

# PHYSICS (PHY)

## PHY 101. Elements of Physics. 3 Credits.

Students study the basic principles of physics and some important applications. Kinematics, Newton's laws of motion, circular motion, torque, fluid dynamics, electrostatics, circuits, waves, sound and light are studied. This course is suitable for both science and non-science majors. Students who have credit for PHY 110 or PHY 121 may not register for PHY 101.

**Prerequisites:** Take MA 107 minimum grade C- or Math placement score of 3.

**Corequisites:** Take PHY 101L.

**Offered:** Every year, Fall and Spring

**UC:** Natural Sciences

## PHY 101L. Elements of Physics Lab. 1 Credit.

Lab must be taken with PHY 101. (2 lab hrs.)

**Corequisites:** Take PHY 101.

**Offered:** Every year, Fall and Spring

**UC:** Natural Sciences

## PHY 105. Physics of Music. 3 Credits.

Students study the principles of wave mechanics and emphasize applications associated with sound, music and instruments. Topics cover the anatomy of waves and sound, the structure and physics of instruments (guitar, trumpet, drums, piano, etc), human voice, singing and speech, musical harmony and scales, architecture acoustics and electronic communication and sound digitization. This course is designed for nonscience majors with no previous coursework in physics or any background in music. This course will use mathematics and algebra but not be the focus of the course. Any math background acceptable. No prerequisites.

**Corequisites:** Take PHY 105L;

**Offered:** Every year, Fall

**UC:** Natural Sciences

## PHY 105L. Physics of Music Lab. 1 Credit.

**Corequisites:** Take PHY 105;

**Offered:** Every year, Fall

**UC:** Natural Sciences

## PHY 107. Introduction to Astronomy. 3 Credits.

This course provides students with an overview of the principles and techniques used for observing the night sky, components of the Solar System, Milky Way galaxy and the universe. Students assemble the required tools to examine recent and historic data that is used to build models of the ever-evolving universe. Using hands-on activities, students apply concepts and techniques related to the structure of our solar system, reading and plotting celestial coordinates, gravitation, features and operation of telescopes, methods of determining astronomical distance, stellar and cosmic evolution, and general relativity. Required nighttime telescope observation sessions reinforce lecture concepts. This course is intended for non-science majors and will use basic geometry and algebra for modeling.

**Corequisites:** Math Placement level of 2 or higher.

**Offered:** Every year, Spring

**UC:** Natural Sciences

## PHY 110. General Physics I. 3 Credits.

Students use algebra and trigonometry to examine the fundamentals of Newtonian mechanics. Topics include kinematics and dynamics, momentum, energy, and rotating rigid-body equilibrium and dynamics. This course is designed primarily for science majors. Must be taken in conjunction with PHY 110L.

**Prerequisites:** Take MA 107; minimum grade C-; or Math placement score of 3.

**Corequisites:** Take PHY 110L.

**Offered:** Every year, Fall and Summer

**UC:** Natural Sciences

## PHY 110L. General Physics I Lab. 1 Credit.

Lab must be taken with PHY 110. (2 lab hrs.)

**Corequisites:** Take PHY 110.

**Offered:** Every year, Fall and Summer

**UC:** Natural Sciences

## PHY 111. General Physics II. 3 Credits.

Students use algebra and trigonometry to examine the fundamentals of classical electromagnetic theory. Topics include electrostatics, magnetostatics, dc circuits, electromagnetic waves, and geometric and wave optics. Must be taken in conjunction with PHY 111L. This course is designed primarily for science majors.

**Prerequisites:** Take PHY 110, PHY 110L; Minimum grade C-.

**Corequisites:** Take PHY 111L.

**Offered:** Every year, Spring and Summer

**UC:** Natural Sciences

## PHY 111L. General Physics II Lab. 1 Credit.

Lab must be taken with PHY 111. (2 lab hrs.)

**Corequisites:** Take PHY 111.

**Offered:** Every year, Spring and Summer

**UC:** Natural Sciences

## PHY 121. University Physics. 4 Credits.

Students use calculus to examine classical Newtonian mechanics in an integrated lecture and laboratory classroom. Through experimentation, computer modeling and group problem-solving, students apply physics principles to predict the outcome of reality-based and open-ended problems. Topics include kinematics, Newton's laws, conservation of energy and momentum, torque, and equilibrium of static bodies and fluids. (6 studio-lab hrs.)

**Prerequisites:** Take MA 141 or MA 151; Minimum grade C-.

**Offered:** Every year, Fall and Spring

**UC:** Natural Sciences

## PHY 122. University Physics II. 4 Credits.

Students use calculus to examine classical electromagnetism in an integrated lecture and laboratory classroom. Through experimentation, computer modeling, and group problem-solving, students apply physics principles to predict the outcome of reality-based and open-ended problems. Topics include electrostatics, magnetostatics, dc circuits, Maxwell's equations, and electromagnetic radiation. (6 studio-lab hrs.)

**Prerequisites:** Take PHY 121; Minimum grade C-.

**Offered:** Every year, Fall and Spring

**UC:** Natural Sciences

**PHY 202. Physics of Life and Technology. 4 Credits.**

Students study the basic principles of physics including everyday applications and their use in applied technology. Topics include Newton's Laws of Motion and Gravity, torque, sound, light and optics, electricity and magnetism. These principles are examined through the study of roller coasters, space travel, musical instruments, the mechanics of muscle movements, sports and sport technology, the circuitry of the human brain, medical imaging using light and sound, optics of the human eye, lasers and elementary circuits. Enrollment in this course is restricted to students in the Online Bachelor of Science in Health Science Studies degree completion program. Students may not receive credit for PHY 202 if they already have credit for PHY 101 or PHY 110.

**Prerequisites:** Basic algebraic skills; MA 107 or MA 110 or higher; or a Math placement score of 3 or higher.

**Offered:** As needed

**PHY 399. Independent Study. 1-6 Credits.**

**Prerequisites:** None

**Offered:** As needed