Common Course Outline for: PHYS 1050 Survey of Classical Physics

A. Course Description

1. Number of credits: 4
2. Lecture hours per week: 3
   Lab hours per week: *2*
3. Prerequisites: Eligible for MATH 700
4. Co-requisites: None
5. MnTC Goals: Goal 3 Natural Science

A one-semester introductory physics course focusing on the fundamental concepts of physics. Topics are chosen from classical physics and may include one-dimensional kinematics, laws of motion, conservation laws, heat, waves, sound, light, electricity, and magnetism. Physics problems will be solved using algebra. Lecture 3 periods, Lab 2 periods. Meets Minnesota Transfer Curriculum goal 3 (Natural Science) competencies a, b, and c

B. Date last revised: April 2017

C. Outline of Major Content Areas

1. Graphing motion.
2. One dimensional kinematics/Algebraic representation of motion.
3. Dynamics/Newton's Laws of Motion
4. Conservation laws
5. Oscillations
6. Waves and wave interactions (sound and light)
7. Electric charge and electric current
8. Magnetism

D. Course Learning Outcomes

Upon successful completion of the course, the student will be able to:

1. Demonstrate an understanding of scientific theories and principles by: (2a, b, c, 3a)
   i. Stating and applying the fundamental laws and concepts relating to the course topics.
   ii. Identifying which physical laws and principles are appropriate for the solution of physics problems relating to various applications.
   iii. Using the appropriate physical laws and principles and algebra techniques to develop the mathematical expressions required to solve physics problems; solving those mathematical expressions.
   iv. Using the terminology of physics correctly.
2. Formulate and test hypotheses by: (2a, b, c, 3b)
   i. Performing laboratory, simulation, or field experiments.
   ii. Collecting data and analyzing it statistically and graphically.
   iii. Identifying sources of error and uncertainty.
   iv. Estimating the magnitude of error and uncertainty in data.

v. Using appropriate software to perform experiments and analyze data.

3. Communicate experimental findings, analysis, and interpretations by: (2a, b, c, 3c)
    i. Presenting laboratory results orally.
    ii. Orally explaining analysis and interpretations of laboratory results and relating the results to physics concepts and theories.
    iii. Presenting written reports that interpret laboratory results and relate them to physics concepts and theories.

E. Methods for Assessing Student Learning: Assessment methods are at the discretion of the instructor and may include written and/or oral reports, homework, projects, quizzes, exams, a final exam, and laboratory projects.

F. Special Information:

1. A simple scientific calculator and internet access are required.