

# Guidelines for Formal Lab Reports

(Used for AerE344 and AerE545)

The following is the format for a formal lab report. It is not significantly different than the format expected for an engineering journal publication.

**ADVICE:** Within many of the sections listed below, subheadings can be an effective means of organizing the report. Subheadings can help the reader follow your presentation more easily.

1. **Title Page:** List the course and course number, the lab experiment name, all group members' names, and the date.
2. **Abstract:** This should be a brief (<100 words) summary of the results of the work. The abstract should stand on its own. This means that it must not reference equations or figures in the main body of the report. A good way to write an abstract is to write it after the rest of the report is finished.
3. **List of symbols (nomenclature):** All English variables/symbols should be listed in alphabetical order followed by Greek symbols in alphabetical order.
4. **Introduction:** This section describes the relevance and importance of the work that was conducted. In this section, relevant journal or textbook publications should be cited. The general objectives of the project should be stated here.
5. **Methodology:** This section should briefly describe the methods used to conduct the experiments and reduce the data. Rather than describe every detail of each method (for example, a numerical integration scheme), it is sufficient to summarize the approach taken (for example, "integration was conducted using the trapezoidal rule"). Diagrams or bulleted lists are often good ways of showing the steps of a method. If computer programs are used, they should be mentioned in this section but listed in an appendix.
6. **Results:** In this section, the results of the experiments and data reduction are presented. Present data in the clearest form possible. Usually this means presenting data graphically. Do not present raw data in this section. Put raw data in appendices. Present only final results in this section.
7. **Discussion:** In this section, the results of the project are discussed in light of any relevant theory or published data. Each table or figure from the Results section should be discussed. State your opinions about the value and/or limitations of the results. Describe what you might do to improve the results in future work. Describe what you learned from the results.
8. **Conclusions:** This should be a brief summary of the major findings of the project. Do not discuss results here.
9. **References:** Provide complete citations for all references.
10. **Appendices:** This section should include sample calculations illustrating the methodology. This will include data reduction schemes and uncertainty analysis calculations. Raw data that may be of use to the reader should go here.

**REPORT GRADING**

*Grading of reports is divided into the following topics:*

Writing: 20 points  
Plots: 20 points  
Numbers: 20 points  
Explanations: 30 points  
Appendices: 10 points

*Keep the following things in mind as you grade the reports:*

**WRITING**

\_\_\_\_\_ [out of 20]

Are sentences well written and clear?  
Good section headings for clear organization?  
Does introduction have a clear presentation of goals?  
Are all sources cited?  
Figures showing primary results should not be in appendices.  
Are figures in logical order?  
Well written and helpful intro and conclusions?  
Discussion should not be in figure captions.  
General approach explained? Assumptions stated? Equations explained?

**PLOTS**

\_\_\_\_\_ [out of 20]

Symbols and lines chosen well? Are data sets clearly distinguishable from each other?  
Units on all axis labels?  
Captions adequately detailed?

**NUMBERS**

\_\_\_\_\_ [out of 20]

Reasonable values?

**EXPLANATIONS**

\_\_\_\_\_ [out of 30]

Each figure discussed? Helpful observations made?  
Have required comparisons been made?  
Are comparisons quantified or just vague? For example, "Predictions were within 5% of actual values" versus "Predictions were good."  
Conclusions concise and helpful? Or just vague?

**APPENDICES**

\_\_\_\_\_ [out of 10]

If computer codes are included, are commented sufficiently?  
Calculations are clearly presented?  
Well organized?

**TOTAL SCORE:** \_\_\_\_\_ [out of 100]