

ECE4012 Course Syllabus

ECE4012

ECE Culminating Design Project II (0-2-6-3)

CMPE Degree

This course is Required for the CMPE degree.

EE Degree

This course is Required for the EE degree.

Lab Hours

3 supervised lab hours and 3 unsupervised lab hours

Prerequisites

ECE 4011 and ((ECE 3020 and ECE 3030) or (ECE 3025 and ECE 3072 and ECE 3084))
[all courses min C]

Corequisites

None

Catalog Description

Second semester of ECE culminating design sequence. Team project in ECE incorporating engineering standards and realistic constraints. Requires formal reports and group presentations.

Textbook(s)

Hyman, *Fundamentals of Engineering Design* (2nd edition), Prentice-Hall, 2003.(optional)

Course Outcomes

Upon successful completion of this course, students should be able to:

1. Understand how professional issues (teamwork, ethics, licensure, engineering standards, social factors, environmental factors, and economic factors) relate to the practice of engineering design.
2. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
3. Create engineering designs to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
4. Effectively communicate engineering designs with a range of audiences.
5. Exercise leadership skills.
6. Understand issues, methods and tools used in the engineering practice.
7. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
8. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
9. Acquire and apply new knowledge as needed, using appropriate learning strategies.
10. Effectively communicate engineering designs with a range of audiences.
11. Exercise leadership skills.

12. Understand issues, methods and tools used in the engineering practice.
13. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
14. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
15. Acquire and apply new knowledge as needed, using appropriate learning strategies.

Student Outcomes

In the parentheses for each Student Outcome:

"P" for primary indicates the outcome is a major focus of the entire course.

"M" for moderate indicates the outcome is the focus of at least one component of the course, but not majority of course material.

"LN" for "little to none" indicates that the course does not contribute significantly to this outcome.

1. (P) An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. (P) An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. (P) An ability to communicate effectively with a range of audiences
4. (M) An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. (P) An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. (P) An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. (P) An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Topical Outline

Working in teams, students will complete the second semester of the

1. Topics presented in the common one-hour lecture:

- a. Course overview and deliverables
- b. Safety issues with culminating design projects
- c. Senior design laboratory rules and ordering parts
- d. Laboratory notebook requirements and reporting timeline
- e. Project Final Report and Oral Presentation instructions

Topics for the scheduled weekly meeting with the team's faculty advisor

- a. Critical Review II: Revised project proposal presentation
- b. Revised Project approval & permission to begin the project
- c. On-going meetings with team's faculty advisor
- d. Project Final Presentation
- e. Project Final Report
- f. Project demonstration