

PH 122 TYPICAL SYLLABUS

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Phys 122: General Physics II Lab Sec. 1 (14934); Monday 13:10- 15:55, TH 116. This is the lab to accompany Ph 121, the second semester of non-calculus physics for life-science majors.

Prerequisites: Ph 111; concurrent registration in the lecture part of the course (PH 121) is required.

Instructor: Name: office TH nnn, phone nnn-nnnn; help session Day nn:nn; office hours Day nn:nn or by email (name@stars.sfsu.edu).

Materials Required: For the first meeting of the lab you will need

- A **hard-bound quad-ruled** lab book to write in; Roaring Springs #77475 (\$2.95 at the bookstore) is fine; so is [Roaring Springs 77591 = National #43-591] (\$7.95) or [Roaring Springs 77108 = National 53-108](\$6.95).
- The lab manual for both semesters of this course, *General Physics Laboratory Manual, Physics 112 and Physics 122, Revised 2006*, is on sale at the bookstore (\$45.40). Students may download the lab writeups from the web, at <http://www.physics.sfsu.edu/~manuals/ph122/>.
- A \$4 lab fee is also required. On the first day of class the lab instructor will give each student a voucher, to be taken to the Cashier's Office (ADM 155) for payment of this fee. The receipt from the cashier must be returned to the instructor. Payment of this fee is required for continuing enrollment in the lab.
- You may also want to bring a pocket calculator.

Learning Objectives.

- You will learn to make reliable measurements of physical quantities, and to estimate the uncertainty in the measurement.
- You will learn to record scientific observation and analysis in a lab notebook, following accepted scientific practice.
- You will carry out measurements and observations permitting you to verify some of the physical laws presented in the lecture part of the course.
- You will learn the scientific method of testing theory by experiment.

Keeping a Lab Book. All your work in the lab is to be documented in this book, in a special way explained below in detail. This is the method used by research scientists in all fields to record their work as they do it. Here are some procedures to follow.

- While you are in the lab, write **only** in your lab book, and **only** in ink. A single exception is the blackboard - use the blackboard for quick calculations or temporary notes.
- Treat the lab book as a sequential log of what happened, noting the time as you start each new experiment or procedure.
- NEVER tear out pages from the lab book. No re-writing history!
- Every week, when you enter the lab, open your book and make the first entry. Write the date and the time. Then write what you are going to do that day, in about two sentences and in your own words. For instance, today you might write
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 - 14:07 Wednesday September 1, 1999. Physics Lab. Today we are
 - going to do something with computers. I guess I
 - have to
 - buy a lab manual too.
- Describe what you do as you do it. Don't devote a lot of space to writing out procedure before you do it. It is unrealistic to write down everything you're going to do ahead of time, because what you do often depends on how the early phases of the experiment work out.
- Diagrams are very important. Every time you work with a piece of apparatus, make some sort of sketch. Capture the essence of the situation, without unnecessary detail (unless you just like drawing!) Often the diagram can provide a convenient and easy-to-read way to record data - for instance, writing voltages measured directly onto a circuit diagram.
- A guideline for knowing how much detail to put in: you should be able to get out your lab book three months later and repeat the experiment, just from what you have in your lab book. (See *Final Exam* below.)
- Don't record data and plan to analyze it later. In each part of the experiment, take the data, do any necessary calculations, and finish your complete conclusion, before doing the next part. Each time you obtain a result, put a box around it so that it stands out. Once you get a result, discuss its error and its interpretation before going on to the next part of the experiment.
- Be sure and answer all questions asked in the lab manual, and put a box around the answer.
- At the end of the lab, leave your lab book on the table at the front of the room. There will be no work required outside of class.

Grading:

The grade for the lab is separate from the lecture-course grade. The instructor of the Ph 121 lecture and the lab coordinator

will determine the letter grades given for the lab course, based on the numerical scores given by the lab instructors. All lab sections will be given the same distribution of grades,

with an average grade of about 3.0 (B). The numerical grade will be based on grades for the individual labs, quizzes, and the final exam, with the final exam counting the same as two labs. Note that, as in most science courses, the grades will be assigned according to a curve. We do NOT follow the system where grades between 90 and 100 represent A's, 80-90, B's, etc. Students will be given an estimated letter grade near midterm time. The class-average score for each lab should be given by the instructor when the lab books are returned.

Quizzes: A short quiz may be given at the start of each lab.

Final Exam: A final exam will be given during the last lab. Each person will do two one-hour experiments, working alone and referring only to their lab book. Each of the experiments will follow part of one of the regular labs closely. This means that you should make sure that you carry out some of the measurements for each of the labs. Your lab book should contain all of the information necessary to carry out the measurements.

Lab Partners: The instructor will re-assign people to groups at various times during the semester.

Makeups: There will not be a makeup lab at the end of the semester, so try to be at every meeting of the lab. Some instructors will drop everyone's lowest lab grade, so one lab can be missed without penalty. You can make up one additional missed lab by going to the [Exploratorium](#), working with some suitable display and writing a report on it. See the instructor for more details if necessary.