How to write up specific sections of a Physics Lab Report

This is a list of possible sections that might be indicated for a report for a given experiment. You only need to do a particular section if the rubric for that lab experiment indicates so.

**Title Page:** See the sample on the next page: fill in the numbers that are illustrated with x’s.

**Introduction:** The INTRODUCTION is meant to give an overview of the theme presented in the experiment. It should basically answer two main questions: WHAT do you want to show (your theme/theory), and HOW are you going to show it (what measurements will you make, what general equipment will you use ... how will you test the theory/theme). This should NOT contain any results (you are "introducing" the lab). You should try to avoid "Part 1, Part 2, etc." ... instead, use phrases like "Initially we studied ... Then we looked at...". In this section, you should explain any theory, significant variables to be measured, and/or important equations.

**Data Tables and Graphs:** Include the ULI graphs (or Excel graphs) printed in the lab. All graphs must be scaled to show the important information - this means you should try to reduce the ‘white space’ – zoom in on the important parts of the graph. The graphs must be labeled properly with a descriptive title (don’t just use “Distance vs. Time”, for example, because that can be seen from the axes).

**Calculations:** Show one sample calculation of each type of calculation done. Write down the formula; show the numbers used, and the final results.

**Analysis of Results:** The emphasis is on the word ANALYSIS, which means an examination of the different parts of the experiment to see how they relate to each other and to the theory. The analysis also includes considerations of errors or suggestions for improvements. This is a very important part of the report – it should indicate what you learned and reasoned from the experiment. This is your analysis, not a restatement of the lab manual. This requires looking at some of the numbers (with % differences or % errors) and demonstrating that they support the theory/theme of the lab. If there are numbers that are "off", you should explain (or speculate) why. You should cite specific examples with your numbers to show how the theory/theme is supported. (Don't just repeat the data/question sheet numbers here in tabular form - pick examples.)

Use GOOD WRITING PRACTICES that you have learned in your writing courses, including PARAGRAPHS with introductory sentences. BACK UP your statements with SPECIFIC NUMBERS or observations, but ONLY mention those numbers that are RELEVANT to your statements. DO NOT just repeat the information in the lab manual. DO NOT BE VAGUE. If you say something that could be said about ANY experiment, without being SPECIFIC, you are being VAGUE.

1. Did you obtain what you expected or those things that theory suggests? What did you find out? Did you verify your hypothesis or not? If appropriate, compare your results with theory.
2. Do an ERROR ANALYSIS of the experiment to see what measuring apparatus, technique, method, or assumptions could have led to error.
3. If there are GRAPHS, describe what you see in them including the significance of their shape. Did the graph match with theory or with expected functional variation? Comment on any significance of the slopes or the intercepts if you have a straight line. If there are several graphs, you may be able to compare them. Make sure the graphs have TITLES and are labeled properly. Also make sure that only the relevant portion of the graph is shown (scale them properly!)
**Conclusion:** The CONCLUSION section is a summary of the ideas presented, along with some of the final numerical results (again, NOT in tabular form). Also, if you read the introduction, and then read the conclusion, you should be able to determine specifically how successful the experiment was. The conclusion should also show some final numbers to support the ideas (most likely % differences or % errors). The conclusion section should be SHORT, with FINAL NUMERICAL RESULTS and any general conclusions that can be drawn.

**Data/Questions Sheet:** Should be turned in with every lab report.
SAMPLE TITLE PAGE:

COURSE: PHYXXXX
SECTION: XX

GROUP: X-XX

There is a computer number on the computer table:
Col-Row

Lab course information

LAB XX: TITLE
INSTRUCTOR'S NAME

This is important for the labs to get to the correct instructor.

YOUR NAME
STUDENT NUMBER
LAB DAY OF THE WEEK
DATE/TIME LAB WAS DONE
LIST OF PARTNER’S NAMES: