

PHYSICS, ENGINEERING PHYSICS TRACK (BS IN PHYSICS)

Program

Traditionally, many physics undergraduates continue in graduate school in pursuit of Ph.D. degrees in physics or engineering. Previous students who have completed a physics major also enter a variety of other fields, including among many others, archaeology, astronomy and astrophysics, biology, mathematics, computer science, high school teaching, law, medicine, environmental sciences, operations research, technical sales, industrial management, engineering and oceanography. Because physicists are scientific generalists, undergraduate work in physics followed by specialization in other areas has become one of the preferred preparations for many activities that are setting new directions in society. The requirements for major in physics are relatively flexible, and are designed to prepare people for either graduate work in physics or for later specialization in other areas.

Information on the program can be obtained through the World Wide Web at the address <https://www.wm.edu/physics>.

Graduate Program

The department offers the degrees of Master of Science and Doctor of Philosophy. Degree requirements and a full description of graduate courses in physics can be obtained through the World Wide Web at <https://www.wm.edu/physics> or you may request application forms by e-mail at grad@physics.wm.edu or by writing to the Chair of the Graduate Admission Committee in Physics.

Required Credit Hours: 45

Course Requirements

Core Requirements

This concentration is designed for students interested in research and development in applied sciences and advanced technology. It also aims to provide preparation for material science and engineering graduate programs.

Code	Title	Hours
PHYS 101 or PHYS 101H	General Physics-Lecture General Physics I - Honors	3
PHYS 101L	General Physics-Lab	1
PHYS 102 or PHYS 102H	Gen Physics-Lecture General Physics II - Honors	3
PHYS 102L	General Physics-Lab	1
PHYS 201	Modern Physics	4
PHYS 208	Classical Mechanics of Particles and Waves I	4
APSC 251	Engineering Design	3
PHYS 252	Electronics	3
PHYS 313	Quantum Mechanics I	3
PHYS 351	Scientific Instrumentation Laboratory	3
APSC 301	Mechanics of Materials	3
APSC 304	Energy and Thermodynamics	3
PHYS 401	Electricity & Magnetism I	3

Select one of the following: 6

PHYS 471 & PHYS 472	Capstone Engineering Design Senior Project and Capstone Engineering Design Senior Project
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EPAD 495 & EPAD 496	Honors and Honors
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Select one of the following: 1-3

APSC 401	Research Applied Science
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APSC 401 & APSC 402	Research Applied Science and Research Applied Science
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APSC 402	Research Applied Science
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PHYS 455	Sup Senior Research
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Select one of the following: 3

APSC 327	Introduction to Laser Biomedicine
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APSC 422	Introduction to Materials Characterization
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APSC 427	Biomedical Materials and Devices
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APSC 428	Scanning Probe Nanoengineering: Visualization and Manipulation of Matter at Atomic Scales
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APSC 457	Computational Materials Design
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PHYS 302	Fluid Mechanics
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Total Hours 47-49

Major Computing Requirements

The departmental computer proficiency requirement is satisfied through the completion of course work demonstrating programming ability. This is typically satisfied by completion of PHYS 256 Practical Computing for Scientists and Engineers. Students may petition the Physics Undergraduate Committee to satisfy the requirement by another course or a senior/honors research project that demonstrates computational proficiency.

Major Writing Requirements

Code	Title	Hours
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Select one of the following: 6

PHYS 471 & PHYS 472	Capstone Engineering Design Senior Project and Capstone Engineering Design Senior Project
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EPAD 495 & EPAD 496	Honors and Honors
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