

General Physics Laboratory: Electricity and Magnetism
PHYSICS 11C Laboratory – Section 7
Monday 8:00AM – 10:50PM

Dr. William DeGraffenreid

Office: Sequoia 230

Phone: (916) 278-6518

E-mail: degraff@csus.edu

WWW: www.csus.edu/indiv/d/degraffenreidw/

Office Hours: Mon 2 - 3, ~~Tues~~ **WED** 9 – 10, Thurs 10 – 11

And by Appointment

Course Summary

Physics 11C is part of the introductory calculus-based physics sequence taken by engineering, physics, and chemistry majors. It covers the topics in electricity and magnetism.

Required Materials

Physics 11C Laboratory Manual, revised Fall 2013. Available in the first two weeks of laboratory, sold by the Society of Physics Students. \$15, cash only.

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 (possibly involving multiple parts) during each lab session and you will work in teams of (typically) three and the groups will change several times during the semester. The lab schedule is attached and 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, we will have a weekly quiz (~ 5 minutes) at the start of class.

As beginning scientists and engineers, 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. Each time you fail to have an appropriate notebook in class, you will have a half point deduction applied to your end of semester notebook score.

The general outline of a single week's experiments in your notebook will be something like this (assuming multiple parts):

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 had 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 and graded.

For each experiment, your team will write a single report for submission. One of the group members will be identified by me as the editor and he/she is not be responsible for writing the report but can contribute to the analysis. More about the editor later. The remainder of the group is responsible for the writing, illustrations, tables, and graphs. The report should be a good summary of the material that ought to be in your notebooks: your experimental procedure (note: if you follow the procedure in the manual to the letter, just reference it rather than rewrite – but if you modify the procedure based on changes in equipment or instructor request, clearly describe the new procedure), your data, your calculated results, commentary on whether your results make sense or not, and any discussion on problems encountered. Care should be taken in presenting data in nicely organized tables/graphs. Sketches and diagrams need to be labeled for the clarity of your reader. If you use materials from other sources other than your own work, ensure that you properly cite the work (see the

Department Statement on Academic Dishonesty below). The draft to the editor must be submitted by email to the editor and me (cc'd) by 11:59PM on the Friday following the experiment. Late drafts will have a 10% penalty assigned to them.

The editor's work begins after receiving the draft. He/she shall critically read the draft using the draft editing guide (at the end of this document and available at my website) as a starting point for his/her comments. The editor will provide thoughtful and helpful criticism to the authors (and cc'd to me) in a timely fashion so that the authors can make changes to their final draft, which is due by 11:59 PM on the Wednesday of the week after the experiment was performed. The final version will be submitted electronically to me in a "print ready" format. Late final drafts will also have a 10% penalty assigned. It is my goal to have your reports back to you by the next meeting. You should expect to serve as editor three times over the course of the semester.

Teams will be shuffled during the semester. It is important that you learn how to work effectively in a team: I don't intend to serve as a referee.

Should you miss a lab, and if you get permission by another instructor to attend his or her section (which lab instructors are under no obligation to allow), you will write the entire report by yourself. For credit, you must also have the lab instructor photocopy your day's entries in your lab notebook and to give to me.

Grading

The lab is only a portion of the total grade for PHYS 11C. For details on the complete grade for the course, see the lecture instructor's syllabus. I determine your lab grade as follows:

Weekly Labs: 60%

Your weekly labs make up the majority of your laboratory grade. They are equally weighted. The scores are based on your individual prelab quizzes and your team report. Your lowest of each will be dropped. As noted above, late reports will be penalized.

Prelab: 3 points

All quizzes will be due at the same time. If you are late, you get no extra time. If you miss the quiz, you will not have any opportunity to make it up.

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 team. If you miss class, your name should not be included on the report.

On weeks when you're serving as editor, your lab report score will be based on the written lab report score with the following adjustments: +1 for outstanding feedback, -1 for insufficient feedback. Notice that this means there is the potential for 11/10 for your report score during your weeks as editor.

