**PHYS 211: University Physics I**

**Department:** Physics

**Designation:** Required

**Catalog Data:** (3-0) 3 credits. Prerequisite: MATH 123 or permission of instructor. This is the first course in a two semester calculus-level sequence, covering fundamental concepts of physics. This is the preferred sequence for students majoring in physical science or engineering. Topics include classical mechanics and thermodynamics. The School of Mines course covers classical mechanics only.

**Prerequisites:** MATH 123 or permission of instructor.

**Textbook:** Fundamentals of Physics*,* D. Halliday, R. Resnick, J. Walker, 8th Ed. Pt. 1

**Course Learning Outcomes:**

1. Demonstrate the scientific method in a laboratory experience. This outcome will be achieved and assessed in Phys 213L course.
2. Gather and critically evaluate data using scientific method. Assessment: Students will be able to critically evaluate data (given or obtained) with proper accuracy using appropriate laws and formulas of classical mechanics for scientifically sound presentation of laboratory reports, homework assignments, and of solutions on quizzes and exams.
3. Identify and explain the basic concepts, terminology and theories of selected natural sciences. Assessment: Students will be able to identify and apply basic concepts and appropriate laws of classical mechanics in order to solve assigned problems in homework, quizzes, exams, and in oral presentation.
4. Apply selected natural science concepts and theories to contemporary issues. Assessment: Students will be able to explain how physics concepts, laws, and phenomena relate to contemporary engineering and science in classroom discussions and written assignments.

**Topics:** Classical mechanics

**Class/Laboratory Schedule:** Varies

**Contribution to Criterion 5:** 3 credits of math / basic sciences

**Relationship of Course to ABET Outcomes (a) through (k)**

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|  | **Level of Emphasis** |
|  | Low | Medium | High |
| **ABET Outcome** |  |  |  |
| (a) an ability to apply knowledge of mathematics, science, and engineering |  |  | X |
| (b) an ability to design and conduct experiments, as well as to analyze and interpret data |  |  |  |
| (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability |  |  |  |
| (d) an ability to function on multidisciplinary teams |  |  |  |
| (e) an ability to identify, formulate, and solve engineering problems |  |  |  |
| (g) an ability to communicate effectively |  |  |  |
| (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context |  |  |  |
| (i) a recognition of the need for, and an ability to engage in life-long learning |  |  |  |
| (j) a knowledge of contemporary issues |  |  |  |
| (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. |  |  |  |

**Prepared By:** Dr. Andre Petukhov, Department Head; June 1, 2010