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

Type of document: *Preliminary Design Report*

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

Preliminary Design Report Template

Instructions:
Use 8.5 x 11 inch paper, 1-inch margins, 12 point font, and page numbers. The maximum length is 25 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%)
> Introduce and provide context for the project.
> Identify need and end-users. Describe how the project is expected to address that need, and what the final outcome of the project is expected to be (i.e., hardware, software, design, etc.).
> Include additional background material, if needed, for a general technical audience.
> Discuss state-of-the-art, benchmarking examples or design inspiration.

B. Goals (5%)
Outline the basic challenges that must be addressed.
Briefly summarize the project goals.

C. Preliminary 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 at least qualitative
specifications.

D. Theory of Operation (20%)
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 (10%)
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.

F. Alternative Designs and Design Choices (20%)
Identify at least three alternative designs or design strategies that will be
evaluated and down-selected for as full design implementation.
Develop a Pugh Matrix to quantify design criteria and selection. Discuss how
constraints are expected to guide design choices as appropriate to the
project.

G. Professional standards (5%)
Indicate application of appropriate standards (e.g. relevant IEEE standards).

H. Project planning and management (7%)
Provide project management organization and responsibilities.
Develop a Gantt Chart to specify task breakdown and scheduling.

V. Conclusions (3%)
Concisely summarize goals and methodologies.
Describe the next steps in the project.

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 such as journal
or conference papers.
Use IEEE format for the citations and bibliography.

Appendices
        Technical Drawings
        Software Codes
        Modeling Details
        Others Salient Materials