

Physics

Physics is the most fundamental of the sciences and has had a profound effect on all scientific development. The study of physics is valuable because of the basic role it plays in all phenomena and the experimental techniques developed in the laboratory. Physics is a science which develops quantitative reasoning and analysis. The study of physics increases the student's ability to comprehend the physical universe in a process of reflecting on the real external world.

REQUIREMENTS FOR A SCIENCE MAJOR (PHYSICS DESIGNATION) WITH TEACHER CERTIFICATION – 45 hours of coursework including the following:

			Hours
BIO	141W	Principles of Biology I	4
BIO	142W	Principles of Biology II	4
CHM	131	General Chemistry I	4
CHM	132	General Chemistry II	4
CHM	250	Quantitative Analysis	4
CHM/PHY	335W	Thermodynamics	4
CHM/PHY	336	Quantum Chemistry and Kinetics	3
PHS	111	Introduction to Earth Science	4
PHS	112	Introduction to Astronomy	4
PHY	220	General Physics I: Mechanics, Waves and Optics	4
PHY	230	General Physics II: Electricity, Magnetism and Modern Physics	4



S&M	200W	Methods of Science and Critical Thinking	2
TOTAL:			45 hours

Plus required supporting courses:

MAT	121	Precalculus	4
MAT	130	Calculus I	4
MAT	140	Calculus II	4

Plus Professional Education Course Requirements. (For a list of these courses, please refer to the Education section of the catalog concerning requirements for certification in Secondary Education.) To qualify for Student Teaching, a student must have an overall 2.50 GPA and a 2.75 GPA in the Science major outlined above.

Physics Courses

PHY 220 General Physics I: Mechanics, Waves and Optics **4 hours**

Pre- or co-requisite: MAT 140.

Introduction to the principles of mechanics and thermodynamics. The course covers kinematics, work and energy, heat transfer, introductory fluid mechanics, mechanical oscillations, and waves. Can be taken individually or in any sequence with PHY 230.

PHY 230 General Physics II:

Electricity, Magnetism and Modern Physics **4 hours**

Pre- or co-requisite: MAT 140

Emphasizes electromagnetism and electromagnetic radiation and modern physics. Can be taken individually or in any sequence with PHY 220.

PHY 335W Thermodynamics **4 hours**

Prerequisites: MAT 140, CHM 132, PHY 230. (Offered in alternate years)

Development of the principles of classical and statistical thermodynamics and their application to chemical systems. Includes a discussion of the kinetic theory of gases and equations of state and their significance in thermodynamics. Lecture/laboratory. (Cross-listed as CHM 335W.)

PHY 336 Quantum Chemistry and Kinetics **3 hours**

Prerequisites: MAT 140 and either CHM 132 or PHY 230. (Offered in alternate years)

Introduction to the principle of quantum mechanics as applied to chemical structure and reactivity. Includes a survey of spectroscopic techniques and a discussion of reaction dynamics. Lecture. (Cross-listed as CHM 336.)

Physical Science

Courses in Physical Science are among the requirements for majors in Elementary Education, Environmental Sciences, and Physics. Other majors may choose to enroll in a PHS to satisfy one of their general education requirements in science.

Physical Science Courses

PHS 110 Introduction to Physical Science

4 hours

Prerequisite: MAT 099R, an ACT Math score of at least 23, or placement by divisionally designated, nationally normed placement test (e.g. COMPASS).

Study of the fundamentals of chemistry and physics with special attention paid to the experimental method and the nature of scientific evidence. Lecture and laboratory. This course is not available to students who have received credit in PHY 220.



PHS 111 Introduction to Earth Science**4 hours**

Prerequisite: MAT 099R, an ACT Math score of at least 23, or placement by divisionally designated, nationally normed placement test (e.g. COMPASS).

The study of the origin and development of the planet earth including plate tectonics. Structure, composition, and identification of earth materials are emphasized. Lecture and laboratory.

PHS 112 Introduction to Astronomy**4 hours**

Prerequisite: MAT 099R, an ACT Math score of at least 23, or placement by divisionally designated, nationally normed placement test (e.g. COMPASS).

Study of modern astronomy and the structure of the universe. Material topics studied include the solar system and its mechanics, description astronomy, galaxies, stellar evolution, distances of space, pulsars, quasi-stellar objects, and black holes. Emphasis is on the methods and process of science. Lecture and laboratory.