

COURSE DESCRIPTION

Dept., Number	Phys 211	Course Title	Physics for Science and Engineering I
Semester hours	3	Course Coordinator	Robert Kroeger, Professor

Current Catalog Description (approved for 2008-9)

A calculus-based introduction to the classical mechanics of compact and extended bodies, fluids, and solids, and related phenomena including oscillations, waves and sound. First part of a two-semester survey of classical physics. (211, 212 with 221, 222 satisfies the engineering and science major requirements for physics.)

Textbook

Halliday, Resnick, and Walker. *Fundamentals of Physics, 8th edition*, Wiley, 2007.

References

Course Outcomes

After successfully completing this course, the students should:

1. understand the role of forces and inertia in the solving of problems in mechanics,
2. know how to apply these concepts through the analytical tools of calculus, vector algebra, and trigonometry to solve physical problems,
3. have enhanced capacities for analytical reasoning and problem solving.

Relationship between Course Outcomes and Program Outcomes

The ABET/CAC criteria for computer science require 30 credit hours of science and mathematics appropriate for the discipline. The BSCS program meets this criterion by requiring 14 hours of natural science courses intended for majors in those fields, including a two-course sequence with associated laboratories in one field, and 18 hours of mathematics beyond the precalculus level. Physics 211 and 212 and their associated laboratories, Physics 221 and 222, form one option for satisfying the laboratory science requirement. The course outcomes are related to the expectations for the role of natural science in the BSCS curriculum.

Prerequisites by Topic

1. Corequisite of introductory differential and integral calculus (Math 262).
2. Corequisite of the associated laboratory (Phys 221)

Major Topics Covered in the Course=

1. Measurement
2. One-dimensional kinematics
3. Vectors
4. Motion
5. Newton's laws
6. Work and energy
7. Potential energy and conservation of energy
8. Momentum and collisions
9. Rigid rotation
10. Angular momentum
11. Equilibrium and elasticity
12. Gravitation
13. Fluid mechanics
14. Oscillatory motion
15. Waves
16. Sound

Assessment Plan for the Course

The instructor assesses the student performance related to the course outcomes by using examinations, quizzes, and homework assignments.

How Data in the Course are Used to Assess Program Outcomes (unless adequately covered already in the assessment discussion under Criterion 4)

The conduct of this course is not governed by the ABET program faculty. No data are collected that are used to assess program outcomes directly.

Estimate Curriculum Category Content (Semester hours)

Science 3 hours