MAE 435 Final Report Format and Requirements

Cover Sheet

Your cover sheet should include the project title and course number, all team members first and last names, and what type of report it is (final or midterm).

Table of Contents – this should include each topic and the page number it is on. Note that the introduction starts on page 1 and every page before that is i, ii, iii, etc. This can be generated using the different headings in word.

List of Figures – this should include each figure, its caption and the page number it is on.

Abstract

An abstract is a free standing summary of your report. This means that you may not make any reference to information (e.g., figures or tables) in the body of your report, and you should not have figures or tables included in the abstract. Additionally, you do not want to quote the other authors in this section because you may not refer to your references either. The abstract should be written after you have completed the report. A general guideline for writing an abstract is that each section should have one to two sentences describing it. In certain circumstances, you may want to use three to four sentences to describe your results and/or discussion. However, your abstract should not be longer than a page.

Introduction

The purpose of an introduction is to justify your project and to convince a reader that it was an important project to perform. Background information should be provided and referenced to help justify why this project is necessary. Finally, the introduction should tell the reader what the purpose/objective of the project is. The easiest way to write this is to have the background information lead to a statement that says, "…therefore, the purpose of this project was to…" You may also include a hypothesis in this section if it applies.

Background and/or Literature Review (optional)

Depending on the nature of your project, a larger literature review/background section may be necessary. In student competitions projects such as the SAE Formula Car, the SAE Mini Baja Car, the Autonomous Surface Vehicle, and the Solar Decathlon, this section should include background information about the competition history and requirements, as well as any lengthy literature review that helps to support the technical development. In non-student competitions, a review of the literature that assisted in the justification of the project and/or any technical development should be included. In some projects, this information may be more appropriate to be contained in the introduction section. For specific guidance on your project, please see Dr. Ringleb or Dr. Bawab.

Methods

This brief section should include a description of how your project was completed including design, analysis, fabrication and testing (where applicable). A reader who knows nothing about your project, but has the background of a second semester senior in mechanical engineering should be able to pick up your report and complete the experiment and/or project based on what you wrote. This includes the equations used to obtain the reported results. You may place your equations in an appendix, if they are complex, but you must refer to the appendix in this section of your report. Note that equations should be numbered and referred to just like a figure or a table.

Results

This section should include a summary of all results obtained, which refers to the tables and figures. The tables and figures should be numbered and captioned in the results section or in an appendix (e.g., sample calculations belong in an appendix). There should be no discussion or interpretation of your results in this section. Your figures should have the x- and y-axes labeled and a caption.

Discussion

The discussion should include five major components, each making up at least one paragraph. The first section restates the purpose of your project. The second part should summarize what you concluded from your results. Once you know what conclusions can be drawn from the results, you should be able to justify these conclusions by comparing your results to results that have been reported previously. The previously reported results could be values found in books, the analytical solution to a problem (if you solved something numerically or with a computer model), results reported in scientific papers, etc. The final required component of the discussion should discuss the limitations to the study (e.g., more precise instruments could have been used, temperature was not controlled for, etc.). Another component of the discussion that is not required, but is useful in research papers is to suggest the present or future implications of the results you obtained.

Conclusion

Your conclusion should tell the reader what the results told you and why your findings were (or were not) significant. This should generally be one paragraph to one page in length.

Appendices

Your reports should have appendices if any of the information that you want to include in your report is too detailed for the body of the report. Examples of this would include CAD drawings, raw data, detailed calculations, manuals for operation of what you have developed, code written for your project, etc. All appendices should be referred to in the main text, just like a figure or table would be. Figures and tables in an appendix should be labeled figure (or table) A1.1 (e.g., if this is the first figure in the first appendix). If you have questions about what belongs in an appendix, please ask your professor or TA. Your budget and your gantt chart should be an appendix.

References

The references used in your introduction and discussion (or any other part of your lab report) need to be included in a reference section. All references should follow the IEEE format. This format can be found on this web site: http://www.ieee.org/documents/ieeecitationref.pdf. Alternatively, if you are maintaining your references in an Endnote database, you Endnote will automatically format them when you enter them into the word document.

Other Requirements and tips

All figures, tables and equations must be referenced in the report.

When you mention a piece of equipment or software for the first time, you must reference who makes it and where that company is located. For example, Matlab (The MathWorks, Natick, MA), Novel Electronics (Munich, Germany), etc.

While your technical writing class probably taught you to write in the passive voice, it is more effective to write in an active voice. For example, instead of writing “has been” use “was.”

Never write in the first person (i.e, don’t say I or we).

Be concise in your writing. If you can say something in 5 words, don’t use 10.

Remember to quote other people’s work.