Take Home Quiz on Academic Honesty: 5%

Sadly, I have found myself frustrated with the number of instances of Academic Dishonesty that have occurred in the past few years. In almost all cases, the cause of the situations has been ignorance of the rules and expectations. So, to make sure that you understand them, you are required to complete the Quiz that is attached at the end of the syllabus and turn it in before the start of the Electrostatics Laboratory.

Laboratory Notebook: 10%

At the end of the semester, you will turn in your laboratory notebook. They will be graded on a 10 point scale. Roughly, the following is how I intend to grade the notebooks: 10 – enough detail that experiments could be reproduced without lab manual, 8 – you have enough that you could probably figure out what you did when you look back six months later, 6 – you have all of the data and little else, <6 – incomplete with data missing. 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. I will take note of people who are not using their notebooks during the semester and penalties will be assigned as noted above (0.5 points per occurrence).

Lab Instructor Evaluation: 5%

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 contributions to the group, skills at working within your group, timeliness, and the quality of the discussions you have with your group and me.

Laboratory Practical: 20%

In the last week of the semester (before finals), you will be given a laboratory practical to test your skills. The practical will be performed individually and without notes. It will emphasize the basic skills that you should have learned over the course of the semester.

Since there are several laboratory instructors, your lecture instructor may normalize laboratory grades to compensate for differences in grading systems. Although I am the Department Chair, I play no role in determining the grading policies for the individual lecturers and fully support their right to establish a system that they see fit.

Food / Drink

Feel free to bring beverages to class. Small, non-disruptive snacks are also okay. That said, if I find myself cleaning up after you, I may revisit this policy.

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.

Editing Guide

The questions below are the sort of things that I have in mind when I grade a lab report. I would suggest using these same questions when you're editing the report. I do recognize that "my eyes" and "your eyes" are not quite at the same place given our differences in experiences, but your thoughtful efforts in serving as editor will improve your own writing. Your job as editor is not to rewrite the report, but to provide suggestions to the authors on how to improve their report.

- Is purpose of experiment clearly stated?
- Could you reproduce experiment with information included or referenced?
- Are results summarized in a clear and concise manner?
- Is there appropriate analysis of results (i.e. comparison to theory)?
- Are tables/graphs used appropriately?
- Is there "wasted ink" (stuff in report that doesn't convey any useful information)?
- Typos/Grammatical Issues?
- Are citations done properly?
- Is there anything obviously "missing"?
- Other issues?

Physics 11C Laboratory Schedule of Experiments

Fall 2017

<u>Week Starting</u>	<u>Experiment</u>
August 28	Syllabus / orientation / Lab Safety
September 4	No lab (Monday is Labor day)
September 11	Electrostatics
September 18	Field mapping
September 25	Electron beams and the CRT
October 2	DC circuits I: Voltage, current and resistance
October 9	DC circuits II: Voltage dividers and diodes
October 16	Oscilloscope tutorial
October 23	RC circuits
October 30	Earth's magnetic field
November 6	Changing magnetic fields
November 13	AC circuits I: Impedance and filters
November 20	No lab: Thanksgiving Week
November 27	AC circuits II: Oscillations and resonance
December 4	Lab practical

Student Name:

Student ID:

Academic Honesty Take Home Quiz

Please search the campus website and find the Campus Policy on Academic Honesty. List the URL of the campus policy below:

Now please read it and answer the questions below.

Which of the following is not a responsibility of students?

- a) Understand and abide by rules that preserve academic honesty.
- b) Not to encourage or enable cheating by others.
- c) Understand what cheating and plagiarism are.
- d) Snitching out other students who you know are cheating.
- e) Properly crediting the work done by others.
- f) All of the above.
- g) None of the above.

Mark each of the following situations with a "C" for cheating, "P" for plagiarism, "M" for maybe, or "N" for neither:

- Use of unauthorized notes during an examination –
- Word-for-word copying of a reference source without citation –
- Sitting in for someone on a test –
- Alteration of previously graded material –
- Paraphrasing without citation –
- Fabrication of sources –
- Reusing a paper from another class –
- Uncited use of an image because it is better than what you can do –

Under what circumstances is a faculty member required to report infractions to the Student Conduct Officer?

Again, using your fine internet searching skills, find the name(s) of the people running the Student Conduct office and write it below:

I sincerely hope that this is the last time you need to see this person's name....