

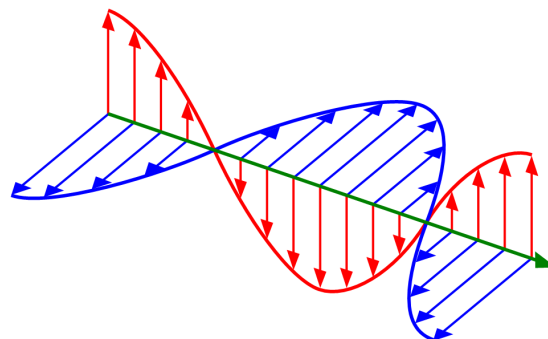
General Physics II

Laboratory

(Phys 116-13)

Spring 2020

What am I doing here? In this lab, we will be doing experiments to learn about waves, light, electricity, and magnetism. In addition to understanding the underlying physics of each experiment, we also want you to become familiar with some of the *methods* and *equipment* used for scientific investigation of these phenomena. We also want you to improve in your skill with data analysis (including estimating uncertainties). Finally, you should continue to develop your written communication skills through the writing of abstracts and keeping a lab journal.



Part of the intent of laboratory is that it is “discovery based learning”. Learning will sometimes include trial and error, and you will not always know what the results will be ahead of time. You should take advantage of this opportunity to *investigate*, instead of merely going through the steps in the lab manual.

What stuff do I need? Every week, you need your lab manual, your quad-ruled lab notebook (both available from the campus bookstore), a calculator, and a laptop with Microsoft Excel installed on it.

How will I be graded? Your grade will be determined by:

Weekly quizzes:	20%
Worksheets:	25%
Abstracts:	25%
Notebook:	15%
Final Exam:	<u>15%</u>
	100%

The final exam will be held in lab on Thursday, April 30, 2020, from 10:30 am to 12:30 pm.

What if I miss a lab? Attendance at all labs is required to pass this course. However, if you have a legitimate, documented reason for missing a lab, then I will help you schedule a make-up lab.

Can I just turn in my lab partner’s work? Seriously? Of course not! All submitted work must be your own. This includes calculating results on worksheets and writing abstracts. You should expect to have a different lab partner each week. All required work is due at the beginning of class... you may not use the first few minutes for printing, or looking for a stapler, etc. Lab reports that are 1 minute late start with a 10% reduction, which increases by 10% each day thereafter.

What's covered on quizzes? Anything from the previous week's lab, *or* anything from the lab manual for the current week. You may use calculators on quizzes, but not phones.

What is the course schedule? Here is a tentative schedule of topics for the semester:

Week	Date	Topic
1	Thursday, January 23	No Lab
2	Thursday, January 30	The wave equation (and using Excel)
3	Thursday, February 6	Standing waves on a string
4	Thursday, February 13	Plotting electric field lines
5	Thursday, February 20	DC circuits
6	Thursday, February 27	Ohm's law, part I
7	Thursday, March 5	Ohm's law, part II
8	Thursday, March 12	Capacitance: finding the time constant for an <i>RC</i> circuit
9	Thursday, March 19	Spring break
10	Thursday, March 26	Charge-to-mass ratio of an electron
11	Thursday, April 2	Reflection and refraction (Mirrors, Snell's Law)
12	Thursday, April 9	Thin converging lenses
13	Thursday, April 16	Thin diverging lenses
14	Thursday, April 23	Diffraction and interference
15	Thursday, April 30	Final exam (during scheduled lab period)

What if I have trouble with the homework? Come see me during office hours (see times listed above) and I'll try to point you in the right direction.

Learning Outcomes

At the end of this course, students will:

- Students will demonstrate ability to carry out experiments successfully.
- Students will understand the physical principles at work in the experiments.
- Students will show ability to analyze data and interpret the results. Students will also show the ability to estimate uncertainties in experimental results.
- Students will learn how to use scientific equipment.
- Students will demonstrate ability to keep detailed record of laboratory activities in log book.
- Students will demonstrate ability to write scientific reports that clearly and concisely communicate the experimental technique, data analysis, and final results of their experiments.