

Capstone Design Project Final Documentation Requirements (Version 1.2)
BE-406, Dr. C. S. Tritt, Spring '10

These requirements are subject to minor revision until the documents are submitted. All reports must be bound and have clear covers. They should have 1" margins on all edges. Turn in printed copies (probably just 1, but the exact number to be specified later) and a CD. It is your responsibility to read, understand and adhere to all the following requirements.

Design (Project) Report (due Friday of week 9 (5/14))

Objective is to:

- Completely document what you accomplished.
- Provide a basis for later, follow-on work by qualified engineers.
- Communicate product design details.
- Make recommendations to "management" regarding project continuation.

Suggested Structure

- Title Page (including your names)
- Copyright Statement (details to be provided later)
- Table of Contents
- List(s) of Illustrations (Figures, Tables, etc.)

- Acknowledgement(s)
- Executive Summary (on its own page – starting with a concise problem (project objective) statement).

- Introduction and Background
 - Market Issues (including competitive products)
 - Literature Review (current technology)
 - Ethical/Safety/FDA Considerations

The Design

This is the major part of the report. Provide sufficient detail for device to actually be produced. Typically start with a general description of how your device will work and its component parts (including block diagrams). It must include complete target technical specifications. It should be a combination of text and diagrams. Describe specific component parts and how they go together. Ask yourself if someone could produce a working version of your device using the information provided in this section. If your device consists of multiple, distinct subsystems you can, and probably should, deal with them in separate subsections. In this case, you should start this section with an overview of your device and its subsystems (including a block diagram) stressing how the subsystems interact.

Production Cost & Selling Price Estimates (added 4/5/10)

Estimate the initial production cost and selling price of your device. This estimate does not have exceptionally rigorous, but should be reasonable. The first step in making this estimate is to establish the number of units to be initially produced. Use any approach you are comfortable with to do this, but be ready to defend your number. Then get price quotes or make estimates of the cost of all the components that make up your device. I will accept simply doubling the total parts cost as an estimate of the final unit device cost and doubling this again to estimate a reasonable selling price of your device.

Software Design Documentation (as needed, no code)

Design Verification & Validation Experiments (Possibly Multiple Sections)

Specific safety and/or human subject issues

Materials and Methods

Results

Discussion

Conclusions and/or Recommendations (relative to specifications)

Conclusions and Recommendations (ending with a final Go/No Go statement)

References (a.k.a., Bibliography or List of Sources Cited)

Appendices (Designated with numbers or letters and titles. May include manufactures' literature, raw data, source code, etc. Discuss putting parts of this on only CD with Dr. Tritt. All material must be specifically referred to in body of report. Note that you can refer to materials in your DHR without including these items as Appendices to your report.

Details regarding source citations, line spacing, type face and figure captions: In the body of your report, cite your sources by author and year (for example, (Tritt, 2009)). Arrange entries in your bibliography alphabetically by author. Only cited sources should be included in your bibliography. All entries must include a year. Single space your document. Use a modern *sans serif* type face like Calibri (the current Word default) for the body of your report. All figures (and tables) must be numbered and have meaningful captions. All figures and tables in the body of your report must be individually and specifically referred to. See MSOE's undergraduate style guide (http://www.msoe.edu/library/docs/undergraduate_style_guide_august_2005.pdf) and the Purdue On-line Writing Laboratory (<http://owl.english.purdue.edu/>) for more information.

Other Required Documentation

Poster (Due Friday of week 9 (5/14))

36" by 30" (Same size as EE posters).

Use superscript numbers to refer to sources and list them in the bibliography in order of appearance.

Include a picture of your team in professional attire.

User Manual (Due Friday of week 9 (5/14))

For non-technical users – include only essential technical details.

Focus on tasks the users will want to complete.

Start with device setup, calibration, etc.

Include plenty of illustrations and step-by-step instructions.

Abbreviated Maintenance or Services Manual (Due Friday of week 9 (5/14))

For technically literate service technicians.

Table of Contents should list all tasks you believe should be included in a real manual.

Include details on only 2 or 3 common tasks in this manual.

Include complete background and schematics sections.

Other Suggested Style Guides

Manuscript (Mechanical) Style Issues (follow the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (available at <http://www.mja.com.au/public/information/uniform.html>). This source provides a concise list of examples of source citations using the U.S. National Library of Medicine *Index Medicus* format (<http://www.nlm.nih.gov/>).

The IEEE Computer Society maintains a useful style guide at <http://www.computer.org/portal/web/publications/styleguide>. In particular, they have an extensive alphabetical list of common acronyms with a notation (*) indicating the ones that are so common that they need not be spelled out on first use.

Math Style Guide: “The Handbook of Writing for the Mathematical Sciences, 2nd ed, 1998.” Published by SIAM (the Society for Industrial and Applied Mathematics), this handbook provides some helpful information about math typography and other stylistic matters.