Physics

Physics Degree

Physics Degrees with Certification

The physics major is designed to prepare students for graduate school in physics and allied areas of science and engineering. Students will also be qualified for scientific or technical employment with industry or government. It is also designed to prepare students to teach physics at the high school level. The student has the option of graduating with a Bachelor of Science degree or with a Bachelor of Arts degree.

CMU has a chapter of Alpha Epsilon Delta, a national pre-health professions fraternity (advisor: Dr. Ashley Lough).

Physics Minor

Two (2) courses from the following (8-10 hours):

PH111 General Physics I (3) with PH111L (1) and PH112 General Physics II (3) and PH112L (1) OR PH205 Calculus Physics I (3) with PH205L (2) and PH206 Calculus Physics II (3) with PH206L (2)

Electives in Physics (7-9 hours)

CS231 Scientific Computer Programming (3) may be counted toward satisfying minor requirements.

Physics Courses

PH111 General Physics I. 3 hours. A survey of physics including an introduction to mechanics, thermodynamics, fluids, wave characteristics, and sound. 3 lectures. Fall.

PH111L General Physics I Lab. 1 hour. Lab exercises that accompany PH111. Must be taken concurrently with PH111. 2 lab hours. Fall.

PH112 General Physics II. 3 hours. A survey of physics including an introduction to electricity, wave characteristics, optics and nuclear structure. 3 lectures. Prerequisite: PH111 or instructor's permission. Spring.

PH112L General Physics II Lab. 1 hour. Lab exercises that accompany PH112. Must be taken concurrently with PH112. 2 lab hours. Spring.

PH205 Calculus Physics I. 3 hours. A unified survey of physics including an introduction to mechanics, thermodynamics, fluids and acoustics. This course is presented at the mathematical level of calculus. 3 lectures. Prerequisite: high school Calculus I or completion of/or concurrent enrollment in MA118. Fall.

PH205L Calculus Physics I Lab. 2 hours. Lab exercises that accompany PH205. Must be taken concurrently with PH205. 3 lab hours. Fall.

PH206 Calculus Physics II. 3 hours. A unified survey of physics including an introduction to electricity, optics and modern physics topics, field phenomena and the properties of matter. This course is presented at the mathematical level of calculus. 3 lectures. Prerequisite: PH205 and high school Calculus I or completion of/or concurrent enrollment in MA118. Spring.

PH206L Calculus Physics II Lab. 2 hours. Lab exercises that accompany PH206. Must be taken concurrently with PH206. 3 lab hours. Spring.

PH307 Modern Physics. 3 hours. A study of relativity, atomic and nuclear physics, elementary particles and field theory. Prerequisite: PH112 or PH206. Alternating Falls.

PH322 Scientific Instrumentation. 3 hours. An introduction to modern electronics, optical instrumentation, and other scientific instrumentation including computer-based equipment. 3 lectures. Cross-listed with CH322. Prerequisite: PH112 or PH206.

PH322L Scientific Instrumentation Lab. 1 hour. Lab exercises that accompany PH322. Must be taken concurrently with PH322. 3 lab hours. Cross-listed with CH322L.

PH354 Thermodynamics and Physical Chemistry. 3 hours. State of matter, chemical thermodynamics, solutions, equilibria, phase rule, and electrochemistry. 3 lectures. Cross-listed with CH354. Prerequisites: CH114, MA209 and PH206, or instructor's permission.

PH354L Thermodynamics and Physical Chemistry Lab. 1 hour. Lab exercises that accompany PH354. 3 lab hours. Must be taken concurrently with PH354. Cross-listed with CH354L.

PH355 Quantum Mechanics and Solid State Physics. 3 hours. Topics include quantum mechanics, spectroscopy, group theory and solid state. 3 lectures. Cross-listed with CH355. Prerequisites: CH114, MA209 and PH206, or instructor's permission.

PH355L Quantum Mechanics and Solid State Physics Lab. 1 hour. Lab exercises that accompany PH355. Must be taken concurrently with PH355. 3 lab hours. Cross-listed with CH355L.