**ME430 Final Report Guidelines**

Last Updated May 1 2017

# General Reporting Guidelines

Report Appearance

1. Reports will be typewritten using a word processor.
2. Texts will be 1.5 or double spaced.
3. Reports will be bound (the final draft). The title page can be photocopied on the cover.
4. Page numbering shall begin with Roman numeral 'i' on the abstract and ending with the Table of Contents. Starting with the Introduction, the remaining pages will be numbered consecutively through the Appendices.

## Writing Style

1. Be consistent in your use of first or third person. Most technical literature is written in third person, but you learn in technical writing that first person is generally easier to read. Your choice here, but be consistent.
2. Avoid unnecessary complexity. Use simple words.
3. Keep the discussion as clear and succinct as possible.
4. Be very specific in your language. Use numbers whenever possible. Avoid phrases such as "..measurements were taken at various points."
5. Be consistent in your vocabulary. If necessary, clearly define terms which will be used throughout your report. For example, you may want to define system efficiency as flow power out divided by electrical power consumed for an air compressor, which may be different than other commonly defined efficiency definitions.

## Composition

1. Use paragraph structure.
2. Use "thesis-sentence/body/conclusion" structure for paragraphs whenever appropriate.
3. Individual thoughts in paragraphs should be organized.
4. Paragraphs should contain one idea.
5. Sequences of paragraphs should be organized.
6. Organization of paragraphs should be general to specific.
7. There should be no miss-spelled words.

## Equations

1. All equations should be consecutively numbered on the right hand margin.
2. Symbols should be defined immediately after they are introduced. The definition of a single mathematical symbol should remain the same throughout the report.
3. Use common symbols which appear often in the literature.
4. Cite formulas when they are taken from the technical literature.

## Figures

1. Figures should be generated by computer whenever possible. Otherwise ink sketches are acceptable.
2. Each figure shall have a caption, and will be numbered for reference in the text.
3. Page size figures will be oriented so that the top of the figure is toward the binding of the report.

## References

1. References will be listed in a single section at the end of the main body. The location of this section should be clearly identified in the Table of Contents.
2. References in the text of the report will be numbered consecutively in the order of appearance. The number can be superscripted, 1, or in brackets [1].
3. References in the listed reference section should take the form:
   * + - 1. Journals: Author(s), Title, Journal, Vol #, pages, date.
         2. Books: Author(s), Title, publisher, edition, (optional: location in book for the specific citation), date.
         3. Communications: Type of communication (usually, "private communication", telephone conversation), with whom, date.

# Contents of Report

## Title Page

Contains title, who wrote the report, when the report was submitted, to whom the report was submitted.

## Abstract

The abstract summarizes the report and should be no longer than one page. It should take the form of a one single spaced paragraph. The abstract should contain information that is as specific as possible. For example, when describing results, summarize in quantitative form. The abstract should contain:

* Objective and motivation
* Methods
* Results, with accuracy
* Conclusions

## Table of Contents

* Gives page numbers for main sections of report.
* Gives page numbers for abstract, list of tables, list of figures, and nomenclature.
* Gives page numbers for references and appendices.

## Introduction

The purpose of this section is to define the problem and objectives, and to describe the motivation for solving the problem.

* Defines the problem and states objectives. This should be done as precisely as possible.
* Describes motivation for solving the problem. This section often cites literature (if it is an extension of previous work).
* Summarize what is already known about your project from the pertinent references.

## Methods

The purpose of this section is to describe how the problem is solved.

* Describes apparatus. This includes identifying each component, explaining the function of each component, and discussing the location of each measurement point. Be specific, e.g., include model numbers, accuracy, ranges, etc.
* Outlines mathematical models. For example, an orifice may be used to measure flow rate. In this case, several measurements may be used in an equation to predict flow rate. Each equation should be cited from a source and clearly explained.
* Discusses each variable. Variables should be identified as independent or dependent. The ranges of independent variables explored in the experiment should be given discussed within the context of an experimental plan. A chart or matrix is useful in this description.
* Discusses uncertainty analysis. This section should include a description of the method used for analysis (such as root sum square), and a summary of the results of the uncertainty analysis (e.g., limiting measurements and expected accuracy of performance indices).

## Results

The purpose of this section is to communicate the results of the experiment.

* Presents results (usually performance indices measured versus independent variables) in a graphical format. Whenever possible, tables should be avoided in this section.
* Explains the significant features of each graph.
* Provides information on the uncertainty associated with the results.

## Discussion

This section is often combined with F above to comprise a “Results and Discussion” section. The purpose of this section is to explain the results as well as their significance.

* Uses knowledge of engineering science to explain results.
* Draws observations from the results. For example, you may note an optimum operating point for a machine in a particular situation. These observations will be used to draw conclusions.
* Discusses relevance of experimental uncertainty in drawing conclusions.

## Conclusions

Typically, these consist of three or four main points learned from the experiment.

* States conclusions supported by observations contained in the Discussion of Results section.
* Cites quantitative results whenever possible.
* Recommendations for future work.

## References

Contains a list of works cited in the report. You may choose any of the standard reference formats. Just be consistent with how they are used throughout the document. Depending on the standard chosen, your references will appear alphabetically by author last name, or numbered chronically.

## Appendices

These include supporting information which is too detailed to appear in the text of the report. An Appendix should be included only if it is referenced in the text of the report.

* Contents
  + Original data in tabular form.
  + Details of the experiment design.
  + Details of model derivations.
  + Operational procedures.
* Organization
  + The appendices should be organized so that the information they contain is readily accessible. They should be compiled with the same care as the main body of the report.
  + The appendices should be identified as Appendix A, Appendix B, etc.
  + Often a table of contents for the Appendices is useful.