Final Lab Report

For each lab you will hand in a research styled paper. You are required to treat your work as closely as possible to an original piece of scientific research to be submitted to a peer-review journal.

All papers must follow the American Journal of Physics (AJP) style (first link on my sample papers). We will be including a LaTex template and resources that follows this style sufficiently. You will list yourself as first author and your lab partner as second. You will list Augusta University as your affiliation, and the submission deadline as the date.

Like any research paper, you will need to include an abstract. The abstract should clearly and concisely state in a few sentences an overview of the methodology and must include the major results. Basically, it should answer What did I do? How did I do it? What are the results?

It is typical for reports or papers to have sections outlined as follows in pages 21-24
http://www.drjbloom.com/Public%20files/Laboratory%20Notebook%20Booklet.pdf
Some of these sections that may be merged together (and often are) at your discretion under a single section heading. For example, items 4 and 5 may be labeled as "Introduction and Theory". Sections 8 and 9 might be called "Analysis of Data" or simply "Results", and so on.

You must have an abstract, and must have a section representing each of the remaining groupings I have lumped together in the following list. I have six different groupings below.

1. Title

2. Abstract

3. Introduction
4. Theory and Analysis

5. Apparatus / Materials
6. Experimental Procedures

7. Data and Results (this was already written)
8. Discussion

9. Conclusions and Recommendations
10. Acknowledgments
11. Bibliography/References
12. Appendix

Every component of your report is open to grading. This also includes communication style, grammar (though I will generally only notice very serious infractions on grammar), completeness, formatting, analysis, significant figures, presentation, placement of equations, graphs, figures. Other details for graph captions, tables, figures, sketches, etc.

Your work should assume that the reader has a knowledge base similar to your own. You may assume that basic math is understood and that basic physics units and jargon are well understood. Your paper should "tell a story" that includes background and context, theory, method, analysis, end results and a conclusion with significance.

Scientific writing is "matter of fact". **Sentences tend to be short and direct**. Completeness and conciseness are good goals to have. There is no room for discussion like "I feel my results…". The results were determined with a scientific method, and have uncertainties, so your "feelings" have no place in a report. Statements like "My results could have been better…" don't have place here either. If your results are not good, don't report these results, go back, redo your experiments/analysis and get better results. It is not your job to pass judgement over your experiment or your results, that is the reader's job. Your paper is about presenting "just the facts". (Yes, Colbert worked in yet another famous movie quote.)

I will generally make copious comments on your papers. The feedback that is provided is there to make you think and question:

1. Is there a better way to say it?
2. Is there a better way to explain it?
3. Am I getting the point across clearly?
4. Is my figure complete?

   ...

Many of the comments are to get you to self-examine you own work. Other comments have to do with technicalities and grading issues. There is no upper limit on when to stop improving the paper or experiment. There is no "have I done enough to get an A?" There is just you, your experiment, and your communication of the "story".

If the reader is unable to comprehend something, or goes in a different direction than you intended, that is your responsibility as author. It is your job to ensure that the reader is able to comprehend your results by your clear, concise, complete, and correct writing.

If there is something in a research paper that the reader does not understand, then the author needs to revise their communications.

Final Draft Grading **Final Draft Score (100pts) _____**

Author's name: _____ Lab Partner's Name: _____

Lab title: _____

1. (10 points) Does the paper adhere to appropriate general format with regard to the following (overview of large formatting issues)?
    i. Title
    ii. Names
    iii. Date
    iv. Abstract
    v. Introduction/Theory
    vi. Procedure/method
    vii. Results
    viii. Conclusion/Discussion
    ix. References
    x. Other general formatting issues?

2. (10 points) Abstract
    i. Does the abstract communicate general method of experiment (concise/complete)?
    ii. Results listed properly and in agreement with results section
    iii. Other

3. (10 points) Introduction/Theory
    i. Complete
    ii. Format
    iii. Style
    iv. Other

4. (20 points) Data Analysis
    i. Corrections/correctness: numbers, sig. figs., scientific notation, or other instructor comments on these issues.
    ii. Numerical, algebraic or analytical issues.
    iii. Complete
    iv. Format
    v. Style
    vi. Correctness of physics
    vii. Other

5. (20 points) Methods/Procedure

i. Complete
ii. Format
iii. Style
iv. Clear discussion
v. Experimental setup figure (if it was not in include it in the introduction)
vi. Other

6. (20 points) Overall Readability and completeness of each section
   i. Is the science clearly communicated?
   ii. Have steps been left out?
   iii. Have you omitted critical scientific points?
   iv. Are there glaring omissions or distractions?
   v. Other

7. (10 points) Results, conclusion, and references
   i. Are results stated properly?
   ii. Are the interpretation and conclusions correct and clearly stated?
   iii. References are included where needed
   iv. Other