University of California, Santa Cruz
Board of Studies in Computer Engineering

CMPE-123A
Computer Engineering Design I
Fall 2003

MW 12:30pm –1:40pm Laboratory: BE150  Class: BE 156
Instructor: Cyrus Bazeghi (cyrus@cse.ucsc.edu)
Office: BE 62B Office Hours: MWF 11am – 12pm and by arrangement
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Prerequisites for Computer Engineering Majors:
CE185 (can be taking concurrently), CE121, and the CE core exam.

Prerequisites for Electrical Engineering Majors:
CE185 (can be taking concurrently), and EE171.

Description:
This is the first of a two-course sequence serving as the design capstone of the engineering departments. It is a challenging and fitting opportunity for students to use their skills and knowledge obtained in previous courses in a practical, systems level engineering project. A major aim of this course is to foster interdisciplinary teamwork and thus it is a requirement that students work in groups, the goal being that students will come to realize the incredible potential of a team of motivated engineers. The class will be modeled after a startup company, with the instructor serving as the VP of engineering. Each group will be treated as a design team and students will learn about effective teamwork and project management. Experience will be gained from the entire cycle of engineering design from the concept, the specification, experimental prototyping and verification, up to the final design and implementation (the last two being done primarily in the second course).

Each team will give a collective oral presentation of their project at the end of the course and submit a formal report including a technical specification and discussion of their experiences over the quarter. Information such as schedule delays and changes to failures and challenges should be covered. A daily journal in a lab book is also required; it should contain what you worked on and any insights you have learned. More information on the lab notebook requirements will be discussed in class.

The class meeting will be an open forum for lecture, discussion, problem resolution, and group one-on-ones. I will expect every member of a team to have a general understanding of the entire project and to have thorough knowledge of their portion of the design. You may be asked to present findings or briefly lecture on topics for which you have become an expert or especially informed.

Students are encouraged to ask faculty members for project ideas and for support. Students are also encouraged to contact other departments for true interdisciplinary projects ideas.

Textbook:
“Teamwork and Project Management” by Karl A. Smith. Available at the bookstore.

Evaluation:
Your performance in this class will be based on the following general areas:

1. Ability to apply the fundamentals of system design to a particular project while working as part of a group, including:
   a. Exercising judgment and independence in creating a project with clearly defined specifications and goals.
   b. Creating a realistic schedule with target milestones.
c. Doing independent research to determine viable components, showing the ability to comprehend data sheets and application notes.
d. Participating in peer group design reviews of each person’s work.

2. Demonstrating independence and self-motivation in mastering new topics necessary to successfully complete project, including new EDA and CAD tools.

3. Demonstrating technical competence in related hands-on experimental laboratory work. This would include competence using all applicable laboratory equipment such as oscilloscopes, spectrum analyzers, RF network analyzers, DVM, waveform generators, etc.

4. Formal group presentation and written report with technical specification of project.

**Laboratory:**
To accomplish the task of coming up with a project, evaluating its feasibility, designing and prototyping it students are being given the privilege of unlimited and unsupervised lab access. This includes the use of laboratory equipment (computers, printers, scopes, etc) and resources (web-access, email, ftp, etc) in a responsible and respectful manner. Any abuse of equipment or misuse of resources will result in the immediate loss of these privileges, and may result in disciplinary action by the University. Lab support will be provided by the Baskin Engineering Lab Support Group (bels@soe.ucsc.edu). Please report immediately any problems pertaining to the laboratory to them, they are also an excellent resource for parts. It is expected that you will keep the lab clean and orderly and respect other group’s equipment.

**Laboratory notebook:**
In keeping with industry practices students will be required to purchase a hardbound engineering notebook. You will be required to keep a daily log of all activities. Details of proper lab notebook usage will be covered in class.

You can order a lab notebook from:

[http://www.bookfactory.com/lab010.html](http://www.bookfactory.com/lab010.html)

I would suggest the smaller of the two. If you find another lab notebook that you would like to use please get it approved by the instructor before purchasing it.