University of California, Santa Cruz  
Jack Baskin School of Engineering  
CMPE/EE-123A Winter 2004  
Capstone Design Project I

Lecture Room: B.E 165 (MWF 2:00 – 3:10pm)  
Laboratory Room: BE 161  
Instructors: S.C. Petersen (petersen@soe.ucsc.edu), P.E. Mantey (mantey@soe.ucsc.edu)  
Office: A.S.62A (x9-4782) (831-335-3115 off campus)

Course Description:

This is the first class of a capstone design course spread over two quarters meant to enable students to engage a worthy engineering design project. An aim of this class is to foster interdisciplinary teamwork requiring that students learn to work effectively in groups and thereby perceive the potential for extraordinary work such efforts are capable of. Working as collaborative teams, students will learn about effective teamwork and project management while gaining experience in the entire cycle of engineering design from concept, specification, experimental prototype verification, final design and implementation. Each group will give a collective oral presentation of their work at the end of the course.

Our class meetings will be seminar-based, where we will meet with each team to discuss problems, gauge progress etc. You may also be asked to present findings or briefly lecture on topics for which you have become expert or especially informed and would be useful to your colleagues.

References:

Lecture and web handouts  
Karl A. Smith, Project Management and Teamwork, McGraw Hill 200

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 selected for the course while working as part of a group, including:
   a. exercising judgement and independence in framing a viable design project as a set of clearly defined specifications;
   b. defining a reasonable time-line with target milestones;
   c. ability to do independent research and assess suitable resources like application notes, data sheets, etc.;
   d. participate in peer-group design reviews of one's own work as well as others; i.e. keep technical engineering notes consistent with current industrial practice;
   f. delivering satisfactory interactive oral presentations before the class;

2. Demonstrate independence in self-motivated learning to master new topics necessary to successfully complete a project's design or devise feasibility experiments.

3. Demonstrate technical competence in related hands-on experimental laboratory work. This would include competence using all applicable laboratory test equipment for prototype concept evaluations, such as the oscilloscope; spectrum analyzer, RF network analyzer, noise- figure meter; DVM; arbitrary waveform generator; etc.

4. Demonstrate technical competence in mastering necessary EDA and CAD tools required for specific designs.

5. Formal group presentation and written report.
Laboratory:

Please note that unlimited and unsupervised use of laboratory equipment (computers, printers etc.) and resources (web-access, email, ftp etc.) is a privilege not a right. 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. Note too that all food and beverages are expressly prohibited in lab, and the door should never be left propped open. We enjoy competent and professional support from the Baskin Engineering Lab Support Group (bels@soe.ucsc.edu). Immediately report any problems pertaining to the laboratory to them; they can also be consulted for parts you may need.

Please keep the lab clean and orderly!