

FALL 2012
Physics 222, Section: 001

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Office hour: Whenever you can find us. Please send an email to fix a time.

Summary of Introductory Physics Laboratory Goals:

The Art of Experimentation: The introductory laboratory should engage each student in significant experiences with experimental processes, including some experience in designing investigations.

Experimental and Analytical Skills: The laboratory should help the student develop a broad array of basic skills and tools of experimental physics and data analysis.

Conceptual Learning: The laboratory should help the students' basic physics concepts.

Understanding the Basis of Knowledge in Physics: The laboratory should help students understand the role of direct observation in physics and to distinguish between inferences based on theory and the outcomes of experiments.

Developing Collaborative Learning Skills: The laboratory should help students develop collaborative learning skills that are vital to success in many lifelong endeavors.

Grading:

Active class participation (including online questions and extra credit problems): 60%

Lab Report: 40%

Lab reports:

Please prepare your Lab report while you are performing the experiment. One lab report for the group (usually 3 people per group) will be enough. One person can be in charge of writing while the others are performing the lab work. They should be submitted before you leave the lab. We will review it and you may need to make some corrections later. Since it makes part of your grade, don't rush for finishing. Remember you can always change your group. To fulfill the "Active Class Participation", you should be actively involved in performing the class activities which are mostly available online and also writing part. To be sure that all the group members are involved in that you may want to have a schedule for who writes for which experiment and who's turn is it for this one.

Lab report:

(1) Title page: A title page should include the following:

(1) Experiment name (find it in “Discussion and Laboratory”) (2) Your group members name (3) Section number (4) the date.

(2) Purpose and method: This should be short: a paragraph or two describing what measurements were made and for what purpose. Procedural details should not be given

(3) Data tables: The original or photocopies of the original data sheets, collected in-class and initialed by the instructor, should come first. Neatened or expanded versions of the data with additional derived quantities may come next. Remember labels, units, and uncertainties.

(4) Calculations, including error analysis: Whenever possible calculations should be done in the lab. Include in your calculations the units associated with any variable and, where appropriate, cancel units or change them to derived units. If you do the calculations with a spreadsheet, remember to put labels and units on any additional columns, and state in the report how these columns were calculated.

(5) Graphs, when appropriate, should include a title, and axis labels with units. These should also be done in the lab, if possible. If straight line fitting is performed on the data, either by hand or with a linear regression program, remember to record the slope and intercept and their uncertainties.

(6) Conclusions: This should include a brief discussion of the main findings. For example: “We found that there is a linear relationship between the measured variable ... and ... This can be seen from the graph and is predicted by the theory”.

- Attendance: You are supposed to attend each laboratory period and do all experiments in your assigned section. In general, you will not be permitted to do your experiments in another section. “Lab reports are an indicator of your presence and participation so if you are not attending a lab, you cannot have lab report for that experiment. You also should not write your group members name on the report first page if they are absent.” Beside your physical existence in the room, your active participation in the experimental procedure and submitting the report are the most important factors contributing to your grade. **THERE WILL NOT BE A MAKE UP LAB.**