COMMON COURSE OUTLINE: Course discipline/number/title: PHYS 1117: Introductory Physics I

A. CATALOG DESCRIPTION
   1. Credits: 5
   2. Hours/Week: 4 hours lecture and 2 hours lab per week
   3. Prerequisites (Course discipline/number): MATH 1117
   4. Co-requisites (Course discipline/number): None

This course is the first semester of a two-semester algebra-based introduction to physics. The course covers topics from mechanics that include linear and parabolic motion, Newton's Laws of motion, energy, momentum, angular motion and torque, fluid mechanics, periodic motion, waves and sound. Emphasis is on both conceptual learning and problem solving. The laboratory experience will provide the student with opportunities for discovery, measurement, report writing and data analysis. College-level reading and writing skills are required.

B. DATE LAST REVISED (Month, year): April, 2008

C. OUTLINE OF MAJOR CONTENT AREAS:
   Lecture:
   1. Units and measurement
   2. Problem solving strategies
   3. Linear motion
   4. Vectors and motion in two dimensions
   5. Newton’s three laws of motion
   6. Work and energy
   7. Linear momentum and collisions
   8. Circular motion
   9. Torque
   10. Rotational dynamics
   11. Fluid mechanics
   12. Stress, strain, Hooke’s Law
   13. Periodic Motion
   14. Waves
   15. Physics of sound

   Lab:
   1. Measurement
   2. Significant figures
   3. Basic statistics
   4. Graphing
   5. Error analysis
   6. Data analysis
   7. Scientific method
   8. Instrumentation
   9. Technical writing

D. LEARNING OUTCOMES (GENERAL): The student will be able to:
   1. Learn common definitions of terms found in physics.
   2. Explain and apply basic physics principles to their everyday lives and explain simple phenomena using these principles.
   3. Learn problem-solving techniques and be able to apply algebra and trigonometry to problem solving.
   4. Learn to think critically and conceptually about the physical world.
E. **LEARNING OUTCOMES (MNTC):**
   Goal 2/Critical Thinking: The student will be able to:
   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.
   
   Goal 3/Natural Sciences: The student will be able to:
   1. Demonstrate understanding of scientific theories and the ways in which scientists develop, express and question theories in the field of physics.
   2. Formulate and test hypothesis by performing laboratory or simulation experiments requiring 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. **METHODS FOR EVALUATION OF STUDENT LEARNING:**
   Evaluation methods may include any or all of the following:
   1. Objective exams
   2. Essay exams
   3. Research papers
   4. Quizzes
   5. Written homework
   6. Small group projects
   7. Oral presentations
   8. Laboratory reports
   9. Or any other as deemed appropriate by the instructor and so indicated by his/her syllabus (original or revised).

G. **SPECIAL INFORMATION (if any):**
   A scientific calculator is required