Department of Electrical and Computer Engineering
ECE 4900: Senior Capstone Design

Spring 2016

Tuesday/Thursday 12:45-2:05

Classroom – Campbell 209, Lab Workspace – Dreese 761

Instructor: Dr. Christopher Ball
Office: 233 Dreese Lab
Email: ball.51@osu.edu

Text: Design for Electrical and Computer Engineers, Ford and Coulston, 2008

Prerequisite: Senior standing and … (check formal course listings)

Office Hours: (at present, subject to change)

- Tuesday 2:15 – 3:15 pm, Thursday 11:30 am – 12:30 pm
- Tuesday and Thursday during class times when no class meetings are scheduled.
- By appointment: please arrange via email.

Course Objective: To provide students with a realistic engineering design experience in which they propose, manage, and execute a design project. Key goals include:

- Understanding engineering design process
- Integrating concepts learned throughout the engineering core curriculum
- Applying modern engineering practices and standards
- Learning and using project management techniques to ensure successful project execution
- Developing verbal and oral communication skills
- Using teamwork to optimize project performance
- Performing design activities in context of realistic design constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

Assignments [Grading]:

- Individual and Team Assignments [10%]
- Design Proposal and Project Planning Presentation [10%]
- Design Proposal and Project Planning Report [15%]
- Weekly Progress and Team Meeting Reports [15%]
- Preliminary demonstration [5%]
- Final Design and Testing Presentation [15%]
- Final Design and Testing Report [20%]
- Tested Prototype Implementation and Demonstration [10%]
- Self and Team Member Evaluations (submit individually, midterm and final) [up to ± 1 letter grade]

Written assignments: due by the end of day (11:59 pm) on their scheduled due date.
Presentation files: due at the end of the day (11:59 pm) of the day before the presentation. Revised presentation files are due at the end of the following day (11:59 pm) on which the presentation is made.
Submission: Electronically through individual or team drop box on Carmen
Presentations: all team members are expected to participate (develop and present).
Late assignments: no late work will be accepted without prior arrangement.

Other Notes:

- Role of the instructor:
    - This is your design; I will not dictate a specific technical approach. Take ownership of the project and figure out how to get it done. I am available and eager to help you and mentor you, but you need to take responsibility for involving me if you need help.
    - I will want to meet with each team from time to time (see schedule). You should keep the scheduled class time free even when class is not meeting. You can also use the class time for team meetings.
- Teamwork expectations:
    - Teams are expected to schedule a regular meeting. Procure a notebook and appoint someone to document each meeting: ideas and options discussed, decisions made, progress (success and failures), etc. These notes will be the basis for your weekly progress reports.
    - I expect all team members to contribute. Sand bagging will not be tolerated. I reserve the right to promote/demote and team member(s) a full letter grade from their team's grade based on my judgment of that individual's contribution to the team effort.
- Components and supplies:
    - You may need to purchase components and supplies in order to build and test your prototype design. You should plan for a budget of approximately $500 for any additional supplies or components you might need. **ALLOW PLENTY OF TIME FOR THE UNIVERSITY TO PROCESS AND PLACE THE ORDER AND THE VENDOR TO DELIVER**. First components/modules should be ordered on or before Tuesday, March 1.
    - There are limited components available in the lab (Dreese 761). Please familiarize yourself with the resources available there as early as you can.
    - Talk to me **BEFORE** you spend out of pocket if you think you want to be reimbursed.

Disabilities Statement

Any student who feels s/he may need an accommodation based on the impact of a disability should contact the instructor privately to discuss specific needs. Please contact the OSU Office for Disability Services for assistance in verifying the need for accommodations and developing accommodation strategies.

Academic Misconduct Statement

Any student found to have engaged in academic misconduct, as set forth in the Code of Student Conduct Section 3335-23-04, Prohibited Conduct, will be subject to disciplinary action by the university. Academic misconduct is any activity that tends to compromise the academic integrity of the university, or subvert the educational process.

