

**EEL4911C – ECE SENIOR DESIGN PROJECT I – FALL 2014****Course Syllabus**

**Day / Time:** Main class lecture meetings: Thursdays, 3:30 – 4:45 pm.  
Time slot reserved for other events/meetings: Fridays, 10:00 am – 1:00 pm.

But, if you want to have a chance of passing, you **MUST** leave plenty of flexibility in your weekly schedule to attend other required meetings & presentations, which may end up being scheduled at various other times throughout the week!

**Location:** Thurs. lectures in FAMU-FSU Coll. of Eng., Bldg. B (CE2), Room B-221.  
Friday events at FAMU-FSU Coll. of Eng., Bldg. B (CE2), Room B-210/211.  
(Other meeting rooms/locations to be determined as needed for specific projects.)

**Instructor:** Dr. Michael P. Frank  
**Email:** [mpf@eng.fsu.edu](mailto:mpf@eng.fsu.edu)  
**Office:** Room A-342, FAMU-FSU College of Engineering  
**Office Hours:** Tuesdays 12-1 & 4-5; Wednesdays 12-1.  
**Phone:** (850) 410-6463

**Teaching Assistants:** None assigned at this time.

**Required Textbooks:** **Design for Electrical and Computer Engineers: Theory, Concepts, and Practice**, Ralph M. Ford & Chris S. Coulston, McGraw-Hill, 2008.

**A Handbook of Public Speaking for Scientists & Engineers**, Kenny Peter, Institute of Physics (IoP) Publishing, 1982.

**Course Web Page:** A course web page is on the FSU Blackboard System, <http://campus.fsu.edu>. All FSU students registered for the class are automatically enrolled on the web page and will see the page when they log in using your Garnet account ID and password. FAMU students who have an FSUID and Blackboard account will need select the course and use the enrollment button to add their names to the course web page roll. FAMU students without a Blackboard account must go to <http://campus.fsu.edu>, select “Activate your FSUID” and follow the instructions (Note: Engineering email account is required!). **IT IS REQUIRED FOR ALL FAMU STUDENTS TO ENROLL, AND ALL FSU STUDENTS VERIFY ENROLLMENT IN THE COURSE WEB PAGE.**

**Course Twitter Feed:** A tweet stream for this course is available @ECESrDes (<http://twitter.com/ECESrDes>) and will be used for broadcasting urgent/important course-related announcements. Students are requested to follow this feed and enable text alerts for it on their mobile phone.

**Catalog Description:** Senior students are exposed to the concepts in design, project management, engineering team organization, and professionalism. Students are grouped into design teams where these principles are put into practice in organizing, proposing, and developing an engineering project. Periodic written reports and oral presentations, and a final written report are required. The lecture material and texts provide instructions on project management, ethics, and design skills.

**Prerequisites:** For EE Majors: EEL3111, EEI3112, EEL3135, EEL3705, EEE3300, and at least 3 out of the following 4 in EEL3472, EEL4021, EEL4515, and EEL4746.

For CpE Majors: EEL3111, EEI3112, EEE3300, EEL3705, EEL4746, EEL4710, and COP3530 (FAMU) or COP4530 (FSU)

For EE & CpE Majors: Up to two (2) of the prerequisite courses listed above may be taken as co-requisites to EEL4911C.

**Course Goals:** The senior design project is the culmination of course and laboratory work in the bachelor’s degree program in each field of engineering. In this comprehensive two-semester course, students are expected to work in teams to apply the concepts and theories of their discipline to a novel engineering project. The course is focused on both the process of engineering design as well as the completion of the project. As such, multiple written reports, giving details of the project and test

results, and oral presentations, giving the details of the project, are required to complete the course satisfactorily. Also each team is expected to design, implement and test an engineering prototype meeting the specifications given in class. It is expected that about twelve hours of laboratory and field work per week outside of class will be necessary for satisfactory completion of the project.

