

Capstone Electrical Engineering Design Projects
Electrical and Computer Engineering Department
University of California, Santa Barbara

Class Meeting Time:

Time: Mon/Wed 2:00-3:15pm
Place: PHELPS 1431
Instructor: Dr. Ilan Ben-Yaacov, ESB room 3221D, ext 5295, ilan@engineering.ucsb.edu
Office Hours: Wednesday 10:00-11:00am in ESB room 3221D or by appointment

Course Description and Objectives:

In this course, students work in teams under the direction of a faculty advisor to tackle a challenging engineering design project. Engineering communication, such as reports and oral presentations are covered. The course emphasizes practical, hands-on experience, and integrates analytical and design skills. Students will develop skills in design problem solving, creative thinking, project planning, and teamwork, as well as developing technical and practical skills in the particular area(s) of research covered by their project.

Topics Covered:

- Development of a Project Plan: Gantt Charts
- Development of Concepts and Designs
- Design Research and Development
- Prototyping
- Design Testing, Analysis, and Evaluation
- Engineering Reporting: Design Reviews, Presentations, and Technical Reports
- Engineering Project Management
- Intellectual Property and Lab Notebooks

Course Format:

In ECE 188, students design, build, and present a challenging engineering design project. ECE 188A primarily focuses on the initial design and development stage. After choosing a project, each group will begin researching the critical elements of their project, develop a preliminary project plan with a set of preliminary design specifications, and give a short preliminary presentation to the class describing their projects. Students then continue to refine their plan and begin prototyping and design testing. At the end of the quarter, each group will finalize their project plan and product design specifications, and give a 30 minute presentation detailing the (1) Project Plan, (2) Product Design Specifications, (3) Budget, (4) Prototyping and Testing, and (5) Division of Labor (individual responsibilities). Grades will be assigned approximately as follows:

- Project Plan / Design Specifications: 25% of Fall grade
- Prototyping and Testing: 15% of Fall grade
- Final Presentations: 40% of Fall grade
- Lab Notebook: 10% of Fall grade
- Individual Contribution: 10% of Fall grade

DAY / DATE	TOPIC / ACTIVITY	TASK / ASSIGNMENT
Week 1		
Mon 9/27	Project Introductions	Review projects
Wed 9/29	Project Requests	Form teams
Week 2		
Wed 10/6	Course Objectives Lab notebooks	Projects/teams defined
Week 3		
Wed 10/13	Project Planning: Gantt Charts Design Requirements/Specifications	Projects/teams finalized
Week 4		
Wed 10/20	Prototyping Final Presentation Overview	Group meetings with instructor and faculty advisers
Week 5		
Wed 10/27	Prelim Project Plan / Design Specs	Group meetings with instructor and faculty advisers
Week 6		
Wed 11/3	Corporate project design, development, and management.	
Week 7		
Wed 11/10	Patents and Intellectual Property	Preliminary Project Plan and Preliminary Design Specs due Nov 12 by 5:00pm
Week 8		
Wed 11/17	Preliminary Presentations	
Week 9		
Wed 11/24	No class (Thanksgiving week)	
Week 10		
Wed 12/1	Project Presentations Additional days/times TBD (if necessary)	Revised Project Plan, Design Specs, Notebooks, and Group/Individual Evaluations due Dec 3 by 5:00pm