plan of Study for Students

This roadmap assumes student placement in MATH 1511G Calculus and Analytic Geometry I and ENGL 1110G Composition I. The contents and order of this roadmap may vary depending on initial student placement in mathematics and English. It is only a suggested plan of study for students and is not intended as a contract. Course availability may vary from fall to spring semester and may be subject to modification or change. Full-time students are usually required to take at least 15 credits per semester.

First Year		
Semester 1		**Credits**
ENGL 1110G	Composition I [1]	4
MATH 1511G	Calculus and Analytic Geometry I [1]	4
PHYS 1111	Introductory Computational Physics [1]	3
PHYS 2110 & 2110L	Mechanics and Experimental Mechanics [1]	4
PHYS 2111	Supplemental Instruction to PHYS 2110 [1]	1
	Credits	**16**
Semester 2		
ENGL 2210G	Professional and Technical Communication [1]	3
MATH 1521G or MATH 1521H	Calculus and Analytic Geometry II [1] or Calculus and Analytic Geometry II Honors	4
PHYS 2140 & 2140L	Electricity and Magnetism and Electricity & Magnetism Laboratory [1]	4
PHYS 2141	Supplemental Instruction to PHYS 2140 [1]	1
Area IV: Social and Behavioral Science Course [2]		3
	Credits	**15**

Second Year		
Semester 1		
CHEM 1215G or CHEM 1216	General Chemistry I Lecture and Laboratory for STEM Majors [1] or General Chemistry I Lecture and Laboratory for CHEM Majors	4
MATH 2530G	Calculus III [1]	3
PHYS 2120 & 2120L	Heat, Light, and Sound and Heat, Light, and Sound Laboratory [1]	4
PHYS 2121	Supplemental Instruction to PHYS 2120	1
COMM 1115G	Introduction to Communication	3
	Credits	**15**
Semester 2		
CHEM 1225G or CHEM 1226	General Chemistry II Lecture and Laboratory for STEM Majors [1] or General Chemistry II Lecture and Laboratory for CHEM Majors	4
MATH 3160	Introduction to Ordinary Differential Equations [1]	3
PHYS 315	Modern Physics [1]	3
PHYS 316	Supplemental Instructions to PHYS 315	1
PHYS 325	Intermediate Experimental Physics [1]	3
Area V: Humanities Course [2]		3
	Credits	**17**
Third Year		
Semester 1		
PHYS 451	Intermediate Mechanics I [1]	3
PHYS 461	Intermediate Electricity and Magnetism I [1]	3
PHYS 395	Intermediate Mathematical Methods of Physics [1]	3
VWW: Viewing a Wider World Course [3]		3
First Course in Second Language Series		3-4
	Credits	**15-16**
Semester 2		
PHYS 462	Intermediate Electricity and Magnetism II [1]	3
PHYS 480	Thermodynamics [1]	3
Area VI: Creative and Fine Arts Course [2]		3
VWW: Viewing a Wider World Course [3]		3
Next Course in Second Language Series [1]		3-4
	Credits	**15-16**
Fourth Year		
Semester 1		
PHYS 454	Intermediate Modern Physics I [1]	3
Physics Upper-Division Elective Courses [1]		6
Elective Courses		6
	Credits	**15**
Semester 2		
PHYS 455	Intermediate Modern Physics II [1]	3
Advanced Physics Laboratory [1]		3
Elective Courses		6-4
	Credits	**12-10**
	Total Credits	**120**

[1] These courses may have prerequisites and/or co-requisites, and it is the students responsibility for checking and fulfilling all those requirements.

[2] See the General Education (https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/) section of the catalog for a full list of courses.

[3] See the Viewing a Wider World (https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext) section of the catalog for a full list of courses.