



Phys 332

Advanced Laboratory II

Basic Information

Class hours and location:	Lecture	Monday	15:10 - 16:00	Physics Room 123
	Lab Sec. 1	Wednesday	13:10 - 16:00	Physics Room 227
	Lab Sec. 2	Thursday	13:10 - 16:00	Physics Room 227

Instructor Contact: Lucas Illing
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Office hours: Mo & Wed 10:30-12:00 (trial)

Evaluation: Lab Reports 75%
Presentation 25%

Course Webpage: <http://academic.reed.edu/physics/courses/Physics332/index.html>

Details

Overview

This course is meant to give you an *introductory* experience in being an independent research scientist - in preparation for your senior thesis.

This implies that you are expected to teach yourself the theory required to understand the experiments that you are performing. Your theoretical understanding will be measured by me through the quality of the background and the theory section in your lab report. You may find the task of understanding the theory challenging and it might take weeks and the consultation of many sources before you can write intelligently about the motivation for doing a particular experiment. However this is an excellent preparation for your senior thesis.

Similarly, you will be expected to figure out, on your own, how the measurement and test equipment works (although I will give you pointers) and thereby get to know well the available component type equipment at Reed College.

An awesome aspect of this course is that you can pick an independent project of your own design. However, with this freedom comes some responsibility, *i.e.* you will need to show that the project is doable. To formalize this process, I require a formal proposal, very similar to the one required for the senior thesis (see course webpage).

Presentations

Scientific presentations are an essential way to communicate with peers and to learn of new findings. In this course you will have a chance to gain experience in giving a scientific talk, something that requires practice but is very rewarding.

Everyone will give one presentation about a topic from a list of topics (see course webpage for details.) Two students will present per class period starting in week 4 (2/18/08).

Be punctual - interruption by latecomers is unfair towards the presenter. Therefore, **attendance and punctuality is mandatory.**

15 min + 5 min - The talks are 20 min out of which the last 5 min are for questions.

Lab Reports

Laboratory reports are due at 11 AM on 3/7, 4/11, and 5/2, respectively.

Lab reports for the spring semester will be similar to those for the fall semester. Many of you wrote outstanding reports last semester and should continue in the same manner. The main difference will be a typically more extensive theory section and references to the background literature.

It is not possible to prescribe a fixed structure for a good report. To smooth issues of typesetting, I do provide a simple LaTeX template on the webpage. In general reports would contain:

Title and Author Names - include the name of your lab partner.

Introduction - describe the theme of the lab and explain why the topic is important.

Details - the meat of the lab (see below).

Discussion / Conclusion - Describe the key things that you discovered, learned, or measured in this laboratory.

Bibliography - Citations go here

Regarding *Details*

The structure of the sections containing the detailed information may vary depending on the experiments. You should structure this part in a way that is logical and that makes the report readable and concise. In this semester I expect that you typically need to address in some way or form

Theory

Experimental Setup/Procedures/Materials & Methods

Results and Analysis

As a reminder, resources for writing reports: <http://library.reed.edu/instruction/physics/physics200.html>
Linda Maddux is our fabulous science librarian.

Laboratory Notebook

I require you to keep a lab notebook. In your lab notebook you should record science. It is a document that contains what happened in lab rather than what you think should have happened.

Your notebook should contain a running table of contents on the very first page, which details the experiment name and appropriate page number.

You may share the raw data (as it appears in the notebook) in either paper or electronic form with your lab partner (but only your lab partner) after you have left the lab. You may absolutely not share data that has been processed, graphed, etc.

Attendance Policy

You must be present for every scheduled laboratory period. I will be going around during Wed. and Thu. in order to offer suggestions and help with experimental difficulties, so I will be noticing absences.