

Lab reports for Physics 284

The grades for experiments will be primarily based on the report, although you should be prepared to present your notebook for examination in case further details are needed. Lab reports should be between three and five pages long. They should consist of four sections; **introduction**, **procedure**, **results & analysis**, and **conclusions**. The **introduction** should briefly lay out the plan of the experiment and the relevant physical principles involved. It should present the formulae that will be compared with your data, but it should not repeat long derivations. In addition, there is no need for historical background or lengthy discussion. The **procedure** section should describe how you took the data and include a figure of the experimental setup. Hand-drawn figures are perfectly acceptable. The **results & analysis** section should present a summary of the data collected. It need not include every result written down in your notebook, but it should present the data you want the reader to focus on. It should allow the reader to make a sensible estimation of the quality of the experiment from the data. It is usually preferable to present a large amount of data as a graph rather than a table of values. Details of error analysis should also be presented here. It should describe how you reduce the raw data and compare it with theory. Make sure that all graphs have titles and labels, and that only relevant information appears on the graph (don't just paste the output of Excel into the report without looking at it). In addition, make sure all figures and tables are properly identified with captions. Finally, any figures which appear in the report should be discussed somewhere in the text. The **conclusions** section should comment on the comparison of theoretical predictions with the measured data. It should try to account for any discrepancies, and it should suggest possible improvements to the experiment.

Above all, focus on clarity and brevity. Long lab reports take more time to write, are a pain to read, and often the important details get lost in unnecessary discussion.