ECE337 Phase 1 Project Proposal Guidelines

Purpose:

In industry or academia, proposals are an unavoidable step in the process of getting money, staff, and space to be able to carry out a design or research project. In the case of ECE337, it is an unavoidable step in passing the course. A proposal is used to describe what you want to do so as to persuade others to provide resources for your project. If people are giving you money and staff to develop a project, then they expect you to already have a good idea of what you want to do, how you want to do it, and what is needed in order to do it. Consequently, some of the research and design work already has to be done before you even present your proposal in order for anyone to believe it.

These sections are also similar to what you might find in industry. Deviations from this format will count against you. Keep in mind also that your final report will also include much of the same information. Therefore, a good job on the proposal will save you time later. **Be warned! You have to make several design decisions in order to write a reasonable proposal. This should become apparent as you read the requirements for this proposal.** In some cases, you may feel like you don't know enough to make the necessary design decisions. You might have to guess or make some arbitrary choices. That is ok. Even if you are confident of what you are going to do, you will probably have to make some corrections as you get into the details of the design.

0.   Title page (1 page)

This should contain the title of your project, the words "Preliminary Proposal Draft", your name, your partners' names, the name of this class (ECE337), your lab day and time, the date the report is due, and your TA's name. At the bottom, all people who prepared the report should place their signatures indicating that they have reviewed the entire report and approve of its contents. Everything should be centered and neatly spaced on a single page.

1.   Executive Summary (from 1/2 to 1 page)

The executive summary is the first part of your proposal. Company executives or prospective investors will look at this to decide whether or not to bother with the rest of the proposal. **Assume that the reader of the executive summary is an executive or investor.** The reader of the rest of the proposal would probably be someone who can evaluate the technical merits. The executive summary should be short while giving the reader some reason to want to give you resources needed for implementing the project. The summary should answer the following questions:
- What is it you want to design and build?
- Why is it important? (Is there a market for it? Will it save the company time or money?)
- What will be unique about your design that will make it important?
- Why is this design appropriate for an ASIC implementation?
- What will it take to do it?
- What is in the rest of the proposal?

2.   Design Specifications

This section describes the chip you are designing. The description should include (but is not limited to) the following sections.

The chip you specify here must be consistent with the project idea already approved by your TA or instructor (in writing, or email in the TA or instructor's possession). If the idea you are writing is different from what was approved, be sure to clear the idea first.

2.1. System Usage

2.1.1. System Usage Diagram

You need to create a super high-level block diagram that illustrates how your intended use of the design and must show what external devices will connect to your design and how they will be connected in terms of interface standards and the types of information that will be sent between them. The purpose of this diagram is to enable system builders and designers to quickly develop a basic understanding of how your design could be used in various systems, so that they can quickly decide if the design has the potential to fulfill a needed role in their system or not. Your entire design should be represented by one block in this diagram. Interfaces/connections between your design and the rest of the system should be clearly labeled. For right now you need only label the type of any chip that you will be interface with. However, you will need to choose a specific part or part family and have corresponding datasheet(s) for the Phase 3 Proposal.

2.1.2. Implemented Standards and Algorithms Overview

You must cleanly list all interfacing standards and all internally implemented standards and/or algorithms for your design in a bullet list format. Each standard's/algorithm's listing must include key requirements/chosen options such as bus frequency and address/data width(s) for interface standards and word/data block size for computational algorithms. Additionally, if a standard/algorithm has been chosen that allows for you choose subsets of it to implement for (feasibility purposes or normally) you must directly state which part(s)/subset(s) you plan to implement.

2.2.   Design Pinout

You need to identify all external input and output pins of the chip. For this purpose, include a table listing all inputs and outputs of your chip including clock, reset, power, ground, and all data signals unique to your design. Organize the table as shown below, including specifying data formats, active high/low, and timing requirements. A separate table should be used for implemented interface's pins as well as a table for all common (pwr, gnd, clk, reset, etc.) and miscellaneous pins (non-standardized pins).

Signal Name	Type In/Out/Bidir.	Number of bits	Description
RST	IN	1	Asynchronous reset for all memory elements in the design.

3.   Design Architecture (1 page)

You a required to have an architectural block diagram of your chip completed with the preliminary project proposal draft. The level of detail of the architectural block diagram should be such that it consists of high-level functional blocks, i.e. a DVI interface, SD Card Interface, Master Control Module, Memory Arbiter, etc. Draw arrows with labels to identify any essential data that has to flow from one block to another. External inputs and outputs should be consistent with the descriptions in the operational characteristics section.

4.   Format, and method of submission

Format: single spaced, 12 point fonts for text, 14 point for section labels. Margins no more than 1 inch on each side.

There will be a blackboard assignment for submitting your phase 1 project proposal. Submissions must be a single PDF including all diagrams and images.