

ECE 4901: Capstone Design Special

Course Description

Design principles and methodology culminating in a capstone design project. Teams of at least three arrange special projects with a faculty member.

Prior Course Number: 683

Transcript Abbreviation: Capstone Des Spec

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad

Student Ranks: Senior

Course Offerings: Autumn, Spring, May + Summer

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 3.0

Repeatable: No

Time Distribution: 3.0 hr Lec

Expected out-of-class hours per week: 6.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: Permission of department and: Option 1: 2560 (265), 3010 (312), 3020 (323), 3030 (432), 3040 (341), 3050 (352), and 3090 (582), 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), 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 4900 (682), 4900H, 683, 683H, or Engr 4903.

Cross-Listings:

Course Rationale: Existing course.

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.1001

Subsidy Level: Baccalaureate Course

Programs

Abbreviation	Description
CpE	Computer Engineering
EE	Electrical Engineering

General Information

Special capstone design class arranged between a team and a faculty member. Teams must have at least three members. Teams should prepare a proposal detailing the topic, source of supplies, and team member names, signed by all team members, approved by the faculty member. The signed proposal should be submitted to the Associate Chair for approval, no later than the end of the first week of the quarter.

Course Goals

Be competent with the principles and issues of engineering design
Demonstrate competence in the management of a project
Demonstrate competence in a team-based environment
Demonstrate mastery in technical writing and presentation skills
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
Engineering design methodology	5.0							
Project management (Gantt charts, task breakdowns, budgets and resources, etc.)	4.0							
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
Initial preparation assignments	10%
Design proposal/ planning presentation	10%
Design proposal/planning report	15%
Regular progress/status reports	15%
Preliminary and final demonstrations	15%
Final presentation	15%
Final report	20%
Plus or minus one letter grade for 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 versions of prereqs. Added 4900H to exclusions, removed 4901H (non-existent course). Put prereqs and exclusion in standard university form. Removed "permission of associate chair" because university removed it- presumably they can't enforce it.

Changed prereq 3367 to 3561 May 7, 2012

Corrected prereqs after reigstrar changed meaning 8/7/12

Added permission of instructor to prereqs 10/31/12

Change to permission of department 11/2/12

Change text to Ford and Coulston 3/27/13

Added ENGR 4903 to exclusions. 11/15/13

Rewrite course goals to reflect level of mastery 4/29/2914

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