**Instructional Objectives:** After completing this course, a successful student will be able to:

1. Identify engineering problems using a needs assessment.
2. Estimate the costs of a project and prepare a proposed budget.
3. Prepare a project schedule.
4. Develop effective oral presentations and written documentation.
5. Utilize available resources to engage in life-long learning.
6. Recognize the impact of engineering solutions on society.
7. Develop an understanding of professional and ethical responsibility.

**Relationship to Student Outcomes:** This course supports the student outcomes of the B.S.-Electrical Engineering (EE) and B.S.-Computer Engineering (CpE) programs. Specifically, this course supports and assesses ABET Student Outcomes C (design) and G (comm.) for both EE & CE programs. (See <http://eng.fsu.edu/ece/undergrad/accrreditation/outcomes.html>.)

**Class Policies:**

Exams/Tests/Quizzes: - Any Test/Quiz dates will be announced at least 1 week in advance.  
 - There is no Final Exam scheduled for this course.  
 - No make-ups will be granted unless **prior** approval has been obtained from the instructor.

Assignments: - **ALL Assignments are due by the START of class on the due date.**  
 - Late Assignments will **NOT BE ACCEPTED**.

Attendance: - **Class attendance is expected for all students.** College and University rules allow only 3 unexcused absences for this course. A **student exceeding 3 unexcused absences** will be **dropped from the course and assigned a grade of "F"**.

- **Attendance at all weekly team meetings (including advisor meetings) is REQUIRED.** Unexcused absences from team meetings will result in a reduction in the individual's grade for the course.

Ethics/Honor Code: – All students are bound by the honor code of their university; details below. Honor code violations will be reported. Penalties include but are not limited to 1) failing grade on the assignment and 2) failing grade for the course.

– Homework assignments are considered *individual* efforts. Students are encouraged to discuss topics and homework, but the work itself is to be performed on an individual basis.

**FSU Attendance Policy (applies to FSU students):**

- Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

**Academic Honor Policy:**

- **FAMU:** Details of FAMU's Student Code of Conduct may be found on the world-wide web at <http://www.famu.edu/index.cfm?judicialAffairs&StudentCodeofConduct>.
- **FSU:** The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations

of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to “. . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University.” (Florida State University Academic Honor Policy, found at <http://dof.fsu.edu/honorpolicy.htm>.)

**Students with Disabilities:** Students with disabilities needing academic accommodations should:

- (1) Register with and provide documentation to the appropriate university office. For FAMU students, this is the Learning Development and Evaluation Center (LEDC). For FSU students this is the Student Disability Resource Center (SDRC); and
- (2) Bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

*This syllabus and other class materials are available in alternative format upon request.*

For more information about services available to students with disabilities,

FAMU students should contact the:  
Learning Development and Evaluation Center  
667 Ardelia Court  
Tallahassee, FL 32307  
(850) 599.3180

FSU students should contact the:  
Student Disability Resource Center  
874 Traditions Way  
108 Student Services Building  
Tallahassee, FL 32306-4167  
(850) 644-9566 (Voice)  
(850) 644-8504 (TDD)  
[sdrc@admin.fsu.edu](mailto:sdrc@admin.fsu.edu)  
<http://www.disabilitycenter.fsu.edu/>

### **Grading Policy:**

<u>Assignment</u>	<u>Due Date (tentative)</u>	<u>% of Grade</u>
<i>“Job Application” Form*</i>	Due Tue. 9/2	(req.) <sup>†</sup>
Team Formation Forms	Due Tue. 9/9	3%
Code of Conduct Agreement	Due Fri. 9/12	5%
<i>Practice Presentation*</i>	Present Fri. 9/19	2%
Milestone 1: Needs Analysis and Req. Specifications (Group Presentation and Written Report)	Report due 9/18 Present 9/22 – 9/26	15%
Milestone 2: Project Proposal (Group Presentation and Written Report)	Report due 10/16 Present 10/20 – 10/24	25%
<i>Professional Engineering Licensing Assignment*</i>	Due 10/30	10%
Milestone 3: Conceptual/System-Level Design Review (Group Presentation and Written Report)	Report due 11/13 Present 11/17 – 11/21	30%
<i>Practice HW on Engineering Ethics &amp; Prof. Resp.*</i>	Due 12/4	0%
Self & Peer Evaluation	Due 12/5	±8%
Team’s Web-Based Engineering Log	Weekly	10%

