Instructor: Dennis Eggleston
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Office Hours: MWF 10-11am; and by appointment.
Class schedule: T 1:30 – 4:25pm, HSC 004 and 026.
Required Text: Physics 315 Advanced Lab Manual (provided by instructor)
Other Standard Texts: An Introduction to Error Analysis, by John Taylor and
Experiments in Modern Physics, by A.C. Melissinos.
Prerequisite: Physics 240 (Modern Physics)
Home Page: http://faculty.oxy.edu/dleggles/Phys316/index.html

Course Goal: The goal of Physics 316 is to prepare students to engage in independent experimental research by completing and reporting on advanced laboratory experiments. Four components of this preparation include:

1. Library Research. Independent literature searches are necessary to complete the experiments presented in this course. Reports are required to contain at least three cited references.

2. Experimentation. Use laboratory equipment skillfully and safely.

3. Analysis. Error analysis and data interpretation must be included in each report.

4. Writing. Each laboratory will conclude in a written report. You will be graded both on content (75%) and on your ability to write clearly and concisely, with properly formatted tables and graphs (25%).

The Course Flavor: Students are responsible for determining the course of research and discovering the important scientific points of each laboratory. The course laboratories are presented in general terms with limited direction. Laboratory manuals do not have sufficient information to thoroughly complete experiments. Reading outside the lab manual is essential.

Class Organization

- Each student is required to complete and write a report on two experiments during the semester. Scores on these two reports will constitute the course grade. The report should follow the format and guidelines that are distributed in class. A completed report is due on the following dates: Wednesday, March 6 and Wednesday, April 24. The report will be considered on time if it is received before noon on these dates. Late reports are accepted with a penalty of 5% for each day (or fraction thereof), including weekends and holidays, past the deadline. All reports must be handed in by May 2 at noon. No report will be accepted after this time.
• These due dates give you about six weeks to complete a lab. The following is a suggested schedule. Week 1: read background material and meet with instructor for briefing. Weeks 2 and 3: take data. Week 4 and 5: start writing, get help on unresolved questions, take additional data if needed. Week 5 and 6: finish writing.

• Students will generally work in groups of two. Students in a group may share data (numbers) only. Each student must write his/her own report, including all tables and graphs.

• There are a number of experiments to choose from, as described in the class lab manual. Lab groups should sign up for experiments early in the term for best selection. Prior to starting the experiment each pair of students should acquaint themselves with the background material listed in the references. The group will then schedule a meeting with the instructor to be briefed on the use of the apparatus. The group will then proceed with the experiment. Do not start an experiment without being briefed by the instructor.

• Students may obtain lab keys from the department secretary if they wish to work outside of scheduled class hours. However, the instructor may not be available for assistance outside of scheduled hours. Lab keys must be returned at the end of the term (on or before May 2). If a key is lost, the student may be required to pay for re-keying the lab.

• For safety reasons no one will work alone in the labs at any time. Students found working in lab alone will lose the privilege of working outside class hours.

The Physics Department Writing Requirement: The departmental component of the College writing requirement involves a review of a writing portfolio submitted to the department, typically, at the end of your Junior year. The portfolio consists of two papers from Physics 315/316 and/or from Physics 240 Lab and the two research papers required for Physics 390/391. All papers may be revised prior to submission of the portfolio. Please see the Physics Department Writing Requirement document for more information.

Policy on Disabilities: Accommodation of disability-related needs is available on request. Students with documented disabilities who are registered with Disability Services are required to present their accommodation verification card to the instructor at the beginning of each semester or as soon as possible thereafter. Students who experience significant physical or mental impairments can contact Disability Services at (323) 259-2969 to learn about available services and support.

Academic Honesty: Except on exams, you may seek help from faculty, staff, and other students. You must, however, write up your final lab reports individually. Copying from any source is cheating and academic misconduct in any form is unacceptable. I am required by College policy to refer cases of suspected academic misconduct to the Judicial Examiner.