

## Writing the Lab Report

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Office Hours: Th 10am-12pm, or by appointment, Help Study Room

### Overall Style (5%)

Lab reports should be written in the past tense, and should avoid the use of personal pronouns like “I,” “you,” “we,” and “our.” For example, instead of writing, “We recorded 2500 data points,” phrase it this way: “Two-thousand five-hundred data points were recorded.” (If you begin a sentence with a number, spell it out.)

Your report should include tables and figures. A figure could be a graph, a drawing – essentially anything that’s not a table. Number tables and figures separately, so that you will have a Table 1 and a Figure 1. Do not use descriptive titles at the tops of tables and figures, but label them by number in the caption below the table or figure. For example, the caption for your first figure should read something like “Figure 1. Experimental set-up. The receiver on the right was rotated 180°.”

At the beginning or end of the report, identify each member’s role in performing the lab and writing the report. Rotate through these roles, so that, for example, the person who wrote the discussion last week may write the introduction this week and the results section next week. (You might find it beneficial to let the same person who collected data in the lab write the results section of the report.)

You may divide your report into sections of your choosing, based on previous classes or academic journal articles. If you do not already have a preferred style, I suggest dividing the report into the following sections: Abstract, Introduction, Procedure, Results, Discussion, Conclusion.

However you format your report, be sure to include the following information:

### Abstract (5%)

Even though this section appears first in the report, you will most likely write it last. Briefly summarize the important parts of every other section. Include the purpose of the lab, a one-sentence (or less) description of the experimental setup, important results (including numbers), and what those results mean or why they’re important.

### Introduction (15%)

Begin with appropriate background information to give the reader context for your experiment. Which begs the question: What information is appropriate? This depends on who your reader is. Is he your grandfather who has to write down which button turns on the computer, or is she a physics post-doc at NASA’s Jet Propulsion Lab? Technically, I’m the one reading your reports, but you should write as if the reader were a PHY 252 student familiar with the material in lecture but unfamiliar with the lab.

Include the equations you used in the lab. Each equation should be numbered and take up its own line, center justified. Continue your paragraph on the following line, where you should immediately identify the physical meaning of each variable in the equation.

Include – *in your own words* – the goal or purpose of the lab.

**Procedure (15%)**

In narrative form (not a numbered or bulleted list), describe the experiment itself – what you did during the lab period. *Remember to write in the past tense without personal pronouns.* Write in enough detail that the reader (see Introduction) would be able to repeat the experiment, but make sure the details are relevant. The reader doesn't need to know which computer in the room you used, but he probably does need to know if you used special software.

Unless the lab guide specifically asks for it, you will not generally need to provide a sketch of the experimental set-up. However, if you do not include a sketch, your narrative description must sufficiently explain the set-up. If you do decide to include a sketch, you may draw it by hand, produce it on the computer, or include a photo taken in lab. Remember to number it as a figure and include a caption.

**Results (20%)**

Present your graphs and other results (with captions), with just enough narrative to put the figures and tables in context. For example, if you had only one graph that plotted acceleration versus time, then “A graph of acceleration as a function of time is given in Figure 2” is sufficient narrative for the entire section.

**Discussion (25%)**

Compare your results with your expectations. If they don't match, explain why, specifically. “Human error” is not sufficient; describe what component of human error played a role in your experiment. Was a needle difficult to hold steady? A phenomenon difficult to observe? Suggest how the lab might be improved.

If the experiment did go according to plan, don't just say, “The experiment went according to plan.” Describe each result, and explain why it occurred the way it did.

Refer to equations, tables, and figures by number.

**Conclusion (10%)**

Briefly reiterate your important results and why they're important. State what you learned, and, if appropriate, what “next steps” would be taken were you to continue studying this subject in lab.

**Appendix (5%)**

At the end of the report, attach any sample calculations, additional graphs, or other supplementary data. *Include in this section any pages of raw data that I have signed.*