Formal Lab Write-ups

No scientific work is of any value unless it is presented to someone else in a clear and persuasive manner. The “someone else” may be the Scientific Community in which case the presentations would be in the form of a published paper in a scientific journal. Or it might be someone else in your company who has the authority to make use of your work (to improve company profits, for example) in which case the presentation would be in the form of an internal company memorandum. Either way, presenting the results of your work is imperative.

Formal Lab Write-ups for this course should be typed. If you have trouble typing the equations, you may write them by hand. Graphs and diagrams can be done by hand or on the computer as you wish. Please prepare your formal lab write-ups on 8-1/2 x 11 paper. Do not use a fancy binder that significantly exceeds the size of the paper. Be sure to include your name, the name of your lab partner and the name of the lab you are writing up on the first page.

The remainder of the write-up must conform to the following format:

1. Purpose
What is the purpose of the lab? What are you measuring?

2. Theory
Give a brief description of the theory involved for this particular experiment.

3. Procedure
Describe the procedure that you followed in sufficient detail that someone else could duplicate your results. Include a sketch of the apparatus if appropriate.

4. Data
List all of your measured values including the error associated with each measurement. (No calculations should be included in this section.)

5. Analysis
This section includes values calculated from the data, graphs and answers to questions. You may use any appropriate software to analyze your data and present your results.

6. Error Analysis and Accuracy Considerations
This section should include all error analysis. First, estimate the accuracy of your result pretending you do not know the accepted value. This is by far the most important part of the error analysis. (This is what you would do “in the real world” where there would be no “accepted value” for the result.) Then, compare your result with the accepted value and, if possible, explain the difference. For example, identify any systematic error you expect might exist (if any).

7. Conclusion
The conclusion should address the purpose of the experiment. You should restate your relevant results along with the associated error bounds. Does your result support the theory or disprove it? Why?

8. Suggestions for Improvement
If you were going to repeat the experiment, what would you do differently? Why?

Be sure to include all of the sections listed above.