ECE443
SENIOR DESIGN PROJECT

Term: Spring 2010
Section: 001
Time: W 4:00 – 5:50 pm
Location: Cord 1109
Grading: as listed below

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office hours: 1-3pm Wed., or by appointment

COURSE OVERVIEW

ECE441/2/3 is the Electrical Engineering capstone design sequence. This three-course sequence provides practical experience in new product development and project management through the design, manufacturing, and testing of a new product or process. Course topics include Project Planning and Scheduling, Marketing and Quality Functional Deployment, and Product Development. Specifically the sequence consists of specifying a complete paper design by the end of ECE441, construction of a prototype (including design iteration) during ECE442, and presentation of the completed refined project in ECE443. The sequence must be taken in consecutive terms. While attendance of organizational lectures and seminars is mandatory, the majority of the work in this sequence occurs outside of class. Students should expect to spend approximately 240 hours of total time on the project per student.

As well as being the department’s capstone sequence, ECE441/2/3 is also Electrical Engineering’s designated writing-intensive (WIC) sequence. As such, students enrolled in this sequence complete a variety of formal written and oral assignments that support the design process and further their engineering communications skills. In completing these assignments, ECE441/2/3 students are expected to review and respond to one another’s writing, revise individually and collaboratively produced drafts, and use informal writing techniques to explore and solve engineering design problems.

It is important to remember that success in this course is your responsibility. Do not depend on the faculty advisor or sponsor mentor to keep your project on schedule. Advisors and mentors will support and guide you in completing your project successfully, but you must take the initiative and seek out their help. A successful project is worth your effort. It gives a tangible example of your capabilities to potential employers and can lead to valuable references for your resume.

COURSE LEARNING OUTCOMES

At the completion of the courses, students will be able to perform the following tasks:

1. Plan, schedule, and carry out an engineering design project.
2. Develop and implement an electrical system using effective design/project techniques.
3. Design and implement test plans and evaluate results.
4. Individually produce written reports that effectively communicate project information to their target audience(s)—i.e., that are rhetorically appropriate for these audiences and follow disciplinary conventions of usage, vocabulary, format, and citation.
5. Participate effectively in the peer review process.
6. Prepare and present formal project-management reviews and other oral presentations.

ABET OUTCOMES

1. Record technical results and measure progress. (ABET outcomes d, g)
2. Complete a significant ECE project. (ABET outcomes a, b, c, d, e, g, k, m)
3. Generate Operational and Technical Documentation for an ECE project. (ABET outcomes a, c, g)
4. Present project information succinctly to a technically aware audience. (ABET outcomes a, f, g)
MAJOR ASSIGNMENTS AND PORTION OF COURSE GRADE (1000 POINTS TOTAL)

LATE WORK POLICY
All late work will receive no credit. Only pre-arranged excuses will be accepted.

BIWEEKLY MEETINGS (SCALAR) – INDIVIDUAL GRADE
Submitted during special time
During weeks 22, 24, and 26 of the term, each group will meet with the teaching assistants. The meeting will be 30 minutes in length. During this meeting a to-do list will be created and students will assign tasks from this list. Points are assigned during the following meeting. Points are based upon the number of tasks completed, if the tasks were entered into BeaverSource, if each student brings a list of tasks to the meeting, and if the completion of the tasks was in the spirit of the task. These points are individually assigned.

The week 26 meeting will be your opportunity to present your final system for grading according to the Pre-Expo review assignment.

The final percentage of these meetings for each person will be multiplied by the score the group receives on its Pre-Expo review. This will be the maximum points each person can receive for the Pre-Expo review.

PROJECT IMPROVEMENTS (50 POINTS) – GROUP GRADE
Done by Friday of Week 21
Your group will be asked to come up with 1 to 3 additional minimum system requirements. Your group will also be asked to distribute 30 points between the requirements. Your group needs to have posted these new requirements to the projects BeaverSource page by Friday of Week 21 at 5pm. Both the customer and engineering requirement need to be completed. The course instructor will review and approve these improvements. Points are awarded for successful submission and how specific the engineering requirements are.

