CMSC 435: Software Engineering
(Dept. of Computer Science, Univ. of Maryland, College Park)
Spring 2012 Semester

Type of document: *Final Design Report*

Submitted by: *(name of student)* *on date:*
Total points: *100* *Points awarded:*

Final Design Report Template

Instructions:
Use 8.5 x 11 inch paper, 1-inch margins, 12 point fonts, and page numbers. The maximum length is 30 pages, excluding appendix. All figures and tables must be numbered, captioned in bold font, and mentioned in the main text. Appropriate citations must be included when incorporating ideas and supporting materials from publications and other sources, including web downloads.

The document must include the following sections. Suggested allocation of credit for each section is indicated in parentheses following the title.
Overall format and style (5%)
I. Cover Page and Table of Contents
    Include as appropriate: Team Name, Team Member, Course Number and
    Section, Instructor, Submission Date, TOC.

II. Signature (approval) of each team member
    Include 1 sheet that includes the printed name of the member, a concise
    statement of his/her contributions, signature of approval of the report and
    adherence to University Honor Pledge.

III. 1-page Executive Summary (5%)
    High level summary of the project goals, paths to achieve the goals, design
    considerations and choices, simulation results, implementation, validation
    and testing plans, and prototyping, as appropriate.

IV. Main Body
    A. Introduction (5%)
    Discuss the objectives of the project based upon context and end-user needs.
    Describe how the project might be used in an application.
    Review challenges faced and solutions.

    B. Goals (5%)
    Describe the original project goals and design specifications, and why/how
        these goals and specifications have been modified over time, if
        appropriate.
    Briefly summarize the project goals.

C. Design Overview (10%)

Provide an overview of the design, including a block diagram, key design sub-sections, and how they relate/connect to one another. For each component, describe the function and provide quantitative specifications.

D. Theory of Operation (10%)

Formulate mathematical models based on fundamental principles to describe requirements and theory of operation for candidate solutions. Calculation or derivation details can be placed in appendix.

E. Realistic Constraints and Professional Standards (8%)

Identify and discuss at least five realistic constraints on the problem. Such constraints can include (but are not limited to) the following factors: Economic; Environmental; Social; Political; Ethical; Health and safety; Manufacturability; Sustainability; Legal; Regulatory and policy issues.

Discuss how appropriate standards have guided design choices in the project.

F. Alternative Designs and Design Choices (7%)

Describe at least three alternative designs that were considered during execution of the project.

Update the Pugh Matrix to quantify design criteria and selection. Discuss how design choices were guided by constraints and other factors.

G. Technical details for subsystems (20%)

Describe the technical details for each of the subsystems, including
- Theory of operation, if it was not already presented in the preliminary design report.
- Simulation or test results that demonstrate function and performance. Results should include parameters and conditions that are sufficient to allow the data to be reproduced. Each axis and trace should be intelligible and clearly labeled. Explain what the figure is intended to show, and what features of the figure demonstrate this point.
- Table of specifications and whether specifications have been satisfied.
- Identify redesign approaches based on results.
- Discussion of shortcomings in the designs from the preliminary design report.
- Error sources, including bad assumptions.

H. Technical details at systems level (5%)

Describe the technical details of the design at the system-level
- Demonstrate pairwise or system-level simulation of components to ensure that they work together and that there are no issues with interfaces between them.
- System wide redesign if novel ideas are introduced after preliminary

design execution.

I. Test plan (10%)

Test plan for completed project. Explain the criteria that will be used to assess whether the design is working properly. How will inputs be applied and outputs be measured to assess the functionality of the individual components and the overall design?

I. Project planning and management (2%)

Describe compliance to task breakdown and scheduling.

V. Conclusions (3%)

Summary of design methodologies, key creative approaches and potential impact.

VI. References (5%)

The text should cite at least two sources per team member, with at least half of the sources from peer-reviewed archival publications.

Use IEEE format for the citations and bibliography.

Appendices

Bill of Materials
Block diagram
Gantt Chart
Technical Drawings
Software Codes
Modeling Details
Others Salient Materials