

PHYSICS 182L

Fall 2011

LP 117

Tuesday 2:30-5:30pm

General Information

Instructor: Ma7moud.ahmad@gmail.com
Office Hours: schedule appointment
Phone: 775 682-1677
Email: Mali@unr.edu
Lab Manuals Website: <http://www.physics.unr.edu/Labs.html>

Class Description and Objectives

The purpose of the physics laboratory is to allow student to experimentally feel and visualize concepts and physical laws that are introduced in PHYS 182. You will enhance laboratory techniques, learn how to set up an experiment, record your data, and use formulas to compute the results. This lab is designed to allow more independent work from the students as well as more peer-to-peer teaching.

For each topic discussed in lab, you will be given two weeks to complete and turn in a detailed report of the experiment(s) performed during that time. The first week will allow you to prepare for the lab such as research the background, check the equipment, organize course of action, etc. And the second week will be spent conducting the experiments. On top of that, during some weeks I may have each person or group talk briefly about his/her experiment(s).

Please do not be late. Attendance and participation is expected. Experiments as well as lab reports may be done in groups of two.

Course Requirements

Class Etiquette:

- While in lab, there will be no food, drinks or application of cosmetics.
- Please turn off cell phones while in lab.
- After you are finished with your lab, you and your partner must clean up your area. Failing to do so will result in a grade reduction.
- Report all damage equipment to me so it can be replaced.

Lab Reports

- There will be 5 lab reports in total. (subject to change)
- You are expected to read the lab experiments as they are provided on the website. This will help you while performing the experiment as well as knowing how to prep.
- The lab reports are due at the beginning of the next class following the week of the experiments. 5 points will be deducted for each day that it is late.
- Type all lab reports. Hand written or illegible lab reports will not be accepted.
- Please follow the format given in the lab manual website.

Attendance:

You are required to attend all the classes. If you must miss a lab due to illness, emergency, or pre-arranged absence, it is your responsibility to arrange to make up the lab during the different session sometime during the week of your absence. In any case, no more than two labs can be done in another lab section. By department rules, if you miss three or more classes, you will automatically fail the lab course. There is no way to make up the labs. Do not turn in a lab report for which you did not attend since you will receive no grade points for not attending a lab. You are expected to be on time for class. Please do not be late more than 5 mins. You will not know what to do if you are not there for lecture.

Laboratory Safety:

Experimental work can be subject to hazards of many kinds, and every person working in a laboratory should be alert to possible safety problems. Be aware to reduce the risk of injury and/or equipment damage. Report any accident or broken equipment to me immediately.

Attentive Schedule (subject to change):

<i>Week</i>	<i>Experiment</i>
09-13-2001	Introductory Optics System
09-20-2001	Introductory Optics System
09-27-2001	Interferometer Systems and Accessories
10-04-2011	Interferometer Systems and Accessories
10-11-2011	h/e Apparatus
10-18-2011	h/e Apparatus
10-25-2011	Electron Diffraction
11-01-2011	Spring Break
11-08-2011	Electron Diffraction
11-15-2011	Frank Hertz Experiment
11-22-2011	Frank Hertz Experiment
11-29-2011	Bragg Reflection Using Leybold XRD
12-06-2011	Bragg Reflection Using Leybold XRD

Grading:

% → A=90-100 B=80-89 C=70-79 D=60-69 F=below 60

Lab reports will be graded using the following rubric:

Title: 1 point for having a title

Abstract: a concise statement (a paragraph or two) that summarizes the objective and results of the experiment, worth a total of 5 points.

- 1 point for having an abstract
- 2 points for summarizing objectives
- 2 points summarizing results

Theory: A summary in your own words, of the theory, working equations and the units. The theory sections should also outline the procedures used in the lab, worth a total of 10 points.

- 2 points for having a theory section
- 2 points for outlining procedures
- 2 points for stating proper units
- 2 points for expressing relevant equations
- 2 points for defining relevant terms

Data: An orderly display of the data, must including original data sheet signed by TA. All entries should be clearly identified and include their proper units, worth a total of 8 points.

- 2 points for a data section
- 2 points original data (signed by instructor)
- 2 points for proper/clear labeling of data
- 2 points for proper units of data

Analysis: Must clearly show the computations used to reduce the data. First write the relevant equation then give a sample calculation. Be sure to include proper units and use the correct number of significant figures, worth a total of 14 points.

- 2 points for having a computation section
- 2 points for displaying relevant formula
- 2 points for sample computation
- 2 points for proper units
- 2 points for significant figures
- Graphs: 2 points proper units
- 2 points labeling axis

Results and conclusion: A brief Summary of your results, stating the determined value or law, along with its numerical uncertainty. Use proper units and significant figures.

Discuss what you found and compare with what you had expected to find. Discuss any discrepancies. One may suggest ways in which to improve the experiment or reduce errors. Some labs may include questions, worth a total of 12 points.

- 2 points for having a results section
- 2 points stating determined value
- 2 points for stating uncertainty
- 2 points for having a discussion section
- 2 points for summarizing experiment and results
- 2 points for each question answered correctly

$$\text{grade} = (\text{total points earned} / \text{total point available}) \times 100$$

Labs are due the week after all experiments are completed for the particular topic. There is a one day grace period after which the grade is docked 20%. The grade will be docked an additional 10% for each week the lab is late.

The following will also be considered when grading lab reports.

- | | |
|--------------|-----------------------|
| Preparedness | Originality / thought |
| Neatness | Spelling |
| Composition | |