
SECTION HEADING

PHYS 1201: Fundamentals of Physics I

Description

Fundamentals of Physics I develops a foundation for future studies in fields not requiring calculus, using laboratory and lecture with calculator and computer based instruction. Develops a foundation in physics for liberal arts, premedical, or pre-pharmacy students. Topics include one and two dimensional motion, forces and acceleration, applications of Newton's Laws, momentum, gravitation, collisions, work and energy, rotational motion, angular momentum, harmonic motion and sound. This course includes a lab.

Credits

4

Prerequisite

MATH 1107, placement by multiple measures, or instructor permission

Corequisite

None

Topics to be Covered

1. Physics and measurement
2. Motion in one dimension – speed, velocity, acceleration
3. Gravity and projectile motion
4. Newton's Laws and their applications
5. Work-Energy Theorem – Potential and kinetic energy
6. Conservation of energy
7. Momentum and its conservation – collisions, impulse
8. Momentum and its conservation – collisions, impulse
9. Oscillations, harmonic motion, and sound
10. Fluids and pressure

Learning Outcomes

1. Define physics concepts and their applications.
2. Model physical behavior by performing hands-on activities and experiments.
3. Develop problem solving techniques using mathematical models describing physical concepts.
4. Analyze and interpret data collected in a variety of methods.
5. Describe and interpret physical properties in action with real-world situations encountered in their everyday environment.

Credit Details

Lecture: 3

Lab: 1

OJT: 0

MnTC Goal Area(s): Goal Area 03 - Natural Sciences

Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal Area 03: Natural Sciences

1. Demonstrate understanding of scientific theories.
2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.

4. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.