

DETAILED COURSE DESCRIPTION

Course Number PHYS 137

Course Title Honors: Fundamentals of Physics for Physics Majors I

Target audience The course is designed for freshman-level physics majors, although other well prepared students are welcome. Physics 135 is an alternative for students who have not had physics or calculus previously. The course has a two-hour weekly lab.

Corequisites Mathematics 141. It is highly recommended that students have completed courses in calculus and physics in high school.

Catalog description Calculus-based physics of mechanics, sound, waves, and thermodynamics.

Expected previous knowledge

Concepts High school courses in physics and calculus are highly recommended.

Skills Differential calculus must be taken concurrently, and preferably prior to the course.

Course Objectives

The objectives are: 1) To cover the basics of Newtonian physics, including motion in one and two dimensions, Newton's laws, work, energy, momentum, center of mass, rotations, equilibrium, 2) oscillations, 3) waves, 4) solids, liquids, gases, 5) thermodynamics

Sample Text

"Fundamentals of Physics, 6th Ed.", Halliday, Resnick, and Walker; Wiley.

Minimum Material Covered

Equations of motion in one and two dimensions

Newton's three laws

Circular motion

Work and kinetic energy

Conservation of energy

Impulse and linear momentum

Center of mass

Rotation and rolling objects

Static equilibrium

Oscillations and one dimensional waves

Solids, liquids, and gases

Sound

Temperature, heat, and the equation of state

Thermodynamics and the zeroth, first, second, and third laws