

General Physics Laboratory: Electricity and Magnetism, Modern Physics
PHYS 11A – Section 10
Lab: Sequoia 130
W 15:00 – 17:50

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Course Summary

Physics 11A is the first semester of the calculus based general physics sequence. This semester concentrates on kinematics and dynamics. Because this is likely the first science course in college for many of you, we will introduce you to some of the issues involved in scientific research as we go through the semester.

Required Text

Experiments in Physics 11A: Mechanics

Modus Operandi

We will perform one experiment during each lab session. We will likely deviate from the order of the experiments in the book. A laboratory schedule will be posted at the front of the class. I will also try to remind you ahead of the upcoming lab in the preceding week. It is my experience that the experiment is easier to perform and time is much better spent in lab if you read the procedure prior to coming to lab. To coax you into reading ahead, I require a one-paragraph summary (prelab) of the purpose and goals of the experiment at the beginning of class. Most of the experiments can *easily* be completed in the scheduled time.

Laboratory Journal

In this course, you will be keeping a lab journal. You need to have a bound (but not spiral bound) notebook. You can use official “laboratory notebooks,” or you can save yourself a few bucks and use a “composition book.” If you use a composition book, try to get one with grid rule. Avoid lab notebooks with carbon or NRC copies. Entries in a journal should be made in pen. Everyone must keep his or her own journal.

In your journal, you will summarize the experiment you are performing and state the objective. You will describe the procedures, methods, and experimental setup. You will record your observations (qualitative as well as quantitative) and

then analyze and interpret your results according to the experiment's instructions. Each report should have the following sections: Objective Statement, Procedure, Results, and Analysis/Conclusions. Refer to the handout for more information on your journal.

Some things to keep in mind in your journal:

1. Don't re-invent the wheel. If there are no deviations in the procedures from the lab manual, make a detailed reference to it rather than copy the text: "We set up the airtrack and cart as describe in paragraph 4, page 16 of the lab manual." Minor changes should be noted: "We measured the period of the pendulum as described on page 94, however, we replaced the Timex stopwatch with a Casio stopwatch."
2. Pictures really are worth a thousand words in a lab manual. A well-done sketch can save you a lot of time compared to explaining a complex setup or unusual observation. Keep in mind that you should also give figures descriptive titles so that someone (i.e. me) can figure out what they are pictures of.
3. Don't forget to document unusual or unexpected observations. The history of science is full of examples of great discoveries originally thought to be mistakes.

I will periodically collect your journal at the end of the lab to grade the reports; they will be returned the next lab meeting.

Grading

The lab is only a portion of the total grade for 11C. For details on the complete grade for the course, see the syllabus of Dr. Osborne. The laboratory portion of your grade is determined as follows:

Each experiment is worth 20 points with the following breakdown.

Prelab: 5 points

- 5 points for a thorough study of the procedure
- 2 point for a less than thorough study or if it arrives late
- 0 points for no prelab

Journal: 15 points

This cannot be simply broken down as it depends on many factors including, but not limited to, quality and thoroughness of observations and analysis. The general guidelines are:

15 – “Perfect”
13 / 14 – Great Job
12 – Very Good
11 – Good
10 – Fair
9 or less – Poor

Lab Instructor Evaluation: 20 points

You will also be graded on your laboratory skills based on my observations of you during the semester. Issues I consider in assigning this grade are your hands on skills, your skills at working with a lab partner, and the quality of the discussions you have with your partners and myself.

Your lowest laboratory grade will be dropped. There is no formal make-up week, if you miss a lab, you do not have many options. The only possible make up is if you can find an instructor who will allow you to perform the experiment during his time. **They are under no obligation to let you in.** You must turn in the journal directly to the instructor when you leave. He/she will make sure that I get it.

I generally assign grades according to the standard percentages: A = 90-100%; B = 80-90%, etc. However, since there are several laboratory instructors, your lecture instructor may normalize laboratory grades to compensate for differences in the grading systems.