Alexandria Technical and Community College

PHYS 1407: College Physics I

A. COURSE DESCRIPTION

Credits: 3
Lecture Hours/Week: 3
Lab Hours/Week: *.*
OJT Hours/Week: *.*

Prerequisites:
This course requires any of these five prerequisites
  MATH 1421 - College Algebra
  MATH 1425 - Precalculus
  MATH 1432 - Principles of Trigonometry
  MATH 1420 - College Algebra
  ATCC Calculus-Level Placement

Corequisites: None

MnTC Goals: Goal 03 - Natural Science, Goal 02 - Critical Thinking

This course covers concepts and principles in the fundamentals of physics. Topics include static and dynamic analyses related to machine design. This course is not a substitute for pre-engineering physics. This course meets MnTC Goal 2 by itself, but must be taken with PHYS1408 (LAB) to fulfill MnTC Goal 3. Prerequisite: MATH1421 College Algebra or MATH1432 Principles of Trigonometry.

B. COURSE EFFECTIVE DATES: 08/25/2008 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Analyze data both quantitatively and qualitatively.
2. Collect data in a neat, orderly fashion.
3. Convert between linear and angular quantities.
4. Convert from English to SIU of measurement.
5. Define moment of inertia.
6. Describe fluid systems in terms of pressure, buoyancy, tension and viscosity.
7. Describe linear motion in terms of position, speed, velocity and gravity.
8. Describe the phase changes of matter.
9. Distinguish between kinetic and potential energy.
10. Make accurate measurements in experiments.
11. Write and explain Newton's First, Second, and Third Law.
12. Write, in proper format, observations and conclusions.

D. LEARNING OUTCOMES (General)

1. The learner will be able to make accurate measurements, collect data, analyze data, and write reasonable observations/conclusions.
2. The learner will be able to apply physical laws and principles to everyday phenomenon.
3. The learner will be able to think critically and solve problems systematically.
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.

Goal 02 - Critical Thinking
1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives which can give alternative meanings or solutions to given situations or problems.
3. Analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.

F. LEARNER OUTCOMES ASSESSMENT
As noted on course syllabus

G. SPECIAL INFORMATION
None noted