PH 411/511 Laboratory Report Format

The goal of the laboratory report is to effectively communicate the results of the experiments you performed. The report should be concise but complete. Divide the report into relevant sections containing similar conceptual material, usually following the structure of the lab handout. Each section typically should include the material listed below. Include any experimental work you did that wasn't in the lab handout. We encourage creative experiments and ideas that are different from the assigned work!

Introduction/Background

Provide introductory discussion of what you are studying. What are you going to measure? What can you learn from making these measurements? To obtain nice flow in the introduction it is often better to discuss broad concepts first and then narrow the focus to specific phenomena. A few sentences are usually sufficient.

Theory/Circuit Diagrams/Experimental Procedure

- a) Discuss theoretical models and provide any relevant equations.
- b) Draw a circuit diagram showing your experimental setup. You may hand draw your circuit diagrams, or preferably find some program to use. If you find a useful circuit-drawing program, please let the rest of the class know about it. Label components in the circuit diagram with symbols/variables, and include numeric values where needed.
- c) Discuss specific measuring techniques and experimental designs of the experiment.

Results/Data/Graphs

- a) Present results in graphical form and tables if appropriate. Label graphs and tables with informative titles, and indicate data regions where interesting behavior occurs. Label the axes of graphs clearly and include units.
- b) Compare results with theoretical expectations. When appropriate, include a theory curve on the data plot, using points for experimental data and lines/curves for theory.
- c) Discuss any error analysis performed.

Conclusions/Discussion

What did you learn? Was there anything unexpected? What is the general behavior of the circuit in the experiment? How do your results compare to theory? Summarize the key concepts.

Pitfalls, and things to watch out for

- a) Do not write a personal diary about your experiments. Make sure that your focus is on presenting professional quality scientific work by discussing the physical concepts you've explored.
- b) Do not try to hide your data if you think it is incorrect. Make your best attempt to present all material in an honest forthcoming manner, and try to explain any measured discrepancies with theory.
- c) The number of words has nothing to do with the quality of content. Be thoughtful and efficient while presenting material related to each section of the lab.
- d) Do not wait until the last minute to write your report, because you may run into any number of problems that require instructor or lab partner assistance. Try to continually work on updating your lab report every day with short notes in your lab notebook.
- e) You may prepare your report using the text editor of your choice (Word, Open Office, LaTeX...). Convert to PDF format before submitting your report.