ECE443
SENIOR DESIGN PROJECT

Term: Spring 2008  Instructor: Donald Heer
Section: 001  email: heer@ece.orst.edu
Time: W 4:00 – 5:50 pm  phone: x7-2978
Location: Cord 1109  office: KEC1117
Grading: as listed below  office hours: 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)

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

PROGRESS REPORTING (100 POINTS) – INDIVIDUAL GRADE
The progress reporting assignment is term long and is broken into several components. Please refer to the specific assignment for details about each component.
  - TA Meetings - (100 points total) INDIVIDUAL GRADE

PROJECT KNOWLEDGE QUIZ (200 POINTS) – INDIVIDUAL GRADING
During class week 22 of the term, each group will be given a short quiz over their project. Questions on the quiz will be derived from the material in the final design specification submitted at the end of ECE442 and information from previous TA meetings. Each group will have a different quiz, but all members of the group will have the same questions. Questions will include system level and block level information.

PROJECT TESTING/IMPROVEMENTS REVIEW (200 Points) - Group
The project testing/improvement review is to be held during week 25 and 26 of the term. Electronic copies of all schematics and important datasheets are due to your instructor by Friday of week 24 at 5pm. These files should be zipped into a single file with the name “group#.zip” Hence group 1 would submit a file called ‘1.zip’. All files included in the zip must be in PDF format. Included in this zip file should be:
  1. Datasheets – For each silicon or electro-mechanical parts a data sheet must be included. Any ‘special’ components not covered by this statement must also have datasheets included.
  2. Design Specification – A current copy of your design specification. It should be updated to match your current design, and should have the revision history updated. This is evaluated using the rubric on the webpage.
  3. Copy of Test Plan with Results – Include a copy of your groups test plan with verification of the results. The senior design team will ask for in person verification of some test during their review of your design. These files will be submitted using the TEACH interface on the college of engineering website. You will be able to submit multiple times. Only one member from each group needs to submit the group’s paperwork.

During week 25 or 26, each group should sign-up for one thirty minute time slot to demonstrate their project. Some groups may require more time and will be arranged on an individual basis. During this time, you will show your design, and be asked questions about its operation. You should be prepared to show any of the system tests that you have reported as completed. Be aware that you need a working prototype for the engineering expo on May 15th. If you must perform a destructive test on your system make sure you have the required parts to repair your system.

Desired features may only be submitted for credit if all minimum system requirements are met as per their associated system tests.

DESIGN EXPOSITION (200 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 15th 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 the TEACH interface on Monday @ 5pm of Week 26. 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. 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 the TEACH interface on Monday @ 5pm of Week 26. 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 (200 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 during week 28.

**“ENGINEERING JUSTICE” SEMINAR (30 Points) - INDIVIDUAL**
Each individual is required to attend the April 20th at 6pm in the LaSells Stewart Center and submit a one page summary of the topics covered. Students should reflect on their personal opinions about the information covered in the seminar in their written paper. The paper is due **Friday by 5PM of week 24** via the TEACH interface. Files must be either ‘.doc’ or ‘.pdf’.

**FINAL PEER REVIEWS (70 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 **Friday @ 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.
ECE443 Schedule

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