

## PHYS118 Lab Report Format

Lab reports must be typed. Each report must include a **cover page**, an **abstract**, an **analysis** of your experimental results (including your original data and any additional notes, tables, or graphs), and a **discussion** of your findings. See the descriptions below for what should be included in each section. Be sure to use proper English grammar and spelling, but most importantly, use scientific terminology appropriately! Lab reports should be written in past tense to explain what you DID, not what you intended to do.

### Cover Page

- Title of experiment
- Lab section and TA name
- Date the experiment was performed
- Your name
- Names of your lab partners (identified as such)
- Honor pledge and your signature

### Abstract

The abstract is a concise summary of the lab report. A good abstract should state the purpose, procedure, principal results, conclusion, and implications of the lab in a single paragraph that is generally 100 to 200 words in length (use your word processor's word count tool to check length).

### Introduction (Optional)

A complete scientific lab report has an introduction that gives the context for the experiment, the background theory, and a description of the experimental procedure and equipment used. For simplicity and brevity, you are not required to include this section, but you may do so if you prefer. In cases where a particular lab does not have a prescribed procedure, or you used a procedure that was significantly different than the one described in the instructions, you should clearly explain what you actually did either in the introduction or discussion sections.

## Analysis

The analysis section contains the data and results of the experiment. The results must be well organized and easy to read. When appropriate, tables or graphs should be used to present data and results. Graphs must be properly constructed with descriptive titles, labeled axes with relevant units, and calculated parameters properly interpreted (e.g. what do the slope and intercept represent?). All measured values must have four critical parts:

1. A label (word or symbol) that clearly identifies the measured value
2. The numerical value for the measurement (rounded to be consistent with the uncertainty)
3. A reasonable estimate of the uncertainty associated with the measurement
4. An appropriate unit of measure (SI units are usually preferred)

Sample calculations, including an analysis of the experimental uncertainties, should be shown for any derived or calculated values as appropriate.

## Discussion

In the discussion section, summarize the results you obtained, and then discuss any discrepancies between your results and what was expected according to the given theoretical predictions or your own hypotheses. Did the experimental results agree with your predictions or the findings from other lab groups? If not, what is the most likely reason for the discrepancy? Remember to consider the uncertainty of your results when determining agreement. Identify the primary source of error in your results and justify your answer based on your uncertainty estimates. (Note: General statements without justification and explanation are not acceptable. "Human error" is not an acceptable source of error since it is too general to be useful.) How could you improve the quality of your measurements with the available equipment? What did you learn or discover from this lab? The discussion section for most labs should be about one to two pages in length. Remember that your discussion will be graded on the quality of your explanations, not the quantity.