

University of Mississippi Dept. of Physics and Astronomy

General Physics Lab Report Format

Purpose:

As part of your experience in the physics lab, you need to be able to present information in a concise but detailed and scientific manner. By writing lab reports, you will demonstrate your understanding of a few of the experiments performed. These reports are the only major individual assessments, they are not group projects and the material presented should reflect your personal understanding of the experiment. We ask that students follow this general structure when composing their lab reports.

General Guidelines: (10 points)

- No cover sheet.
- The upper left corner of the first page must contain the following:
 - Last Name, First Name
 - Partner: Last Name, First Name
 - Experiment Title
 - TA: Last Name, First Name, section #
 - Date Performed: Month, Day, Year
- Typed, 12 point, Times New Roman font, double spaced.
- Use proper grammar and complete sentences.
- Each section (see below) must contain a heading followed by the requisite information in **paragraph** form. Include sketches where necessary. All mathematical expressions may be written neatly in pen or pencil.
- Equations may be written once, numbered, and referred to by number elsewhere in the report (i.e. "As seen in Eq. 1...").
- Attach Datasheet to report as last page before turning in hard copy.

Objective: (10 points)

State the objective of the experiment. This is the reason for performing the experiment. Include primary equations to be utilized and/or verified in this section. Identify independent (what you will change) and dependent (what changes as a result) variables, think big picture, look at the title of the experiment, there will be one major independent variable and one major dependent variable for each report, if there are multiple parts, the independent variable is changed between parts, if there is one part with multiple trials, the independent variable is changed between trials. This should be about half a page at most, usually two or three sentences. This is not the place to explain the physics involved (that goes in the conclusion,) how the experiment was performed (data and analysis,) or explain all of your calculations (also data and analysis.)

Data and Analysis: (30 Points)

State which data you collected during the experiment and how you collected it (this should only be a paragraph at most, you do not need to repeat the entire procedure; i.e. "The motion of students moving around the room, and the motion of a bouncing basketball, was recorded using a motion sensor). Include tables providing the data. Include mathematical expressions for derived values (e.g. manipulated equations, average values, or percent error) and a sample of each type of calculation. **All data must have units included in column headings.** Construct graphs that take the data you collected and arrange them according to the theoretical models being tested. Be sure to show this theoretical model (i.e. write the equation you used to compare your data). Indicate the relevance of slopes and intercepts of graphs. **All graphs must have titles, axes labels, and legends.** Units must appear in axes labels. Include a sketch of the complete apparatus and label each part.

Conclusion: (30 Points)

Address the premise stated in your objective. Explain, in your own words, the physical theory being explored with the experiment, this should start with a definition of the theory at hand. Your discussion of the theory should include both the concepts being considered as well as the principle equations being used. Quantitatively discuss the relevance of your data to the theory (percent error or difference). Be sure to include any equations used and how well your data supports the theory. Discuss the success/failure of your experiment, whether you are convinced the theory is valid, and what students may do differently to improve this experiment in the future. Address sources of systematic and random error in the experiment. Include percent error/difference when applicable. **"Personal error" may be addressed but only so far as human limitations present some error** (improperly collecting data and/or poor math skills are sloppy work, points will be taken) **See Appendix B.** The conclusion should be about a page, and may need to be longer to adequately address everything listed above.

Questions: (20 Points)

Type each of the questions as posed on the datasheet you received in lab. Type your answers to the conceptual questions and include a labeled sketch in pen or pencil if needed. Mathematical work may be written neatly and clearly in pen or pencil. "Just the answer" will receive zero points. You must justify your answer using the theory and equations from the experiment to get full credit. Anything besides sketches or math done in pen or pencil instead of being typed will be ignored.

General Physics Lab Report Checklist

General Guidelines

- Last name, First name
Partner: Last Name, First Name
Experiment Title
TA: Last Name, First Name, Section #
Date Performed: Month, Day, Year
- Typed, 12 point, Times New Roman or similar font, double spaced
- Section Headings
- Datasheet attached as last page before turning into basket
- UPLOADED TO SAFEASSIGN UPON COMPLETION!

Objective

- Objective Stated (3)
- Equations included (3)
- Independent and Dependant variables identified (4)

Data and Analysis

- Collection method (5)
- Data tables (5)
- Titled graph with labeled axes (if applicable) (5)
- Calculations (5)
- Significance of slopes or y-intercepts discussed (5)
- Sketch of Apparatus (5)

Conclusion

- Theory explained; including concepts and equations (10)
- Relevance of data (did it support the theory?) (5)
- Success/failure discussed (5)
- Error discussed (5)
- Improvements (help us make this lab better, be specific) (5)

Questions

- Retype (or copy and paste) questions
- Answers justified with theory/data/equations/sketch