

Minnesota State University Moorhead

PHYS 200: Physics I with Calculus & Lab

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 4

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites:

This course requires any of these three prerequisites

MATH 142 - Pre-Calculus

MATH 143 - Trigonometry

MATH 229 - Topics in Calculus

Corequisites: MATH 261

MnTC Goals: Goal 03 - Natural Science

Calculus-based study of general physics presented in a guided activity-based format which integrates laboratory and lecture using cooperative learning techniques. Includes kinematics, conservation laws (energy, momentum and angular momentum) and harmonic oscillations. MnTC Goal 3.

B. COURSE EFFECTIVE DATES: 05/21/2021 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

D. LEARNING OUTCOMES (General)

1. Participants will become familiar with a variety of physics concepts including Newton's Laws, work, energy, momentum, frames of reference and oscillations.
2. Participants will develop critical thinking skills.
3. Participants will develop estimating and unit analysis skills.
4. Participants will participate in inquiry-based experiences.
5. Participants will become familiar with the scientific method.
6. Participants will develop laboratory skills and technical writing skills
7. Participants will develop data analysis and error analysis within a laboratory experiment.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 03 - Natural Science

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.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted