A. Course Description

Credits: 0

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week:

MnTC Goals: None

This laboratory course is taken concurrently with PHYS 211 Calculus Based Physics I.

B. Course Effective Dates: 08/14/2010 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Demonstrate understanding of scientific facts and theories in physics.
2. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.
3. Demonstrate understanding of the properties of vectors, describe motion in terms of position, velocity and acceleration, and use vectors to describe projectile and circular motion.
4. Understand and apply Newton’s laws of motion, the concepts of work, energy and power, and the connection between forces and motion and apply the principles of energy and linear momentum conservations in solving problems involving kinetic and potential energy and collisions between objects.
5. Understand and analyze rotational motion in terms of angular displacement, velocity and acceleration, the connection between force and torque.
6. Understand the properties and phenomena of fluids including buoyancy and laminar flows, and the properties and phenomena of gasses including gas laws and the kinetic theory of gases.
7. Understand the concepts of heat and internal energy and the first law of thermodynamics as applied to heat engines.
8. Ability to use the above listed physics knowledge in quantitative problem solving.
9. Demonstrate quantitative reasoning skills and competency with arithmetic, algebra, calculus and elementary statistics at a level appropriate for graduates of bachelors degree programs in the sciences.
10. Formulate and test hypotheses by experiment in physics, including the collection of data, statistical and graphical analysis of results, and interpretation of its sources of error and uncertainty.
11. Communicate their experimental findings, analyses, and interpretations both orally and in writing.
12. Recall, describe and apply the concepts, knowledge and vocabulary of physics at the level necessary for success in a second semester Calculus-Based Physics course.

E. Learning Outcomes (MN Transfer Curriculum)

This contains no goal areas.

G. Special Information

Note: This laboratory course is taken concurrently with PHYS 211 Calculus Based Physics I. First day attendance required except by instructor permission.