

PHY451, Fall 2013: How to keep a good laboratory notebook.

The purpose of a Laboratory Notebook is to provide a permanent record (**in ink!**) of what you did, why you did it and how you did it during each laboratory period. It should also include any data analyses, graphs, written thoughts & plans, etc. that you make outside of the lab. This record should be readable at some later time by you or anyone else. Most importantly, there should be enough information so you easily reconstruct what you did in previous lab sessions, in case somebody has moved around all your cables or borrow your oscilloscope and changed all of its settings! ***Writing results down on pieces of paper and then copying them later into the notebook is strictly forbidden!*** If you make mistake, just cross it out (but leave it legible, in case your “mistake” wasn’t so) and write down the correct input.

In a research setting, this Notebook can have a legal status because it provides written proof of when an important discovery was made. In industry, you would be required to have a “witness” sign the pages where an important discovery was recorded.

You are required to purchase a soft-sided 9" x 12" ‘Computation Notebook’ that is much better than a 8" x 10" hardback book. You are required to use these computational notebooks for this class. **Also be sure to make entries on both even and odd numbered pages.**

Suggestions keeping a good notebook

- At the beginning of a new experiment you should describe it, tell what you hope to accomplish and how you will be doing it.
- Each day's entry should begin with a date, time, a brief statement of what you plan to do and why. During the experiment, you may want to record other times because the phenomena you are observing might be time dependent. Also later on you might want to anticipate how long it takes for certain equipment to warm up, liquid helium to be transferred into a cryostat (and how long it will last), etc.
- Careful drawings of your experimental set up must be done. Of course, with advent of digital cameras, it is acceptable to photograph your apparatus and paste an annotated picture of it into your notebook. However, it will probably be easier to draw some circuit diagrams by hand. You should record the ***manufacturer’s name and model number of each piece of equipment used in your experiments.***
- Estimates of systematic and random experimental errors should be recorded. “How accurate is my caliper and to what precision did I measure that distance?” “Does the instrument read zero when there is no signal present?” “Is the reading drifting with time?”
- Sometimes you will be taking data with a computer, and you certainly will be using a computer to create graphs. It is very important to ***record in your notebook the names of these data and graphing files.*** Likewise, if you write a program to analyze your results, you should record the file name.
- At the end of each session, make a summary of your accomplishments and unresolved problems, as well as your plans for the next laboratory period.
- ***Since you are expected to also be doing work outside of your normal lab sessions,*** it would be a ***very good idea to make entries in the notebook*** (with dates, times, etc.) ***that show the results of this outside-lab work.*** We will be looking for these entries as we evaluate your performance in this class.

We may collect your notebook at any time (even before you experiment is finished) in order to evaluate how you are doing.