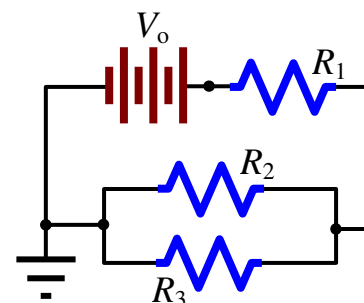


Analytical Physics II Laboratory

(Phys 126)

Spring 2024



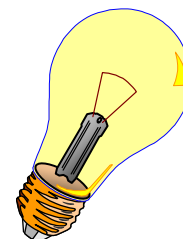
What am I doing here? In this lab, we will be doing experiments to learn about electricity, magnetism, waves, and light. In addition to understanding the underlying physics of each experiment, we also want you to become familiar with some of the *methods* and *equipment* used for scientific investigation of these phenomena. Also, as a continuation of your progress in Analytical Physics I Lab, you should become more accustomed to the limitations and uncertainties associated with scientific measurement.

Finally, you should continue to develop your written communication skills so that you can present your work in a clear, orderly, and understandable way.

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.

How will I be graded? As with Analyt I Lab, your grade is relatively independent of how well your lab results match the “predicted” results. Instead, your grade will be determined by:

Lab Quizzes (weekly):	25%
Weekly Assignments (abstracts, worksheets):	50%
Lab Notebook:	15%
Participation (e.g., tardiness, effort, neatness)	<u>10%</u>
	100%



Is there really a quiz every week? Sort of. The quizzes are actually take-home assignments that are due at the beginning of each lab. They are intended to insure that you have *read and understood* the appropriate sections of the lab manual before coming to lab.

Why all the abstracts? Writing abstracts will give you a professional edge when you finally leave college. For any of you who find employment in science, whether in physics, chemistry, biology, engineering, etc., you will find that recognition and promotion are based to an astonishing degree on how well you can communicate the work you do. The grade for each abstract will be based on whether you include the appropriate material, whether you can express yourself clearly and succinctly, and whether you use correct grammar and correct spelling.

Although the experiments will be performed with partners, each student must submit unique assignments (abstracts, worksheets, etc.) Materials are always due at the *beginning* of each lab session. Late work will lose 20% per day. Lab reports handed in more than one week late **will not be accepted** (but please contact me if you have an emergency situation).

When the lab manual asks you to answer questions in your logbook, those answers are factored into your logbook grade. It is expected that your answers will always stand alone (i.e., they will make sense to someone who has not even read the question). Answers must be grammatically correct English sentence, not scraps or isolated words. Note that most of those questions require you to show some math to support your answer; they are not supposed to be guesses!

Schedule

Every week, you will have at least 4 things due. Sometimes, you will have 5:

- a paper take-home pre-lab assignment/quiz (due at the beginning of lab).
- a paper worksheet from the previous week's lab.
- an electronic copy of your Excel document from the previous week's lab.
- an electronic scan of your lab notebook from the previous week.
- (Occasional): a paper abstract describing the previous week's experiment.

Date	What are we doing?	Abstract due?
January 23, 2024	Lab 1: Standing Waves on a String	
January 30, 2024	Lab 2: Interference and Diffraction of Light	Abstract from Lab 1 (String Waves)
February 6, 2024	Lab 3: Focal Length of Lenses	
February 13, 2024	Lab 4: DC Circuits & Kirchhoff's Laws	Abstract from Lab 3 (Lenses)
February 20, 2024	Lab 5: Resistors & Ohm's Law	
February 27, 2024	<i>No Lab: Diversity Summit</i>	
March 5, 2024	Lab 6: The Inverse Square Law	
March 12, 2024	<i>No Lab: Spring Break</i>	
March 19, 2024	Lab 7: Electric Field Lines	Abstract from Lab 6 (Inverse Square Law)
March 26, 2024	Lab 8: Resistivity & Resistance	
April 2, 2024	Lab 9: Capacitance and Time Constants	
April 9, 2024	<i>No Lab: Eclipse Week</i>	
April 16, 2024	Lab 10: Use of Oscilloscopes	Abstract from Lab 9 (Capacitance & Time Constants)
April 23, 2024	Lab 11: Measuring Small Time Constants	
April 30, 2024	Lab 12: Charge-to-Mass Ratio of Electrons	
May 7, 2024	Lab 13: Magnetic Force on Wires with current	Abstract from Lab 12 (Charge-to-mass of electrons)
May 14, 2024 (or earlier)	<i>No Lab: Finals Week</i>	