

**PHYSICS****PHY 090****Preparatory Physics (4)**

In this course, students will learn how to apply basic numerical, algebraic, and trigonometric procedures to the solution of physical problems. Topics are selected from the fields of mechanics, heat, wave motion, electricity, optics, and electromagnetic radiation. Numerous laboratory exercises and in-class activities are integrated into the course to reinforce understanding of the physical principles. The course is designed for students who have not had high school physics, or need a basic introduction to physics before taking higher-level physics or technology courses.

**3 Class Hours; 2 Lab Hours; Prerequisite: MAT 096 Elementary Algebra and Trigonometry.**

**PHY 118****Physics for Physical Therapist Assistants (4)**

Forces, torques, linear motion, energy, momentum, conservation laws; temperature and heat, temperature scales, heat transfer, changes of state; electric fields, potential difference; Ohm's law, DC circuits, magnetic field, electromagnetic induction, motion of charges in magnetic fields; wave motion, electromagnetic spectrum, atomic structure.

**3 Class Hours, 2 Laboratory Hours; Prerequisites: MAT 096 Elementary Algebra and Trigonometry or equivalent.**

**PHY 160****Applied Physics – IS (4)**

This is a one-semester course in physics with emphasis on hands-on activities completed by students working in teams. General topics to be discussed include mechanics, vibrations and wave motion, light and optics, electricity and magnetism, thermodynamics and modern physics. Class activities and laboratory experiences are integrated into the class discussions. Computers will be used extensively for data analysis and presentation. Oral and written reports are required. This course may not be used as a substitute for PHY 161 or PHY 162.

**PHY 161****Physics I: Mechanics and Heat (4)**  
(Available in ASL mode)

Physics includes the study of matter and motion, mass and energy. It tells you how and why things move. It is important for everyone from technicians to doctors to know why something happens. Problem solving skills that you learn in physics will help you in other courses, as will the skills in laboratory observation and analysis. In Mechanics you will learn about forces and the accelerations they produce, and conservation laws for energy and momentum. In thermodynamics you will study how heat energy affects the properties of matter. This includes topics that range from how atoms bounce around on a hot day to the operation of a gasoline engine. Physics provides the underlying concepts used in technologies and in other sciences. Basic principles are applied to solve realistic problems, using algebra and elementary trigonometry. This course is designed

for Liberal Arts, Computer Science, and Technology students and others who are interested in learning why things happen the way they do.

**3 Class Hours; Prerequisite: Minimum grade of 75 in Math B (H.S.) or a minimum grade of "C" in Math MAT 130 or 136. Minimum grade of 75 in H.S. Physics or a "C" in PHY 090; Corequisite: PHY 161 Lab.**

**PHY 161L****Physics I Laboratory (0)**  
(Available in ASL mode)

This course provides hands-on experiences covering various topics in mechanics and thermodynamics. Experiments are designed to emphasize the empirical basis for the principles covered in class. Tools and methods for gathering and interpreting experimental data will provide you with problem solving techniques, measurement skills, and applications of theory.

**3 Lab Hours; Prerequisite: MAT 130; Corequisite: PHY 161.**

**PHY 162****Physics II: Wave Motion, Electromagnetism, and Atomic Physics (4)**

(Available in ASL mode)

This is the second course of an algebra-based sequence in physics (see PHY 161, above). Your study of sound and light will reveal them as examples of waves, and will include study of optical instruments. Electricity and magnetism introduces you to the basic properties of charges and currents, producing electric fields and magnetic fields. You will progress to understand electric energy as one essential component of our standard of living. Some selected topics in modern physics are also covered, including the study of atoms and their nuclei.

**3 Class Hours; Prerequisite: PHY 161; Corequisite: PHY 162L.**

**PHY 162L****Physics II Laboratory (0)**  
(Available in ASL mode)

Hands-on experiences will provide you with problem solving techniques, measurement skills, and applications of theory.

**3 Lab Hours; Corequisite: PHY 162.**

**PHY 181****Physics for Engineers & Scientists I: Mechanics and Thermodynamics (4)**

Engineering Physics, sometimes called "University Physics," uses calculus in the development of principles. The topics include the description of motion and the causes of motion, with the ideas of force, energy, power, and momentum; equilibrium and rotation; and heat and its effects. This course is designed for students studying engineering, computing, science, or mathematics.

**3 Class Hours; Prerequisite: Minimum grade of 80 in Math B (H.S.) or a minimum of "B" in Math 156 or "C" in MAT 181 (preferred). Minimum grade of 80 in H.S. Physics or "C" in PHY 161; Corequisite: PHY 181 lab and MAT 182 (preferred) or MAT 181.**

**PHY 181L****Physics for Engineers & Scientists I: Laboratory (0)**

Hands-on experiences will provide you with problem solving techniques, measurement skills, and applications of theory.

**3 Lab Hours; Corequisite: PHY 181.**

**PHY 182****Physics for Engineers & Scientists II: Sound, Light, Electricity and Magnetism (4)**

This continuation of PHY 181 covers the nature of sound and of light and their behavior; electric and magnetic forces and fields; electric circuits and electric energy transfer; and electromagnetic induction. This is the second semester of University Physics taught at most major Engineering schools.

**3 Class Hours; Prerequisite: PHY 181 and PHY 181L; Corequisite: MAT 182 and EGR 101.**

**PHY 182L****Physics for Engineers & Scientists II: Laboratory (0)**

Hands-on experiences will provide you with problem solving techniques, measurement skills, and applications of theory.

**3 Lab Hours; Corequisite: PHY 182.**

**PHY 281****Physics for Engineers & Scientists III (4)**

This elective is the third and last physics course for Engineering and Science majors. It covers Einstein's theory of relativity, quantum mechanics, atomic physics, and nuclear physics. Students majoring in Electrical Engineering, Nuclear Engineering, and Physics should consider taking this course. (This course is only offered as enrollment warrants)

**4 Class Hours; Prerequisite: PHY 182, PHY 182L, and MAT 182.**