

Department Requirements for a B.S. Degree in Physics Professional Area of Concentration

Physics is the basic science that underlies all of the physical sciences and is the cornerstone of engineering. Through the rigorous study of concepts related to matter, energy, and their interactions, physics majors develop strong analytic and problem solving skills: adapting mathematics to real world situations; using instrumentation and statistics to compare conceptual models to reality; and using computers to handle both these tasks efficiently. The physics major program contains introductory and advanced courses, a sequence of laboratories, and a substantial mathematical base. The Physics Department at the University of Maryland enjoys national and international recognition due to its many distinguished professors who excel both in the classroom and in their research. We highly encourage our undergraduates to work with our faculty on cutting-edge science. Our program is excellent preparation for graduate work in physics and related subjects, and it is also an excellent background for many science related careers. Students preparing for careers immediately after college can take courses from many of the outstanding departments at the University, such as computer science and mathematics.

Required Courses for a Major in Physics

Freshman/Sophomore Level Required Courses:

- PHYS 171: *Introductory Physics: Mechanics and Relativity* (3 cr)
- PHYS 174: *Physics Laboratory Introduction* (1 cr)
- PHYS 272: *Introductory Physics: Fields* (3 cr)
- PHYS 275: *Experimental Physics I: Mechanics, Heat and Fields* (2 cr)
- PHYS 273: *Introductory Physics: Waves* (3 cr)
- PHYS 276: *Experimental Physics II: Electricity and Magnetism* (2 cr)

Junior/Senior Required Physics Courses:

- PHYS 374: *Intermediate Theoretical Methods* (4 cr)
- PHYS 375: *Experimental Physics III: Waves, Optics and Modern Physics* (3 cr)
- PHYS 401: *Quantum Physics I* (4 cr)
- PHYS 402: *Quantum Physics II* (4 cr)
- PHYS 404: *Introduction to Statistical Thermodynamics* (3 cr)
- PHYS 405: *Advanced Experiments* (3 cr)
- PHYS 410: *Classical Mechanics* (4 cr)
- PHYS 411: *Electricity and Magnetism* (4 cr)

Required Supporting Math Courses:

- MATH 140: *Calculus I* (4 cr)
- MATH 141: *Calculus II* (4 cr)
- MATH 241: *Calculus III* (4 cr)
- MATH 246: *Differential Equations* (3 cr)
- MATH 240: *Linear Algebra* (4 cr) or MATH461: *Linear Algebra* (3 cr)