

PHY - PHYSICS

PHY B14 GPACU:Physics II Lab

Academic Level: Undergraduate

PHY 110 General Physics I w/Lab (4 Credit Hours)

The first course in an algebra-based two-semester sequence covering the major areas of physics. Topics include kinematics, statics, dynamics, energy, with selected topics in thermodynamics. Understanding of concepts is built through guided-discovery laboratory sessions integrated into a lecture studio format.

Academic Level: Undergraduate

PHY 111 General Physics II w/Lab (4 Credit Hours)

A continuation of PHY 110, concentrating on topics including fluid statics and dynamics, oscillations, waves, sound, and selected topics in electricity and magnetism as time permits. Guided-discovery laboratories are integrated into a lecture studio format.

May be repeated for credit.

Academic Level: Undergraduate

PHY 120 General Physics I for A&P (4 Credit Hours)

This is the first course in an algebra-based, two-semester sequence covering the major areas of physics. Topics include kinematics, diffusion, statics, dynamics, equilibrium, energy, and electric circuits, potentials, and forces. The sequence of physics content will parallel the sequence of human anatomy and physiology course content, and major physics topics will be applied to the human body and medical imaging. Understanding of concepts is built through guided-discovery laboratory sessions integrated into lecture in a studio format.

Academic Level: Undergraduate

PHY 125 Introduction to Biomechanics (4 Credit Hours)

Physics 125, Introduction to Biomechanics, is a one-semester course designed to familiarize students in the Health, Wellness, and Occupational Studies program with the basic principles of physics as they can be applied to human motion and the musculoskeletal system. Laboratory activities will focus on connecting course material to real-world example problems.

Academic Level: Undergraduate

Enrollment is limited to students with a major in Hlth Wellns Occupatnal Studies, Occupational Studies or Occupational Studies 3+2.

PHY 210 University Physics I (4 Credit Hours)

The first course in a calculus-based, two-semester sequence covering the major areas of physics. Topics include kinematics, statics, dynamics, energy, rotational motion, and thermodynamics as time permits. An emphasis is placed on advanced mathematical and computational visualization. Understanding of concepts is built through guided-discovery laboratory sessions integrated into lecture in a studio format.

May be repeated for credit.

Academic Level: Undergraduate

PHY 211 University Physics II (4 Credit Hours)

A continuation of PHY 210, concentrating on topics including fluid statics and dynamics, oscillations, waves, sound, light and selected topics in electricity and magnetism as the time permits. An emphasis is placed on advanced mathematical and computational visualization. Guided-discovery laboratories are integrated into lecture in a studio format.

May be repeated for credit.

Academic Level: Undergraduate

PHY 215 Physics of the Body I (3 Credit Hours)

Physics of the Body I builds upon fundamental physics principles introduced in general physics courses, applying them to the human body in a biomedical context. This course explores the mechanics of human movement (biomechanics), energy transfer, and the role of pressure in various organ systems. Through a combination of hands-on activities and relevant examples, students will develop a deeper understanding of how physics principles apply to the human body, preparing them for further studies in medicine and healthcare.

Academic Level: Undergraduate

PHY 218 Energy and Climate Change (4 Credit Hours)

This course explores the relationship between energy and climate change. Students will explore key physical energy concepts; how the climate system works; how energy factors in climate change across different time scales using the geological record to compare climate past and present; how scientists use models, observations and theory to make predictions about future climate; and the consequences of climate change for our planet in light of the dependency of fossil fuels and their alternatives. Energy equivalencies and rates of energy flow (power) are emphasized to enable students to make realistic quantitative predictions. The course looks at the connection between human activity and the current warming trend and considers some of the potential social, economic and environmental consequences of climate change with respect to energy usage. Lastly, alternative models of energy usage will be explored that could help alleviate the impact of the current global warming trajectory.

Academic Level: Undergraduate

PHY 305 Revolutions of 20th Century Physics (3 Credit Hours)

This course is an introduction to contemporary physics and the dramatic changes that occurred in the field as it evolved. The revelations of Einstein's relativity and the birth of quantum mechanics ushered in a new era. The course begins with these topics and continues by examining high energy particle physics, followed by a study of the origin and fate of the universe. Final topics may be student-driven and can include, but are not limited to, chaos, superconductivity, nuclear physics, laser technology, and other recent advances in physics. Primary resources will be writings from leaders in the field, and class time will focus on developing insight into the philosophical-and at times bizarre-nature of the vast and the miniscule.

Academic Level: Undergraduate

PHY 310 Biophysics: Structure & Motion (3 Credit Hours)

Biophysics: Structure and Motion is a comprehensive look at the mechanical aspects of organisms; including animals and plants, structure and movement, solids and fluids. Much of the evolution of organisms reflects the inescapable properties of the physical world with which life interacts, a world that at once imposes constraints and affords opportunities. The course considers biological materials, structural mechanics, and every kind of locomotion. It looks at matters of fluid mechanics, from how organisms resist the forces of flow to the operation of circulatory and internal fluid transport systems. Physical and mathematical models will be crucial in helping to unravel the complex workings of organisms.

May be repeated for credit.

Academic Level: Undergraduate

PHY 411 Research I (1-4 Credit Hours)

The Research I course (PHY 411) is a variable credit (1-4 credits) research experience in any field or subfield of physics that is carried out in collaboration with a UNE faculty mentor. A passing grade in PHY110 or PHY 210 and permission of the instructor are required. These credits may be counted as general electives toward progression to graduation.

May be repeated for credit.

Academic Level: Undergraduate

Enrollment limited to students with the UG Research attribute.