

**EECS 189A ELECTRICAL ENGINEERING SENIOR DESIGN PROJECT**  
(Required for EE)

**Catalog Data:** **EECS 189A Electrical Engineering Senior Design Project (Credit Units: 2)** Design projects for seniors in the Electrical Engineering program. Each project is supervised by a faculty member. Prerequisites: EECS170C, EECS150A, EECS180, and senior standing. EECS189A: In-Progress grading. Formerly ECE189A. (Design units: 2)

**Textbook:**

**References:**

**Coordinator:** Michael M. Green

**Course Objectives:**

- To experience the initial phases of creating a new engineering design.
- To learn the details and documentation of each step in the design process and to communicate these steps effectively to others.
- To gain skills in design, building, and testing of a new prototype.
- To assimilate and find practical use for the knowledge from previous electrical engineering courses.
- To learn to work in teams and subgroups.

**Course Outcomes:**

Students will:

- Identify a problem and formulate a strategy to solve it in a systematic fashion with given constraints of time, budget and other resources.
- Generate necessary project reports such as project proposal, project timeline, design reports, final reports, etc.
- Make necessary presentations for critical review of their work.
- Design, build and test a system or subsystem to meet given specifications.
- Apply the skills they have learned in other courses as well as use modern analysis and design tools in the design of systems and subsystems.
- Work in teams and subgroups.
- Consider the economic, environmental, social, political, ethical, health and safety impact of their final product, as well as study its manufacturability, and sustainability.

**Prerequisites By Topic:**

- Understanding of topics in microelectronics, including device characteristics, simple analog and digital subcircuits, and large-scale multi-transistor analog and mixed-signal electronic systems.
- Understanding of mathematical foundations of discrete-time and continuous-time signals and systems.
- Understanding of basic engineering electromagnetics, including electromagnetic fields, Maxwell's equations, and plane wave propagation, reflection, & transmission.

**Lecture Topics:**

**Class Schedule:** Meets for 6 hours of lab each week for 10 weeks.

**Computer Usage:** PSPICE, AUTOCAD, MATLAB, ADS available on either PC or UNIX.

**Laboratory Projects:** As specified for individual projects.

**Professional Component:** This is part of the capstone design experience for seniors in the Electrical Engineering program. Student enrolled in this course will use their cumulative knowledge gained from other Electrical Engineering courses to design their team projects.

**Relationship to Program Outcomes:** This course relates to Program Outcomes a, b, c, d, e, f, g, h, i, j, and k as stated at:

<http://undergraduate.eng.uci.edu/degreeprograms/electrical/mission>

**Design Content Description**

*Approach:* As specified for individual projects.

*Lectures:* 0%

*Laboratory Portion:* 100%

**Grading Criteria:**

In-Progress grading. Final course grade is based on performance in both EECS189A and EECS189B. Final cumulative grade for this 2-quarter sequence is given in EECS189B.

Efficacy of design proposal and simulation results during first quarter (EECS189A):

20%

Simulation results (EECS189A):

20%

Testing/measurement of design (EECS189B)

50%

Final oral presentation(EECS189B)

10%

100%

**Estimated ABET Category Content:**

Mathematics and Basic Science: 0 credit units or 0%

Engineering Science: 0 credit units or 0%

Engineering Design: 2 credit units or 100%

**Prepared by:** Michael M. Green **Date:** July 2007

**CEP Approved:** Fall 2004