**- Also: Each ECE student must also start keeping an individual log of all work they do on their project as soon as their project is assigned; this will be 10% of their Spring course grade.\***

\* Starred/italicized items apply only to ECE students, including all ECE students working on projects led by other departments. Other items apply to all students who are working on ECE-led projects.

<sup>†</sup> This form is required to join a project; if you do not join a project, you will be dropped from the course.

**Special additional grade penalty policies:**

- Regardless of performance on the above assignments, up to a -5% (-½ letter grade) penalty on the student's overall course grade may be levied, at the instructor's discretion, for each unexcused absence *or refusal to participate* in a class meeting, scheduled advising meeting, or other team meeting.
- If a given project is not completed satisfactorily, as per the advisor's/sponsor's expectations, by end of Spring semester, all team members on that project may receive a grade of Incomplete in Spring semester and have their graduation delayed until the project is done.

Each milestone must be completed prior to proceeding to the next milestone. Each component listed above must be completed successfully in order to receive a passing grade in the course. Milestone 1 grades are 40% written report (team grade), and 60% oral presentation (30% individual and 30% team) scores. Milestone 2 & 3 grades are 60% written report (team grade) and 40% oral presentation (20% individual, 20% team). Oral presentations are expected to be conducted in a professional manner with appropriate dress, conduct and presentations. Note that 30% of the grade on milestone 1 and 20% of the grade on each of milestones 2 & 3 will be based on individual performance on oral presentations. The professional licensing homework, the ethics homework, and the engineering logbook graded in Spring are to be worked on individually and will be individually graded. The peer evaluation ( $\pm 8\%$ ) is your team's assessment of your performance; note that this can gain or lose you a letter grade. And the rest of the grade components are team grades. Thus, **it pays to work together!**

In addition to the items above, project teams will also be required to meet with their project advisor(s) as often as the advisor wishes (up to weekly), and with the course coordinator (instructor) on a biweekly basis, and to keep minutes of those meetings. The advisor & coordinator meetings can be combined if scheduling permits. **Failure to attend a scheduled meeting, or to submit meeting minutes will result in grade reductions of 5 percentage points (1/2 letter grade) on your overall course grade PER MEETING MISSED.**

Questions, problems and errors involving the grading of any assignment or quiz must be brought to the attention of the instructor **within 1 week** of the grade being posted on the course website. A student's absence from class does not extend the time limit. After 1 week the grade is final and will not be reviewed at the student's request.

**Special Grading Procedures for Multidisciplinary Projects:**

For multidisciplinary projects (with students from multiple departments), the *tentative* baseline grading procedure (subject to any changes to this negotiated with other departments, which may vary on a case-by-case basis depending on the nature of each project) will be as follows:

- ECE-led project teams are responsible for completing all major deliverables (milestone reports & presentations) on this (EEL4911C) syllabus. The team members from the other departments will be expected to help prepare these deliverables and will be graded alongside the ECE students. Likewise for the Code of Conduct and Peer Evaluation assignments.
- Project teams led by another department (e.g., ME) are responsible for completing all major deliverables required by the coordinator of that department's Senior Design course. ECE students assigned to those teams will be expected to help prepare these deliverables, and will be graded on them by the other department (possibly with input from other participating departments). For purposes of assigning the course grade in EEL4911C, those grades will take the place of the Milestones #1-3 grades.
- All ECE students (including ECE students assigned to work on projects led by other departments) are responsible for completing the Professional Engineering Licensing homework and the homework on Engineering Ethics & Professional Responsibility, and these will factor into their course grades the same as for the other ECE students. Students from other departments who are working on ECE-led projects are not required to complete these assignments.

