

PHYSICS, PREMED 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.

Courses

Code	Title	Hours
PHYS 100	Concepts and Questions in Physics	4
PHYS 101	General Physics-Lecture	0
PHYS 101H	General Physics I - Honors	3
PHYS 101L	General Physics-Lab	1
PHYS 101P	General Physics I	3
PHYS 102	Gen Physics-Lecture	0
PHYS 102H	General Physics II - Honors	3
PHYS 102L	General Physics-Lab	1
PHYS 102P	General Physics II	3
PHYS 107	Physics for the Life Sciences I	3
PHYS 107L	Physics for the Life Sciences I Lab	1
PHYS 108	Physics for the Life Sciences II	3
PHYS 108L	Physics for the Life Sciences II Lab	1
PHYS 121	Physics of Music	3
PHYS 150	First-Year Seminar	4
PHYS 155	Freshman Research	1-3
PHYS 171	Planetary and Stellar Astronomy	3
PHYS 172	Stellar and Galactic Astronomy and Cosmology	3
PHYS 175	Cosmology & History of Wonder	4
PHYS 175D	Cosmology & Hist of Wonder-Dis	0
PHYS 177	Astronomy Laboratory	1
PHYS 201	Modern Physics	4
PHYS 208	Classical Mechanics of Particles and Waves I	4

PHYS 212	Undergraduate Seminar	1
PHYS 213	Introduction to Modern Optics	3
PHYS 251	Experimental Atomic Physics	3
PHYS 252	Electronics	3
PHYS 254	Introduction to Mathematical Physics	3
PHYS 255	Sophomore Research	1-3
PHYS 256	Practical Computing for Scientists and Engineers	3
PHYS 301	Intro Mathematical Physics	3
PHYS 302	Fluid Mechanics	3
PHYS 303	Classical Mechanics of Particles and Waves II	3
PHYS 309	Undergraduate Seminar	1
PHYS 313	Quantum Mechanics I	3
PHYS 314	Quantum Mechanics II	3
PHYS 351	Scientific Instrumentation Laboratory	3
PHYS 352	Experimental Modern Physics	2
PHYS 355	Junior Research	1-3
PHYS 357	Careers in Physics	1
PHYS 401	Electricity & Magnetism I	3
PHYS 402	Electricity & Magnetism II	3
PHYS 403	Statistical Mechanics and Thermodynamics	3
PHYS 404	Quantum Physics: Research Applications	3
PHYS 430	Quantum Optics and Atomics	3
PHYS 436	Modern Astrophysics	3
PHYS 438	Nuclear and Particle Physics	3
PHYS 451	Physics Research	1-3
PHYS 452	Physics Research	1-3
PHYS 455	Sup Senior Research	1-3
PHYS 471	Capstone Engineering Design Senior Project	3
PHYS 472	Capstone Engineering Design Senior Project	3
PHYS 481	Topics in Physics	1-3
PHYS 482	Topics in Physics	1-3
PHYS 495	Honors	3
PHYS 496	Honors	3

Required Credit Hours:

An alternative concentration for those who are planning to fulfill the requirements for entering medical school consists of the Physics courses listed below. A minimum of 30 credits in physics must be completed. In addition, this concentration requires the Chemistry/Biology courses listed below for a minimum of 42 credits.

Core Requirements

Code	Title	Hours
Select one of the following options:		8
Option 1:		
PHYS 101	General Physics-Lecture	
PHYS 101L	General Physics-Lab	
PHYS 102	Gen Physics-Lecture	
PHYS 102L	General Physics-Lab	
Option 2:		
PHYS 107	Physics for the Life Sciences I	
PHYS 107L	Physics for the Life Sciences I Lab	
PHYS 108	Physics for the Life Sciences II	

PHYS 108L	Physics for the Life Sciences II Lab	
PHYS 201	Modern Physics	4
PHYS 208	Classical Mechanics of Particles and Waves I	4
PHYS 251	Experimental Atomic Physics	3
PHYS 252	Electronics	3
PHYS 313	Quantum Mechanics I	3
PHYS 401	Electricity & Magnetism I	3
PHYS 451	Physics Research	1-3
PHYS 452	Physics Research	1-3
Select one of the following:		3-4
CHEM 209	Organic Chemistry II	
CHEM 207 & CHEM 253	Organic Chemistry II for Life Sciences and Organic Chemistry Laboratory II	
Select one of the following:		3-4
CHEM 208	General Chemistry II and Introduction to Inorganic Chemistry	
CHEM 205 & CHEM 254	Advanced General Chemistry and General Chemistry Laboratory II	
Select one of the following:		4
BIOL 204 & 204L	Introduction to Organisms, Ecology, Evolution and Introduction to Organisms, Ecology, Evolution Laboratory	
BIOL 203 & 203L	Introduction to Molecules, Cells, Development and Introduction to Molecules, Cells, Development Laboratory	
Total Hours		40-46

In addition to the requirements for the Premed Track, Physics Premed students are also encouraged to further develop computational proficiency by taking either CSCI 141 Modern Programming Fundamentals or PHYS 256 Practical Computing for Scientists and Engineers.