

College of San Mateo Course Outline

- New Course
 Update/No change
 Course Revision (Minor)
 Course Revision (Major)

Date: 14 Nov 2010

Department: **Physics** Number: **211**
Course Title: **General Physics I - Calculus Supplement** Units: **1.0**
Total Semester Hours Lecture: **16** Lab: **0** Homework: **32** By Arrangement: **0**

Length of Course

- Semester-long
 Short course (Number of weeks ___)
 Open entry/Open exit

Grading

- Letter
 Pass/No Pass
 Grade Option (letter or Pass/No Pass)

Faculty Load Credit (To be completed by Division Office; show calculations.):

(16 hours/term)(1 FLC/16 hours) = 1 FLC

1. **Prerequisite** (Attach Enrollment Limitation Validation Form.)

Completion of or concurrent enrollment in Math 242 or Math 252; completion of or concurrent enrollment in Phys 210.
2. **Corequisite** (Attach Enrollment Limitation Validation Form.)
3. **Recommended Preparation** (Attach Enrollment Validation Form.)
4. **Catalog Description** (Include prerequisites/corequisites/recommended preparation. For format, please see model course outline.)

Minimum of 16 lecture hours per term. Prerequisite: completion of or concurrent enrollment in MATH 242 or 252; completion of or concurrent enrollment in PHYS 210. Application of calculus to topics in Physics 210. Primarily intended for majors requiring one year of calculus-based physics. (AA, CSU, UC)

5. **Class Schedule Description** (Include prerequisites/corequisites/recommended preparation. For format, please see model course outline.)

Application of calculus to selected topics in PHYS 210. Prerequisite: concurrent enrollment in or completion of MATH 242 or 252; concurrent enrollment in or completion of PHYS 210, both with a grade of C or higher. (AA, CSU, UC)

6. **Student Learning Outcomes** (Identify 1-6 expected learner outcomes using active verbs.)

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

Identify mechanics and thermodynamics problems that should be solved using differential calculus and correctly solve them.

Identify mechanics and thermodynamics problems that should be solved using integral calculus and correctly solve them.

7. **Course Objectives** (Identify specific teaching objectives detailing course content and activities. *For some courses, the course objectives will be the same as the student learning outcomes. In this case, "Same as Student Learning Outcomes" is appropriate here.*)

"same as student learning outcomes"

8. **Course Content** (Brief but complete topical outline of the course that includes major subject areas [1-2 pages]. Should reflect all course objectives listed above. In addition, a sample course syllabus with timeline may be attached.)

Kinematics in one and two dimensions including circular motion and optimization problems using derivatives and definite integrals.

Work as a line integral and the Work-Energy Theorem.

Impulse as the time integral of force, the Impulse-Momentum Theorem and force as the time derivative of momentum.

Gravitational force of extended objects.

Center of mass and moment of inertia calculations using integration.

Hydrostatic forces and torques.

Simple Harmonic Motion.

Work done by an ideal gas and adiabatic processes.

9. **Representative Instructional Methods** (Describe instructor-initiated teaching strategies that will assist students in meeting course objectives. Describe out-of-class assignments, required reading and writing assignments, and methods for teaching critical thinking skills. **If hours by arrangement are required, please indicate the additional instructional activity which will be provided during these hours, where the activity will take place, and how the activity will be supervised.**)

Lecture with Examples
Guided problem solving

Out of class assignments are homework problems that illustrate and elaborate on the topics covered in lecture.

10. **Representative Methods of Evaluation** (Describe measurement of student progress toward course objectives. Courses with required writing component and/or problem-solving emphasis must reflect critical thinking component. If skills class, then applied skills.)

Graded homework assignments and exams.

11. **Representative Text Materials** (With few exceptions, texts need to be current. Include publication dates.)

Cutnell and Johnson, *Physics*, 8th edition, John Wiley & Sons, Inc, 2009.

Physics 211 Worksheets written by CSM Physics faculty, continually revised.

Prepared by:

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