

INTERMEDIATE LABORATORY II - PHYX 3880

SYLLABUS

Spring 2013

It is important that students bring a certain ragamuffin barefoot irreverence to their studies; they are not here to worship what is known, but to question it. –Jacob Bronowski, *The Ascent of Man*

Class: 11:30 - 2:20 MW SER 109 and SER 132 <http://www.physics.usu.edu/>
Instructor: J.R. Dennison, Physics Department SER 222D 797-2936 JR.Dennison@usu.edu
Kripa Chuahan SER kripa.nidhan@aggiemail.usu.edu
Office Hours: *During lab time or by appointment*
(See receptionist in SER 250 for keys or James Coburn for ID access code).

Prerequisites: *General Physics (PHYX 2210 and 2220), Introduction to Modern Physics (PHYX 2710), Introduction to Computer Methods in Physics (PHYX 2500), and Intermediate Lab I (PHYX 3870). Students will not be admitted without the prerequisites without explicit permission from the instructor.*

Objectives: This course is intended to address all five goals for physics laboratory courses identified in the [AAPT Goals of the Introductory Physics Laboratory](#) handout. During this semester, particular emphasis is placed on: (1) experimental and analytic skills including experimental techniques, computer interfacing, data analysis, and error analysis; (2) developing collaborative learning skills through work with a lab partner; and (3) written communication skills.

Texts:

- John R. Taylor, [An Introduction to Error Analysis](#), 2nd ed. (University Science Books, Mill Valley, CA, 1997). **REQUIRED**
- AIP Style Manual, 4th ed. (Am. Institute of Physics, New York, 1990). **Available via web site**
- MathCAD Version 14, (Mathsoft, Cambridge, MA, 2003). **RECOMMENDED COMPUTER ANALYSIS PROGRAM Available in SER 109, SER 005 and SER 231 (see receptionist in SER 250 for access) or Computer Solutions.**
- A bound Lab Notebook is required. All data, notes, calculations and scratch work should be kept in the notebook. **NO EXPERIMENT WILL BE ACCEPTED UNLESS RECORDED IN A NOTEBOOK**
- Additional references are listed in the attached [Annotated Bibliography](#).

Assignments: Complete two experiments on the topics of your choice from the attached [List of Experiments](#). The experiments are designed to take about six to eight hours each for data collection. The first experiment requires a condensed report; you will have four pages single spaced to fully report your results. The second experiment will require a joint oral report (10 min plus 5 min for questions). Experiments should be performed in pairs. Details of the Extended Investigation report are provided on a [separate sheet](#).

Grading: Reports for each of two experiments will count 25% of the total grade. The report for the Extended Investigation will count 50% of the total grade (10% for the proposal). Reports must be turned in before class on the first class day after completing the experiment. You are to revise two reports, based on instructor comments, and resubmit the edited version for final evaluation. *There will be a half letter grade penalty for each class period the report is late. Grades may also be reduced if the lab and equipment is not left clean and orderly.* A [Lab Report Grade Form](#) is available. Students are encouraged to present interesting results from the Extended Investigation at the Student Showcase for extra credit.

Lab partner and experiment selection should be made in consultation with the instructor on the first day of class. A schedule will then be posted. Specific dates are listed on the [Experiment Schedule](#). Each pair of students must have a written plan for the Extended Investigation approved after consultation with the Lab Instructor no later than the first day of the Extended Lab session.

Refer to the handouts [Content of Lab Reports](#) and [Description of Experiments](#) for further details. Periodically, additional class news items will be posted on the web on the [News Page](#).

A \$40 lab fee is charged for this class. This fee covers the cost of expendables, lab breakage, and equipment maintenance.

"If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center, preferably during the first week of the course. Any requests for special considerations relating to attendance, pedagogy, taking of examinations, etc. must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative formats--large print, audio, diskette or Braille."