- All teams that include ECE members (whatever department they are led by) will generally be expected to do a responsible job of producing and posting meeting minutes and/or weekly/biweekly meeting reports, and maintaining an online resource (such as a blog, webpage, or EverNote notebook) functioning as a shared lab notebook in which all project notes and details are recorded. All ECE students will be graded on their team's performance in this general area as 10% of their course grade. If a team led by another department does not maintain any kind of group work log, then the ECE students on the team should still maintain high-quality individual notebooks/blogs of their own work, and make sure that all team deliverables are uploaded to their Group Blog on the EEL4911C Blackboard.

### Oral Communication Competency

In order to fulfill FSU's Oral Communication Competency Requirement (OCCR), you must earn a "C-" or better in the course, and in order to receive a "C-" or better in the course, you must earn at least a "C-" on the oral communication competency component of the course. **If you do not earn a "C-" or better on the oral communication competency component of the course, you will not earn an overall grade of "C-" or better in the course, no matter how well you perform in the remaining portion of the course.** **THIS APPLIES TO FSU AND FAMU STUDENTS.**

The oral competency component consists of the individual and team oral presentation grades for Milestones 1, 2 and 3. You must get a C- or better average on the combined individual oral presentations (15.5% of your grade) AND a C- or better average on the combined team oral presentations (another 15.5%) to pass the EEL4911C course and get OCCR credit.

**NOTE:** The fact that a total of  $\geq 30\%$  of each student's grade is tied to the OCCR is required by FSU policy, and this percentage may not be reduced below 30% in future editions of this course without [OER](#) approval.

### Syllabus Change Policy

Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is only a guide for the course and is subject to change with advance notice.

**Tentative Class Calendar** (subject to modification; provided only for planning purposes)

Week Num.	Month	Dates	Lec. Date	Lecture Topic	Activities	Week's readings:
1	Aug.	25-29	28 <sup>th</sup>	Lec. #1 - Course Introduction	<ul style="list-style-type: none"> <li>❖ Overview of Course / Project Descriptions</li> <li>❖ Hand out "Job Application" forms</li> </ul>	Ford Ch.1, App. B, & §§2.1-3
2	Sep.	1-5	4 <sup>th</sup>	Lec. #2 - The Design Process	<ul style="list-style-type: none"> <li>❖ Labor Day Holiday – Mon., Sep. 1<sup>st</sup></li> <li>❖ <b>DUE:</b> <ul style="list-style-type: none"> <li>➢ Tue. 9/2: "Job Application" form</li> <li>➢ Fri. 9/5: Team Contact Info form</li> </ul> </li> <li>❖ Team Assignments done by Thu. 9/4</li> <li>❖ Meet ECE teammates in-class Thu. 9/4</li> <li>❖ Contact other teammates before weekend</li> <li>❖ <b>Schedule</b> Weekly Team &amp; Advising Meetings</li> </ul>	Ford, rest of Ch. 2 & Ch. 9
3		8-12	11 <sup>th</sup>	Lec. #3 - Requirements and Needs Analysis – <b>Instructions for Written Report &amp; Oral Presentation for Milestone 1</b>	<ul style="list-style-type: none"> <li>❖ <b>Commence</b> Weekly Team Meetings</li> <li>❖ <b>DUE:</b> <ul style="list-style-type: none"> <li>➢ Tue. 9/9: Team Meeting Planner</li> <li>➢ Fri. 9/13: Code of Conduct</li> <li>➢ Fri. 9/13: Self-Assessment Checklist</li> <li>➢ Weekly Meeting Report / Minutes (Start posting online)</li> </ul> </li> <li>❖ <b>Schedule</b> Milestone 1 presentations</li> </ul>	Ford Ch. 3 & Ch. 12
4		15-19	18 <sup>th</sup>	Lec. #4 - Public Speaking – Techniques & Practices	<ul style="list-style-type: none"> <li>❖ <b>DUE:</b> <ul style="list-style-type: none"> <li>➢ <b>Milestone 1 Report: Needs Analysis &amp; Requirements Specifications</b></li> <li>➢ <b>Friday 9/19 @ 10:00 am–1:00 pm:</b></li> </ul> </li> </ul>	Kenny Parts I-III

