

■ Physics

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The offerings in physics are primarily intended to provide the physics components required for degree majors in, for example, biology and chemistry. Additionally, physics courses meet the general education science requirements for the other degrees. A minor in physics is offered.

Pre-minor requirements: PHY 251/PHY 251L and PHY 252/PHY 252L; and MA 210, MA 211, and MA 311.

Minor requirements: 12 semester hours of upper division physics course work to include PHY 315.

Learning Outcomes for Physics

Students completing a course of study in Physics will demonstrate an understanding of:

1. The scientific method and its application in Physics:
2. The different areas of research and practice in Physics:
3. The general concepts and principles of Physics:

Note: some additional upper division math courses may be prerequisites for upper division physics classes. Other requirements: see degree requirements.

Course Descriptions

Physics (PHY)

PHY 111 Environmental Physics (3)

Introduction to physical principles as they relate to societal impact on the environment. Offered according to demand. Concurrent registration in PHY 111L is required. Cross listed as ENV 202.

PHY 111L Environmental Physics Lab (1)

One three-hour laboratory period per week to accompany PHY 111. Offered according to demand. Concurrent registration in PHY 111 required. Cross listed as ENV 202L.

PHY 130 Physics of Human Motion (3)

Introduction to physical principles of mechanics, thermodynamics and electricity using the motion and physiology of the human body as a model. Application of physical principles to real-world examples found in exercise physiology, kinesiology and healthcare. Concurrent registration on PHY 130L required. Satisfies natural science requirement for non-science majors when taken in combination with PHY 130L.

PHY 130L Physics of Human Motion Laboratory (1)

Hands-on experimentation to explore principles of physics using the human body as a model. Concurrent registration on PHY 130L required. Satisfies natural science requirement for non-science majors when taken in combination with PHY 130.

PHY 140 Introduction to Astronomy (3)

Historical overview: the Earth-Moon system; the solar system; stellar evolution; white dwarfs, pulsars, and black holes; galaxies; the Big Bang, cosmology and structure of the Universe.

Offered according to demand. Concurrent registration in PHY 140L required.

PHY 140L Introduction to Astronomy Lab (1)

One three-hour laboratory period per week to accompany PHY 140. Activities are chosen to compliment lecture material and to help students gain a deeper understand of fundamental physics concepts and astronomical principles. Offered annually. Concurrent registration in PHY 140 required.

PHY 151 College Physics I (3)

Introduction to mechanics, heat, and fluids. Offered according to demand for non-science majors who are not eligible for calculus-based physics. Prerequisites: MA 110 and concurrent registration in PHY 151L.

PHY 151L College Physics I Lab (1)

One three-hour laboratory period per week to accompany PHY 151. Offered according to demand for non-science majors who are not eligible for calculus-based physics. Concurrent registration in PHY 151 required.

PHY 152 College Physics II (3)

Introduction to electricity and magnetism, waves, sound, optics and topics in modern physics. Offered according to demand for non-science majors who are not eligible for calculus-based physics. Prerequisites: PHY 151. Concurrent registration in PHY 152L.

PHY 152L College Physics II Lab (1)

One three-hour laboratory period per week to accompany PHY 152. Offered according to demand for non-science majors who are not eligible for calculus-based physics. Concurrent registration in PHY 152 required.

PHY 251 University Physics I (4)

A broad calculus-based introduction to mechanics and fluids. Offered annually. Prerequisites: MA 210. Concurrent registration in PHY 251L required.

PHY 251L University Physics I Lab (1)

One three-hour laboratory period per week to accompany PHY 251. Offered annually. Concurrent registration in PHY 251 required.

PHY 252 University Physics II (4)

A broad, calculus-based introduction to electricity and magnetism, oscillations and waves, and optics. Offered annually. Prerequisites: MA 211, PHY 251. Concurrent registration in PHY 252L.

PHY 252L University Physics II Lab (1)

One three-hour laboratory period per week to accompany PHY 252. Offered annually. Concurrent registration in PHY 252 required.

PHY 253 University Physics III (4)

A broad, calculus-based introduction to thermodynamics, special relativity and the quantum theory. Offered according to demand. Prerequisites: PHY 252 and MA 211.

English 102 and COM 101 are prerequisites for all upper division courses

PHY 310 Classical Mechanics (3)

An extended mathematical treatment of Newtonian and Lagrangian mechanics, small oscillations, and fluid mechanics. Offered according to demand. Prerequisites: PHY 251 and MA 311.

PHY 311 Electricity and Magnetism (3)

An extended mathematical treatment of electricity and magnetism, including Maxwell's equations, electromagnetic waves, and the effects of media. Offered according to demand. Prerequisites: PHY 252, MA 311, and MA 313.

PHY 312 Modern Physics (3)

Atomic and nuclear physics, special relativity, quantum mechanics, wave mechanics and elementary particles. Offered according to demand. Prerequisites: PHY 252 or consent of instructor. Concurrent registration in PHY 315 required.

PHY 313 Thermodynamics (3)

An extended mathematical treatment of thermodynamics and an introduction to statistical mechanics. Topics include thermodynamic laws, thermodynamic potentials, quasistatic processes, kinetic theory, and statistical methods. Offered according to demand. Prerequisites: PHY 253 and MA 311. Concurrent registration in PHY 315 required.

PHY 315 Advanced Physics Lab (1)

One three-hour laboratory period per week, designed to accompany PHY 312 or PHY 313. Perform experiments involving advanced physical phenomena, including incorporation of advanced experimental techniques such as apparatus calibration and chi-squared analysis. Offered according to demand. Prerequisites: PHY 253.

PHY 480 Special Topics (1-3)

Selected topics in physics, such as relativity, holography, chemical physics, and mathematical methods. May be repeated for credit. No pre-requisites.