Student Conduct

Students are expected to abide by the provisions in the Code of Student Conduct. The University's Code of Student Conduct and Sexual Harassment Policy are available on the OSU Web page.

ECE 4900 – Spring 2016 – Calendar

Revised 01/11/2016

Week	Tuesday	Thursday
1	**January 12 Lecture** Read Chapters 1-2, App B by Thurs 1/14	**January 14 Lecture** Individual Assignment 1 Due Friday 1/15 Read Chapter 3 by Tues 1/19
2	**January 19 Lecture** Read Chapters 4 and 9 by Thurs 1/21	**January 21 Lecture** Individual Assignment 2 Due Friday 1/22 Read Chapters 5 and 6 by Tues 1/26
3	**January 26 Lecture** Team Assignment 1 Due Today 1/26 Read Chapters 10-11 by Thurs 1/28	**January 28 Lecture** Finalize project selection Read Chapter 12 by Tues 2/2
4	**February 2 Lecture** Team Assignment 2 Due Today 2/2	**February 4 No Class Meeting** Team work day
5	**February 9 No Class Meeting** Team Assignment 3 Due Today Team work day	**February 11 No Class Meeting** Team Assignment 4 due Friday 2/12 Team work day
6	**February 16 Scheduled in Classroom** Individual team meetings with instructor Weekly Progress Report 1 Due Wed 2/17	**February 18 Scheduled in Classroom** Individual team meetings with instructor
7	**February 23 Class Meeting** Design Proposal and Planning Presentations Weekly Progress Report 2 Due Wed 2/24	**February 25 Class Meeting** Design Proposal and Planning Presentations
8	**March 1 No Class Meeting** Design Proposal and Planning Report Due First parts order deadline Weekly Progress Report 3 Due Wed 3/2	**March 3 No Class Meeting** Individual/Peer Evaluations Due Fri 3/4
9	**March 8 Scheduled in Classroom** Individual team meetings with instructor Weekly Progress Report 4 Due Wed 3/9	**March 10 Scheduled in Classroom** Individual team meetings with instructor
	March 15 Spring Break	**March 17 Spring Break**
10	**March 22 Scheduled in Classroom** Individual team meetings with instructor Weekly Progress Report 5 Due Wed 3/23	**March 24 Scheduled in Classroom** Individual team meetings with instructor
11	**March 29 Scheduled in Lab** Preliminary demonstrations Weekly Progress Report 6 Due Wed 3/30	**March 31 Scheduled in Lab** Preliminary demonstrations
12	**April 5 No Class Meeting** Weekly Progress Report 7 Due Wed 4/6	**April 7 To Be Arranged** Possible team meetings with instructor
13	**April 12 No Class Meeting** Weekly Progress Report 8 Due Wed 4/13	**April 14 To Be Arranged** Possible team meetings with instructor
14	**April 19 Class Meeting** Final Presentations	**April 21 Class Meeting** Final Presentations
	April 26 Class Meeting Final Project Demonstrations	

Exam Week	**Thurs-Fri April 28-29 To Be Arranged** Final Project Demonstrations	**Mon-Tues May 2-3 To Be Arranged** Final Project Demonstrations

Final Exam Period (April 27 – May 3)

Final report Due: Friday, April 29 (11:59 pm)

Individual/Peer Evaluations Due: Friday, April 29 (11:59 pm)

Lectures/Topics

1. Introduction
   Design Process Overview
   Syllabus Review
   Design Topic Ideas

2. Design Process Overview (Chapter 1)
   Needs Identification (Chapter 2)

3. Requirements Specification (Chapter 3)

4. Design Concept Generation (Chapter 4)
   Teamwork (Chapter 9)

5. System Design (Chapters 5-6)
   Components and Modules

6. Project Management (Chapter 10-11)

7. Technical Reports and Presentations (Chapter 12)