SYLLABUS—PHYSICS 2521
PHYSICS LAB II
Spring 2007

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Office Hours:    MW 1-4, T 12:30-2, Th 1-4
Class Time:      T2:00-4:50  Rm 301 NSB
TEXT:            Handouts

COURSE PURPOSE

The purpose of this course is to give the student a hands-on exposure to physical laws of sound, heat & thermodynamics, electricity, magnetism, and optics which are introduced in the second calculus-based physics lecture course so that he, or she, will be challenged to know basic lab apparatus, sharpen skills of lab approaches and safety procedures, and be evaluated for understanding.

COURSE CONTENT

This course is the second of a two semester course sequence in general physics labs designed for students of science and engineering who are taking algebra, or trigonometry, and general physics concurrently, or who have had them previously. The objective of the course is to familiarize from a laboratory perspective students with many physics concepts already introduced from textbook, and to expose them to typical lab techniques and measuring instruments and lab equipment. Each lab submitted on time is worth up to 10 points, unless one participates in demonstrating the lab procedure for which an extra point per lab may be given. The format of the course will be so that the class will do one general physics-level lab which will be setup, carried-out, put back, written up, and submitted all in the same day. A list of what this course will cover (typically 12 of the following experiments) and tentative timetable is found below.

LAB LIST

Lab 0 -- Simple pendulum and spring harmonic motion intro to waves
Lab 1 -- String standing waves
Lab 2 -- Sound resonance - sound standing waves
Lab 3 -- Gay-Lussac's law - determination of absolute zero
Lab 4 -- Calorimetry - heat loss = heat gain
Lab 5 -- Color-coded resistors - Multimeter, breadboard, etc.
Lab 6 -- Resistivity
Lab 7 -- Series and parallel resistors
Lab 8 -- Making ammeter and voltmeter from a galvanometer
Lab 9 -- RC series transient circuit to determine C
Lab 10 -- RCL series circuit to calculate L
Lab 11 -- AC circuit - vector addition of reactances in series, currents in parallel - oscilloscope
Lab 12 -- Electronics - half-wave and full-wave rectifier- oscilloscope
Lab 13 -- DC Power supply
Lab 14 -- Electronic function generator
Lab 15 -- Concave and convex lenses
Lab 16 -- Laser with diffraction grating
Lab 17 -- Speed of light measurement
Lab 18 -- Superconductivity

Important Remarks:

a. Attendance should be maintained. Particularly, there is no way to make-up a lab.

b. Remember: "To hear is to forget, to see is to know, to do is to understand."

c. Your final grade will be based on the total accumulation of points from the labs: A--from 90 to 100%; B--from 80 to 89%; C--from 70 to 79%; D--from 60 to 69%; F-under.

OUTCOMES FOR STUDENTS

Upon completing this course the student will compare favorably in his lab exposure and experience with general physics students nationally who complete a similar course.

* Student Academic Appeals Process (undergraduate catalog, 1998-2001, pp. 88-91)