B.S. Physics – Description and Roadmaps

AY24/25

The B.S. in Physics with a General Physics concentration is designed to prepare students for a career in physics-focused research and technology development. Our program will prepare students to attend graduate school in physics, astrophysics, or a related field. With a strong foundation in mathematics and physics along with experimental methods, students will develop skills for qualitative and quantitative analysis of physical problems in various regimes including, for example, optics, biophysics, particle physics, quantum information, and geophysics.

The B.S. in Physics with Applied Physics concentration is designed to be tailored to a student's interests, be they focused on entering the scientific/engineering workforce following their B.S. or going on to graduate study. This concentration is very flexible in the electives, allowing for student-focused career preparation.

To complement classwork, students in either concentration have the opportunity to participate in research projects with faculty. The B.S. in Physics major requires 83 credit hours of course work[1]. All students take the same Base requirement. In addition to the Base requirements, a student must select either the General Physics or the Applied Physics Concentration, and fulfill the corresponding requirements listed below. All electives should be approved in consultation with the Physics and Astronomy faculty advisor.

Base requirements (62 credits)

MATH:	1512, 1522, 2531, 314, 316	[18 credits]
CHEM:	1215, 1215L	[4 credits]
PHYS:	1310, 1320, 2310, 2415, 301, 303, 330, 366, 405, 491	[31 credits]
PHYSL:	1310L, 1320L, 2310L, 306L, 493L	[9 credits]

General Physics Concentration (21 credits):

Complete: PHYS 307L, PHYS 406, and PHYS 492

Complete: At least 12 credits following (all of which excludes problems and research courses):

- 3 credits chosen from STEM classes at Any Level. CHEM 1225 + 1225L or introductory computer programming recommended depending on background and end-goals.
- 3 credits chosen from Any-Level PHYS/ASTR courses.
- 6 credits chosen from Upper-Level PHYS/ASTR courses.

Applied Physics Concentration (21 credits):

Complete: PHYS 302L or PHYS 307L

Complete: At least 18 credits following:

- 12 credits chosen from STEM field classes at Any Level (excluding problems and research courses). CHEM 1225 + 1225L or introductory computer programming recommended depending on background and end-goals.
- 6 credits chosen from Upper-Level STEM courses (3 credit hours of these may be from a problems or research course).

[1] In addition to the program-specific requirements outlined here, all undergraduate students are required to fulfill other general undergraduate degree requirements for UNM and the College of Arts and Sciences to earn a minimum of 120 credits, including UNM's General Education Program requirements.

B.S. Physics with General Physics Concentration – Roadmap

AY 24/25

Semester 1	**Credits**	**Semester 2**	**Credits**
MATH 1512 (Calculus I)	4	MATH 1522 (Calculus II)	4
PHYS 1310+1310L (Physics I + lab)	3+1	PHYS 1320+1320L (Physics II + lab)	3+1
CHEM 1215+1215L (Chemistry I +lab)	3+1	STEM Any-level Elective	3
Semester 3	**Credits**	**Semester 4**	**Credits**
MATH 2531 (Calculus III)	4	PHYS 2415 (Computational Physics)	3
PHYS 2310+2310L (Physics III + lab)	3+1	PHYS 330 (Intro to Modern Physics)	3
MATH 316 (ODEs)	3	PHYS 366 (Math Methods)	4
Semester 5	**Credits**	**Semester 6**	**Credits**
PHYS 306L (Electronics Lab)	3	PHYS 307L (Modern Physics Lab)	3
PHYS 303 (Analytical Mechanics)	3	PHYS 405 (Electricity and Magnetism I)	3
MATH 314 (Linear Algebra)	3	PHYS 491 (Quantum Mechanics I)	3
PHYS/ASTR Upper-Level Elective	3	PHYS/ASTR Any-level Elective	3
Semester 7	**Credits**	**Semester 8**	**Credits**
PHYS 406 (Electricity and Magnetism II)	3	PHYS 301 (Stat Mech and Thermo)	3
PHYS 492 (Quantum Mechanics II)	3	PHYS/ASTR Upper-Level Elective	3
PHYS 493L (Contemporary Physics Lab)	3		

B.S. Physics with Applied Physics Concentration – Roadmap

AY 24/25

Semester 1	**Credits**	**Semester 2**	**Credits**
MATH 1512 (Calculus I)	4	MATH 1522 (Calculus II)	4
PHYS 1310+1310L (Physics I + lab)	3+1	PHYS 1320+1320L (Physics II + lab)	3+1
CHEM 1215+1215L (Chemistry I +lab)	3+1	STEM Any-level Elective	3
Semester 3	**Credits**	**Semester 4**	**Credits**
MATH 2531 (Calculus III)	4	PHYS 2415 (Computational Physics)	3
PHYS 2310+2310L (Physics III + lab)	3+1	PHYS 330 (Intro to Modern Physics)	3
MATH 316 (ODEs)	3	PHYS 366 (Math Methods)	4
Semester 5	**Credits**	**Semester 6**	**Credits**
PHYS 306L (Electronics Lab)	3	PHYS 307L or PHYS 302L (Modern Physics Lab or Photonics Lab)	3
PHYS 303 (Analytical Mechanics)	3	PHYS 405 (Electricity and Magnetism I)	3
MATH 314 (Linear Algebra)	3	PHYS 491 (Quantum Mechanics I)	3
STEM Any-Level Elective	3	STEM Any-level Elective	3
Semester 7	**Credits**	**Semester 8**	**Credits**
PHYS 493L (Contemporary Physics Lab)	3	PHYS 301 (Stat Mech and Thermo)	3
STEM Any-level Elective	3	STEM Upper-Level Elective or PHYS 452 (Senior Project)	3
STEM Upper-level Elective	3		