



Syllabus

PHY 151 - University Physics I

General Information

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Department Science and Technology

Course Prefix PHY

Course Number 151

Course Title University Physics I

Course Information

Catalog Description First semester of a two-semester sequence suitable for transfer students pursuing degrees in engineering, computer science, physics, or professional programs which require calculus-based physics. Topics include motion in one and two dimensions, force laws, energy, momentum, conservation principles, gravity, rotational motion, static equilibrium, and fluids. PHY101 or high school physics with a C or better is strongly recommended.

Credit Hours 4

Lecture Contact Hours 3

Lab Contact Hours 2

Other Contact Hours 1

Grading Scheme Letter

Prerequisites

MAT 271 with a C or better

Co-requisites

None

First Year Experience/Capstone Designation

This course **DOES NOT** satisfy the outcomes applicable for status as a FYE or Capstone.

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed category

Natural Sciences (and Scientific Reasoning)

FLCC Values

Institutional Learning Outcomes Addressed by the Course

Inquiry, Perseverance, and Interconnectedness

Course Learning Outcomes

Course Learning Outcomes

1. Apply Newton's laws of motion and the conservation laws in the study of mechanical systems.
2. Make and analyze measurements of physical phenomena, applying the proper use of units, dimensions, statistics, uncertainty, graphing, and calculation.
3. Apply arithmetic, algebraic, geometric, and Calculus principles to the analysis of mechanical physical systems.
4. Connect physics to other sciences, the arts, and everyday life.

Outline of Topics Covered

Units, Conversions, and Dimensional Analysis

Precision, Accuracy, and Uncertainty Analysis

Kinematics in One Dimension

Constant Acceleration

Variable Acceleration

Vectors and Coordinate Systems

Kinematics in Two Dimensions

Force and Motion

Variable Forces

Newton's Laws and Applications

Friction

Drag

Conservation Laws

Work and Energy

Work Done by Constant Forces

Work Done by Variable Forces

Impulse and Momentum

Torque and Rotational Motion

Deriving the Moment of Inertia

Static Equilibrium

Elasticity

Young's Modulus, Shear Modulus

Gravitation

Fluid Mechanics