PRE-EXPO REVIEW (400 points) – GROUP/INDIVIDUAL GRADE
The Pre-Expo project review is conducted with your team members and one or more members of the ECE senior design instructional team. You will be reviewed on your personal and group progress on the project. By the Pre-Expo your group should have completed designing and building every your design including testing and BeaverSource must be updated. Additional requirements must also be tested and included. Electronic copies of all important datasheets must be on BeaverSource by the Pre-Expo review meeting week 26. They should be linked from each block that uses the datasheet. Datasheets for each silicon or electro-mechanical part must be included. Any ‘special’ components not covered by this statement must also have datasheets included.

Each group will be expected to meet during the same time as they would meet with TAs for Biweekly meetings. All of the meeting will be in DB211. Please come ready to demonstrate any tests noted as successful on BeaverSource.

The final score received by the group is scaled by each individual’s performance in Biweekly meetings. This scaled score is what will be received for this assignment.

DESIGN EXPOSITION (300 Points) - Group
Unless prohibited by the project sponsor, all groups are required to participate in the COE Design Exposition held during spring term. Students are to create posters, display their functional prototype, and prepare other supporting material to present and explain their project to fellow students, OSU faculty, industrial representatives, and the general public. The expo is Friday, May 14th from 11am-5pm.

- Contact Card: A business sized card that contains all members names and contact emails. Additionally, the project website, sponsor, and a logo should be included. Your contact card is due via BeaverSource and should be linked to Section 9 Expo Materials, on Monday @ 5pm of Week 27. You are responsible for printing your own contact cards for the Expo.
- Poster: A minimum format poster template will be provided. Up to 30 points extra credit may be provided for posters/displays that demonstrate an exceptional effort. Your poster is due via the TEACH interface on Monday @ 5pm of Week 26 and must be posted to BeaverSource and should be linked to Section 9 Expo Materials. Posters must be in either MS PowerPoint or Adobe PDF format.
- Brochures: A minimum format brochure template will be provided. Up to 30 points extra credit may be provided for brochures that demonstrate an exceptional effort. Your brochure is due via BeaverSource and
should be linked to Section 9 Expo Materials, on Monday @ 5pm of Week 27. Brochures must be in either MS PowerPoint or Adobe PDF format. You are responsible for printing your own brochures for the Expo.

- Attendance: Each member of the group should plan to station the booth for at least two hours on the day of the event and the booth may not be left unattended. If the booth is ever unattended, it will reduce the score for the individuals assigned for that time by 50 points. A printed schedule is due to the instructor the day before the Expo @ 5pm.

- Trade Show Goodies: It is not required, but recommended you have some ‘Trade show goodies’ at your booth. This creates a more memorable experience for possible employers. Any ‘candy type’ goodies are due to the instructor the day before the expo.

**FINAL PRESENTATION (150 Points) - GROUP**
The presentations will be a 15 minute presentation with a prototype demonstration followed by questions. Expected time is 25 minutes for each group. The ECE senior design instructional staff will be the evaluators of these presentations. Your entire group will be required to stay for the entire session. **The presentations will be held at special times during week 28.**

**FINAL PEER REVIEWS (100 Points) - INDIVIDUAL**
Copies to Instructor (hard copy)

All group members will individually prepare a “peer review.” In these reviews, students will reflect on their and their peers’ work. Specific topics to be addressed in this peer review will be provided. Due Monday @ 5PM of week 28.

**DB211 Lab Policies**

**Clean-up:**
As needed, the graduate TAs will come by the lab at 1pm on Monday’s to clean up the lab. Any materials left on a desk not currently occupied will be gently placed into a large box and left near the main door. Exempt items include laptops and appliances. So that equipment does not become relocated and misplaced, include a note with your name and contact information for all materials. Loose chips, half empty beverages and the like will not be spared.

Please be sure that you have removed anything of value prior to **Friday June 13th @ 5PM**. The lab will be cleaned the following day and anything remaining not a permanent part of the lab will be removed.

**Be Considerate:**
We all need to share the room. Please be considerate. Use headphones and shower as to avoid interpersonal conflicts. Do not leave your materials spread all over even if ‘you are only leaving for a few hours’ as the space maybe needed by another group.

**Tools:**
Be aware of the tools you are using and turn them off prior to leaving the lab. The tools are a shared resource, if all of the soldering iron tips become damaged due to long term heating, it hurts everyone.
Please refer to the Google™ Calendar for the course. This calendar can be found on the webpage as well at the link below. If there are any conflicts between the dates on this syllabus and the online calendar, please use the calendar dates.

http://www.google.com/calendar/embed?src=4or5p64vcegqkca3cq7399srk8%40group.calendar.google.com