

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

**Class Meeting Time:**

**Time:** Mon/Wed 2:00-2:50pm  
**Place:** PHELPS 1431  
**Instructor:** Dr. Ilan Ben-Yaacov, ESB room 3221D, ext 5295, [ilan@engineering.ucsb.edu](mailto:ilan@engineering.ucsb.edu)  
**Office Hours:** Wednesday 11:30am-1:30pm 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

<b>DAY / DATE</b>	<b>TOPIC / ACTIVITY</b>	<b>TASK / ASSIGNMENT</b>
<b>Week 1</b>		
Mon 9/26	Project Introductions	Review projects
Wed 9/28	Project Requests	Form teams
<b>Week 2</b>		
Wed 10/5	Course Objectives Lab notebooks	Projects/teams finalized
<b>Week 3</b>		
Wed 10/12	Project Planning: Gantt Charts Design Requirements/Specifications	Begin establishing design and specs
<b>Week 4</b>		
Wed 10/19	Prototyping Prelim Project Plan / Design Specs	Group meetings with instructor and faculty advisers
<b>Week 5</b>		
Wed 10/26	Final Presentation Overview	Group meetings with instructor and faculty advisers
<b>Week 6</b>		
Wed 11/2	Corporate project design, development, and management.	
<b>Week 7</b>		
Wed 11/9	Patents and Intellectual Property	Preliminary Project Plan and Preliminary Design Specs due Nov 11 by 5:00pm
<b>Week 8</b>		
Wed 11/16	Preliminary Presentations	
<b>Week 9</b>		
Wed 11/23	No class (Thanksgiving week)	
<b>Week 10</b>		
Wed 11/30	<b>Project Presentations</b> Additional days/times TBD (if necessary)	Revised Project Plan, Design Specs, Notebooks, and Group/Individual Evaluations due Dec 5 by 5:00pm