

407 ADVANCED LABORATORY

THE LABORATORY NOTEBOOK

The laboratory notebook is to be kept as a research lab notebook. It is a chronological account of your laboratory activities and contains observations, comments, data, and relevant calculations and conclusions. It is not to be kept up after the fact as you may have done in the past to make some sort of final report after you do a lab.

Loose-leaf paper is not appropriate for recording data or doing laboratory calculations. You should record data and do calculations directly in your laboratory notebook. However some data are recorded directly into a computer file for certain experiments.

General questions to be considered when writing a lab notebook are “If I pick up this notebook in a year or two, is there enough information in it for me to understand what was done, why, and what the results and conclusions were? Could I reproduce the experiment if I wanted to?”

With these concepts in mind, it is suggested that for each experiment in your lab notebook you record or perform the following procedures:

- 1) First write the date and partner in the upper right-hand corner of the appropriate notebook page.
- 2) Next: state a general purpose in one or two sentences. Throughout the experiment indicate the purpose of each new set of measurements or calculations. (In this instance, the purpose may simply be a statement of exactly what is being measured if the “why” is obvious.)
- 3) Sketch the apparatus hookup, with the parts labeled, when necessary to remember how the experiment is configured. Just a repeat of what is in the lab write-up is not necessary.
- 4) Record all original data directly in the laboratory notebook, not on scratch paper. The original data readings are the most important pieces of information you have, and their loss should not be risked by recording them on scratch paper. Copying the data wastes valuable time and risks mistakes. Be sure to indicate clearly what is being measured and in what units. You may cross out data that appear to be useless or wrong, but do not erase them—they may turn out to be valuable.
- 5) Make certain that measured quantities include a figure of uncertainty or “error.” Write all calculated values in your notebook with the method of calculation clearly indicated. They will usually appear near the data and may be presented in the form of a table. Each calculated result should include appropriate significant figures.
- 6) To record your results and conclusion, tell briefly what you did and how it came out. For example, if you measured a physical constant, how does it compare with the “accepted” value in the light of your estimated errors?

The format of a notebook is not rigid, but it should follow the order in which you worked. As you perform the experiment, you should carry out error, data, and graphical analyses. Such analyses should not be postponed.