Week Num.	Month	Dates	Lec. Date	Lecture Topic	Activities	Week's readings:
					<b>Give Practice Presentations</b> ➤ Weekly Meeting Report	
5		22-26	25 <sup>th</sup>	Lec. #5 - Concept Generation & Selection; System Design	❖ <b>Milestone 1 Presentations this week</b> ❖ <b>DUE:</b> ➤ Weekly Meeting Report	Ford Ch. 4
6	Sep./ Oct.	9/29-10/3	2 <sup>nd</sup>	Lec. #6 – Functional Decomposition & Block Diagrams. The Project Proposal – <b>Instructions for Written Report and Oral Presentation for Milestone 2</b>	❖ <b>Friday 10/3 @ 10:00 am</b> – Attend special lecture on technology entrepreneurship & commercialization. ❖ <b>DUE:</b> ➤ Weekly Meeting Report	Ford Ch. 5
7	Oct.	6-10	9 <sup>th</sup>	Lec. #7 - Project Management – Part I (of 3)	❖ <b>DUE:</b> ➤ Weekly Meeting Report	Ford Ch. 10
8		13-17	16 <sup>th</sup>	Lec. #8 - Project Management – Part II	❖ <b>DUE:</b> ➤ Weekly Meeting Report ➤ <b>Milestone 2 Report: Project Proposal</b> ❖ Schedule Milestone 2 presentations	
9		20-24	23 <sup>rd</sup>	Lec. #9 - Professional Engineering Licensing	❖ <b>Milestone 2 Presentations this week</b> ❖ <b>DUE:</b> ➤ Weekly Meeting Report	
10		27-31	30 <sup>th</sup>	Lec. #10 - Project Management – Part III	❖ <b>DUE:</b> ➤ Weekly Meeting Report	Ch. 6
11	Nov.	3-7	6 <sup>th</sup>	Lec. #11 – The System-Level Design Review – <b>Instructions for Written Report and Oral Presentation in Milestone 3</b>	❖ <b>DUE:</b> ➤ Weekly Meeting Report ➤ <b>Professional Engineering Homework</b>	Ch. 7
12		10-14	13 <sup>th</sup>	Lec. #12 - Detailed Design & Testing	❖ Veterans' Day Holiday – Tue. Nov. 11 <sup>th</sup> ❖ <b>DUE:</b> ➤ Weekly Meeting Report ➤ <b>Milestone 3 Report: System-Level Design Review</b> ❖ Schedule Milestone 3 presentations	
13		17-21	20 <sup>th</sup>	Lec. #13 - Engineering Ethics and Professional Responsibility	❖ <b>Milestone 3 Presentations this week</b> ❖ <b>DUE:</b> ➤ Weekly Meeting Report	Ch. 11
		24-28	<b>THANKSGIVING HOLIDAY – NO CLASS</b>			
14	Dec.	1-5	4 <sup>th</sup>	Lec. #14 – Preview: The Critical/Detailed Design Review (1 <sup>st</sup> Spring Milestone)	❖ <b>Last Week of Classes</b> ❖ <b>DUE:</b> ➤ <b>Engineering Ethics Practice Homework</b> ➤ Weekly Meeting Report ➤ Peer Evaluation Form	
		8-12	<b>FINAL EXAM WEEK – NO FINAL EXAM IN THIS COURSE</b>			

**Notes:**

- Dates and material covered are subject to modification at any time.
- ECE students participating in projects directed by other departments must still attend all lectures and complete all assignments listed. Your schedule/grading may differ from the rest of the class in some areas.