

Core Elements of Lab Notebooks

The following items #1 through #9 are required to be included in your lab notebook documentation for each laboratory exercise.

1. **Lab Header:** Title of lab, date/time, lab partner(s).
2. **Purpose/Goal:** A brief and precise statement indicating what is to be measured or demonstrated in the lab exercise.
3. **Apparatus:** Simple and accurate explanation and/or sketch (e.g. block diagram) of the experimental setup used to make the measurements.
4. **Procedural Details:** Simple and accurate descriptions of important steps undertaken during the experiment, such as equipment settings. Explanations of choices made during data collection, such as distances, sizes, trials, etc.
5. **Data:** All measured values should be in the lab notebook (either hand-written or printed from Excel) and clearly labeled as to what quantity the values represent and how they were measured.
6. **Analysis:** Explicit demonstration of any calculations using the measured data, including error propagation and statistical analysis. If repetitive, then show one representative calculation. This is especially important if Excel formulas are to be used in the lab exercise.
7. **Graphs:** Graphs of data must have properly labeled axes with the range of the axes adjusted to the range of the data.
8. **Computer Files:** For any data stored in computer files, the name of the data file and contents must be documented in the lab notebook so that it could be retrieved at a later date.
9. **Conclusion:** A statement summarizing the results including any conclusions based on the measured data and error analysis. If measuring a specific quantity, the conclusion should make a comparison between measured and accepted values, including a statement about the statistical relevance of the difference, if any. If measurements are to demonstrate a specific principle, then the conclusion should discuss how well the principle was demonstrated.