PHYSICS MINOR

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Program Director: Carter Hall, Ph.D.

This minor provides a rigorous foundation in physics for students who choose not to complete the entire physics major. It includes core coursework in electromagnetic fields, waves, and scientific computing, along with required upper-level electives, chosen from an approved list, that offer deeper exposure to advanced topics in physics.

Students interested in earning a minor in physics should contact the undergraduate advisor for the Physics Department.

Program Learning Outcomes

1. Students will be able to apply foundational physics principles—including mechanics, electromagnetism, and wave phenomena—to analyze and solve problems.
2. Students will be able to use computational and programming tools to support modeling, numerical analysis, and data visualization in a physics context.
3. Students will demonstrate proficiency in experimental methods, including data acquisition, uncertainty analysis, and interpretation of results.
4. Students will engage with core topics in contemporary and modern physics through upper-level PHYS coursework, developing a deeper understanding and mathematical problem-solving skills.

REQUIREMENTS

The minor begins with introductory coursework in fields (PHYS272), waves (PHYS273), scientific computing (PHYS265), and a laboratory (PHYS174, PHYS261, or PHYS271). To obtain a deeper understanding of physics, the minor requires three additional upper-level courses (3–4 credits each), which students can select from the list below.

- PHYS260 with a B- or higher may be used in place of PHYS272.
- PHYS265 may be replaced with another approved computer programming/scientific computing course (e.g., AOSC247, CMSC106, CMSC131, ENAE202)
- Other upper level Physics courses can be substituted for the listed upper-level required electives only with approval from the Department's undergraduate director and the Faculty Minor Advisor.
- All courses must be completed with a grade of "C-" or better to be counted towards the minor.
- No more than 7 credits in this minor can count toward major requirements. Students with more than 7 credits of overlap must substitute non-overlapping 300 or 400 level courses from the above list to reduce the overlap to no more than 7 credits.
- Physics majors and students majoring in Astronomy are not eligible to complete the Physics Minor due to the large number of overlapping course requirements.

Courses Required for the Minor

Course	Title	Credits
Select one of the following:		1
PHYS174	Physics Laboratory Introduction	
PHYS261	General Physics: Mechanics, Vibrations, Waves, Heat (Laboratory)	
PHYS271	General Physics: Electrodynamics, Light, Relativity and Modern Physics (Laboratory)	
PHYS265	Introduction to Scientific Programming	3
PHYS272	Introductory Physics: Fields	3
PHYS273	Intermediate Oscillations and Waves	3
Select three of the following:		9-12
PHYS313	Electricity and Magnetism I	
PHYS371	Modern Physics	
or PHYS420	Principles of Modern Physics	
PHYS401	Quantum Physics I	
PHYS402	Quantum Physics II	
PHYS404	Introduction to Statistical Thermodynamics	
PHYS410	Classical Mechanics	
PHYS413	Electricity and Magnetism II	
PHYS431	Introduction to Solid State Physics	
PHYS441	Topics in Nuclear and Particle Physics	
PHYS457	Introduction to Quantum Computing	
PHYS467	Introduction to Quantum Technology	
PHYS474	Computational Physics	
Total Credits		**19-22**

Prerequisites

MATH140, MATH141, MATH241, MATH243 or (MATH240 and MATH246), and PHYS171 are prerequisites for some of the courses in this program.