

General Physics Laboratory: Electricity and Magnetism, Modern Physics PHYSICS 5B Laboratory - Section 12

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And by Appointment

Course Summary

Physics 5B is the second semester of the non-calculus based general physics sequence. This semester concentrates on electricity and magnetism in addition to modern physics.

Required Materials

Physics 5B Laboratory Manual. Available at the Hornet Bookstore.

Laboratory Notebook. Grid ruled composition books are actually great for this and cost much less than the “official” laboratory notebooks sold at the bookstore.

Scientific Calculator. Bring your calculator to lab each week and know how to use it.

Modus Operandi

We will perform one experiment during each lab session. You will be given a copy of the lab schedule; I've attached the schedule for the first couple of weeks at the end of the syllabus. It will also be posted on my website and at the front of the laboratory. 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 you to write a one-paragraph summary (prelab) of the purpose and goals of the experiment at the beginning of class. As beginning scientists, it becomes very important to learn how to document the performing of experiments and keeping notes. In this class, you will record your data in lab notebooks (sometimes called lab journals).

In your lab notebook, you will describe the experiment's goals and describe the experiment (diagrams can be very useful). You will also record your data and observations, and show your analysis (some experiments may require you to graph your results – this is where a grid ruled page comes in handy). Experiments may ask

you to discuss or contemplate your work. Make sure you take the time to do this; questions are designed to help you understand the material. Be sure to answer questions posed to you in the lab procedures (unless otherwise instructed) as well as any other questions that I write on the board. At the very end summarize the entire experiment, note problems that you encountered and make other useful comments.

The general outline of a single week's experiments in your notebook will be something like this:

Goals

Part 1

Experimental Overview
Observations/Analysis
Discussion

Part 2

Experimental Overview
Observations/Analysis
Discussion

...

Summary / Problems / Comments

It is rare that one writes too much in a laboratory notebook, but very common for insufficient detail to be included. A friend once described it to me in the following way: *"I've never in my life said, 'Darn, I wish I hadn't put that in my notebook.' But many times have I wished I added more detail when looking back later."* The laboratory notebook is your archive of information. It will be collected at the end of the semester.

For each experiment, your "group" will write a single report to be turned in. The report should be a good summary of the material that should be in your notebooks: your experimental procedure, your data, your calculated results, and any discussion on problems encountered. Care should be taken in presenting data in nicely organized tables/graphs. Sketches should be carefully labeled. This report must be typed and it must be signed by all group members. The will be graded on several criteria, as noted below. Reports are due by 5:00PM on the Monday after the experiment is performed. Reports can be turned into me directly or placed in my drop box which is near room 238 in Sequoia Hall.

Your groups will be shuffled during the semester, so don't get too comfortable with your partners. It is important that you learn how to work effectively in a group: I don't want to be a referee.

Grading

The lab is only a portion of the total grade. For details on the complete grade for the course, see the syllabi of your lecture. I determine your lab grade as follows:

Weekly Labs: 70%

Your weekly labs make up 70% of your laboratory grade. They are equally weighted. The scores are based on your individual prelabs and your group report. Your lowest of each will be dropped. Late prelabs will not be accepted. Group reports are due in my hand or in my drop box (second floor of Sequoia Hall) by 5:00 PM on Monday afternoon. Late reports will be penalized 1 point if received after the Monday deadline or 2 points if after 9:00AM Wednesday (start of lab).

Prelab: 2 points

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

Report: 10 points

Your laboratory reports will be scored in several areas. The available points are:

3 Points – Performing experiment
Penalties for unsafe, inefficient, & incomplete work
3 Points – Analysis
Did you do what you were asked? Did you do it right?
2 Points – Writing
Are work and results clearly explained?
2 Points – Presentation of results
Quality of figures/graphs/tables

I will provide one score sheet with comments for each group. If you miss class – your name should not be included on the report.

Lab Instructor Evaluation: 10%

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 me.

Laboratory Notebook: 20%

At the end of the semester, you will turn in your laboratory notebook. They will be graded on a 10 point scale. Your notebook should be easy to read and have sufficient detail to allow you to recreate your experiment at a later time. Continuous improvement in the quality of the notebook is something to strive for, and is something I look for.

Since there are several laboratory instructors, your lecture instructor may normalize laboratory grades to compensate for differences in grading systems. If you miss more than two labs, your lecture instructor may consider you to have failed the lab: I am supportive of this policy.

Furloughs

I have been able to schedule most of my furloughs on “non-teaching” days to minimize impact to students. The result of this is that it does impact my ability to be available on Fridays, when I am in the tutoring center and would normally be on campus. Please don't wait until the last minute to ask questions about your reports, as I may be unavailable.

Academic Dishonesty Statement

The Department of Physics and Astronomy has unanimously approved the following statement:

“The faculty of the Department of Physics and Astronomy will not tolerate academic dishonesty. Falsification of data, copying, unauthorized collaboration, plagiarism, alteration of graded materials, or other actions (as described in, but not necessarily limited to the Sacramento State Policy Manual) will be promptly reported to the Office of Student Affairs. The offending student will be penalized on the assignment in question. Serious infractions will result in course failure and a recommendation for administrative sanctions.”

If you have any questions regarding this statement, please come and speak with me about it.

Additional Information

If you have a disability and require accommodations, you need to provide disability documentation to SSWD, Lassen Hall 1008, 916-278-6955. Please discuss your accommodation needs with me after class or during my office hours early in the semester.

Physics 5B Laboratory Schedule of Experiments

Spring 2010

Week	Experiment
Jan 25 – Jan 29	Syllabus Review, Safety
Feb 1 – Feb 5	Electrostatics
Feb 8 – Feb 12	Electric Fields
Feb 15 – Feb 19	No Lab – Feb 15 is campus-wide furlough day
Feb 22 – Feb 26	Energy