



Syllabus for ENGR190-01: Capstone Design

Spring 2017

Instructor: Ashlie Martini

Designation:	Capstone Design
Catalog Description:	Students will work on multidisciplinary teams on selected and approved design projects, practice design methodology, complete project feasibility study and preliminary design, including optimization, product reliability and liability, economics, and application of engineering codes. Final report and presentation.
Text Books and Other Required Materials:	All materials and tools except the design notebooks will be provided to the students by the School of Engineering.
Course Objectives/ Student Learning Outcomes:	<p>Course Objectives:</p> <p>The course provides an opportunity on a hands-on project that requires application of analytical and design skills acquired throughout the entire undergraduate engineering curriculum</p> <p>The main objectives are (1) the demonstration of engineering knowledge, problem solving, project planning, and teamwork skills by means of working on a challenging design and implementation project; (2) test presentation and report-writing skills combined with ethical behavior of the individuals in each team.</p> <p>Course Learning Outcomes:</p> <p>Upon completion of the course, students will be able to:</p> <ol style="list-style-type: none">1) Design an engineering solution to a challenging contemporary problem, within realistic constraints and utilizing appropriate standards.2) Use project management and teamwork skills to deliver a solution within time constraints.3) Deliver a professional presentation appropriate to a broad audience.4) Demonstrate effective written technical communication skills through final project reports. <p>Relationship to Program Learning Outcomes:</p> <p>The capstone design project is an opportunity to demonstrate mastery of the engineering curriculum; therefore, the course relates to all a-k program learning outcomes:</p> <ol style="list-style-type: none">(a) An ability to apply knowledge of mathematics, science, and engineering(b) An ability to design and conduct experiments, as well as to analyze and interpret data(c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability(d) An ability to function on multidisciplinary teams(e) An ability to identify, formulate, and solve engineering problems(f) An understanding of professional and ethical responsibility

- (g) An ability to communicate effectively
- (h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) A recognition of the need for, and an ability to engage in life-long learning
- (j) A knowledge of contemporary issues
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Learning

Outcomes:

Prerequisites by Topic: Depends on major.

Course Policies:

Academic Dishonesty Statement:

a. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work.

b. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action.

c. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

Disability Statement: Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.

Topics:

Class/laboratory Schedule: Lecture Wednesday 4:30-5:20, Lab scheduled per team

Midterm/Final Exam Schedule: N/A

Course Calendar: TBD

Professional Component: Engineering Science 25%;
Engineering Experimentation: 25%;
Engineering Design: 50%

Assessment/Grading Policy: Grades will be based on individual performance and contribution to the project, and will be distributed as follows:
Preliminary Design Review (10%)
Critical Design Review (10%)

Final Design Review (10%)
Final Poster (10%)
Final Report (20%)
Prototype/Simulation (10%)
Design Notebooks (5%)
Teamwork and Participation (25%)

Coordinator:

Ashlie Martini

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Office Hours:

N/A