

ME349

Team Design Projects

The Senior Design Project

The deliverables for the Senior Design project will include:

- The final report with all inclusions given below
- The oral presentation
- The computer-based assembly model

Final Report Format (*NOTE: the following provides a structures not an absolute*)

The report should be formatted as follows:

1. Section headings should be capitalized and underlined with 12-point font. Use 12 point Times font for the body of the text.
2. Body of the report should be single spaced 11-point font.
3. Top, right-hand, and bottom margins should be 1".
4. Left-hand margin should be 1½".
5. Each sheet (except the title page) should have a page number that is centered.
6. The report including appendices should be bound. Drawings larger than B size can be left unbound.
7. Table, figures, photographs, graphs, etc. must be identified with a caption.
8. References should be identified in the text with bracketed numbers. For example [1].
9. All engineering drawings should be prepared using 3-dimensional modeling.

Design Report Contents

The formal report should include:

Cover Page:

- Title
- Team members
- Class (course #, university, department, instructors)
- Date

Table of Contents:

A single page identifying each section of the report as well as appendices.

List of Figures

Each figure should have a figure number and title, placed below the figure. Figures appearing within the body of your report should be consecutively numbered, and should appear as soon as is convenient after the figure is first mentioned. Do not insert large gaps or blanks in the text.

List of Tables

Each table should have a table number and title placed above the table. Short tables should be placed within the text as near as possible to where they are needed, and not put on a separate page. If possible, two short tables can be put on the same page. Large tables may need to go on a separate page. Table pages should also be numbered and should appear as soon as is convenient after the table is first mentioned in the text.

Abstract

No more than one page in length. The abstract summarizes the project including the problem, objective, procedure, and outcomes. An abstract is written to stand alone, without jargon or reference to figures and tables in the report body. Note that an abstract emphasizes what was accomplished and is not the same as a project description. A reader should be able to read this single page and understand the scope and results of the project.

Introduction

The introduction should be a complete description of the project that defines and explains the problem, purpose, objectives, assumptions, historical background, and general make-up of the report.

Project description (why you are doing it?)
Statement of Requirements
Definition of where / how the design will be used
Deliverables

Body: Description of design

Specification / Executive Summary
Justification of your design choice
Comparison to previous/other designs
Assumptions
Design
Design process
Analysis
Description of fabrication process

Testing/Evaluation
Cost Analysis/Projections
Users/Maintenance/Operation Information

Professional and Ethical Component: Safety and Liability

A professional and ethical responsibility exists to alert the sponsor of the project of any potential safety, environmental, or other impact on society of your design. Possible impacts and remedies should be described.

Professional and Ethical Component: Acknowledgements

A professional responsibility exists to properly acknowledge all sources of ideas, work, and material that have contributed to the design project. These acknowledgments should be incorporated in the report at the point of reference, and again in the acknowledgement/references section.

Include references for all significant sources of information, such as textbooks, scientific papers, manufacturers' publications, etc. In some cases a list of special sources may be appropriate, such as web sites, systems used for patent searches, etc.

Conclusion/Recommendations

Conclusions: Summarize the conclusions obtained from your work, and relate them to the project goals and objectives. Be specific. It is often helpful to present conclusions as a numbered list. Also, when possible, quantify the dollars saved, strength gained, number of parts reduced, and so on. (There should be nothing new here; all conclusions should be drawn from information presented in previous sections).

Recommendations: These are conclusions that are actions to be taken: what steps should be taken now that the project has been completed?

Appendix

Task Distribution

Drawings/layouts/parts listing

Your project should include an assembly drawing of your system. The assembly will be in full section and include a Bill of Materials (BOM). You must also include formal detail drawing of the primary manufactured components, including all relevant annotation.

List of suppliers, purchased part information

Designs considered, program/spreadsheet listings

Equations/formulas used

Calculations

Evaluation Criteria

In addition to the technical accuracy of the report, the following will be evaluated.

1. The document meets the objectives of a report in content and organization.
2. The content is specific, and solutions and problems are easy to identify.
3. Organization and format make it easy to find the relevant information.
4. Style is businesslike.
5. Format, grammar, and mechanics conform to the conventions.

Oral Presentation

Each senior design project team is expected to make an oral presentation to the instructor and the rest of the design class. This oral presentation should be professional and utilize good technical presentation techniques. Audio-visual equipment will be available for student use by prior notification of the faculty advisor. The presentation will be limited to 30 minutes followed by a 10-minute question and answer session. The presentation should be structured to include all aspects of the project so that an individual with no prior knowledge of the project (but with an engineering background) can understand its entire scope as well as the results. The presentation will be graded based upon four equal categories.

- 1) Technical content.
- 2) Structure of talk, i.e. introduction, main body, conclusion, timing.
- 3) Quality of presentation, i.e. clarity of speech, quality of diagrams, etc.
- 4) Knowledge of subject area; ability to answer questions.

CAD Assembly

Your CAD assembly model should be used for presentation purposes to demonstrate the assembly, clearances and function of your system. The CAD assembly will be evaluated subjectively for its completeness, accuracy, and usefulness in the design process.

Grading:

Design Proposal	5%
Preliminary Design Report	20%
Final Technical Report	40%
Oral Presentation	15%
CAD Assembly	10%
Miscellaneous*	10%

* Includes instructor's impression, participation in informal update meetings, etc.