

ECE 4900: Capstone Design II

Course Description

Application of design principles and methodology to conceptual and detailed technical design, implementation, and testing of a capstone project.

Prior Course Number: 682

Transcript Abbreviation: Capstone Design 2

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad

Student Ranks: Senior

Course Offerings: Autumn, Spring

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 3.0

Repeatable: No

Time Distribution: 3.0 hr Rec, 3.0 hr Lab

Expected out-of-class hours per week: 3.0

Graded Component: Laboratory

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: Prereq: Option 1: 2560 (265), 3010 (312), 3020 (323), 3030 (432), 3040 (341), 3050 (352), 3090 (582), and 3900 and Sr standing, and enrollment in Electrical Engineering Program of Study (EES subplan) of the ECE major. Prereq or concur: 3080 (481). Option 2: 3020 (323), 3090 (582), 3561 (561), 3567 (567), 3900, CSE 2231 (321), and 2451, and Sr standing, and enrollment in Computer Engineering Program of Study (CES subplan). Prereq or concur: 3080 (481) and 5362 (662).

Exclusions: Not open to students with credit for 4900H (683H), 4901 (683), or 682, or Engr 4903 or 5902.01.

Cross-Listings:

Course Rationale: Existing course being revised to allow focus on design, implementation and testing aspects of capstone project with new course 3900 taken prior term.

The course is required for this unit's degrees, majors, and/or minors: Yes

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: No

Subject/CIP Code: 14.1001

Subsidy Level: Baccalaureate Course

Programs

Abbreviation	Description
CpE	Computer Engineering
EE	Electrical Engineering

General Information

The scheduled recitation time will be used for team presentations for progress reports and final project reporting; and for team meetings both with the instructor and amongst team members.

Course Goals

Demonstrate competence applying engineering design methods
Demonstrate competence in the management of a project
Demonstrate competence in a team-based environment
Demonstrate mastery in technical writing and presentation skill
Design, build, demonstrate, and report on a major project, integrating material learned
Be exposed to relevant engineering standards
Demonstrate familiarity in considering multiple realistic constraints (e.g. economic, environmental, sustainability, manufacturability, ethical, health and safety, social and political issues) while carrying out their design

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Senior project design								
Project execution, test, and analysis								
Documentation of project								

Representative Assignments

Project proposal document, with problem definition statement, requirements and systems specifications, project implementation and test plan, Gantt charts and budget estimates.
Working prototype.
Final presentation.
Final report.

Grades

Aspect	Percent
Design proposal/ planning presentation	15%
Design proposal/planning report	20%
Regular progress/status reports	15%
Preliminary and final demonstrations	15%
Final presentation	15%
Final report	20%
+/- one letter grade from team grade based on individual and teamwork assessment	0%

Representative Textbooks and Other Course Materials

Title	Author
<i>Design for Electrical and Computer Engineers: Theory, Concepts and Practice</i>	Ralph M. Ford and Chris S. Coulston

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
***	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.
***	d	An ability to function on multi-disciplinary 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 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.

Additional Notes or Comments

Added quarter equivalents of prereqs. Add 4901 to exclusions. Update press and exclusions to university format.

update prereqs to 3561 instead of 3567 for CpE 4/23/12

corrected prereq to show 5362 only required of CES subplan. 4/27/12

changed text to Ford and Coulston 3/27/13

Added ENGR 4903 to exclusions.

Update course goals, lectures, grading, and Criterion 3 outcomes 5/8/14

Correct ABET outcome f to two stars 7/2/14

Update course for program change splitting lecture content into ECE 3900 10/7/14

Added ENGR 5902.01 to exclusions. BLA 2/25/15

Removed ECE 3027 from prerequisites (temporarily) due to transition issues for the ECE program change. Need to add it back when the majority of students in the program have been required to take ECE 3027. Approved by CCAA with 3027 removed today. GJV 9/3/15

Prepared by: George Valco