

# General Physics with Calculus (PH105–002) Fall 2003

Text: **Physics for Scientists and Engineers, Vol. 1 (Sixth Edition)** by Serway and Jewett

Class Meeting Times: Monday 10–11:50, Wednesday 10–11:50, Friday 10–10:50

Classroom: 329 Gallalee

Instructor: Jerry Busenitz (202B Gallalee; 348-6699; busenitz@bama.ua.edu)

Assistants: Christy Covington and George Karatheodoris

Instructor Office Hours: 10–12 Thursdays and by appointment

Web Site: <http://bama.ua.edu/~busenitz/ph105.html>

Pre-requisite: MA125 or equivalent

This course is a calculus-based introduction to classical mechanics and thermodynamics for students in science and engineering. Topics covered include kinematics in one and two dimensions, Newton's laws of motion, work and energy, conservation of energy, linear momentum, collisions, rotational motion, oscillations, gravitation, fluids, temperature, first and second laws of thermodynamics, and kinetic theory of gases. The corresponding material in the text is found in chapters 1–15 and 19–22.

The course will emphasize fundamental concepts and problem-solving techniques in physics using interactive instruction, computer-based techniques, and cooperative learning. During classes on Monday and Wednesday, there will be a mix of lecture segments and student activities. The student activities will include exercises and short lab experiments using the computer for data acquisition and analysis. The lab experiments and many of the other student activities will be performed in assigned groups. The meeting on Friday will be devoted to problem solving and quizzes and exams.

Homework will be assigned, normally on a weekly basis. The assignments will be distributed on-line and solutions to assigned problems must also be submitted on-line. In addition, each student must keep a notebook which shows how he/she worked the problems assigned; these notebooks will be collected and spot-checked from time to time. Students may collaborate on doing the homework, provided that each student actively participates in the effort.

There will be three hour exams and a comprehensive final exam. A quiz will be given each week except for those weeks in which an hour exam is scheduled. The hour exams and quizzes will be given on Fridays. The quizzes will cover the student activities during the week and the most recently submitted homework problem assignment.

The course grade will be based on in-class student activities (15%), homework (10%), quizzes (10%), hour exams (15% each), and the final exam (20%). Before calculating averages, the lowest three student activity grades, the lowest two homework grades, and the lowest three quiz grades will be dropped. There will be no make-up of missed student activities, homework, quizzes, or exams. Any student expecting to miss an hour exam must inform the instructor as soon as possible; if the reason for missing the exam is acceptable, the final exam will be weighted proportionately more in determining the course grade.

Students are expected to do their own work on the exams and quizzes. Suspected violators of this policy will be referred to the Dean's Office in the College of Arts and Sciences.