Course Coordinator

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Course Objectives

The year-long Senior Honors Project, carried out under a two-semester Fall-Spring sequence, serves as a capstone research and design experience for a selected group of electrical engineering and computer engineering seniors. The primary aim of this course sequence is the training of independent, disciplined, and articulate research and design engineers. You will become familiar with the formulation and conduct of experiments, knowledge of applications, and an appreciation for the multidisciplinary and team-based approaches to solving technical problems and developing new techniques and technologies.

Course Outcomes

1. Familiarity with the nature of open-ended research and design projects.
2. Ability to formulate a project, and design and conduct relevant experiments.
3. Ability to analyze and interpret analytical and experimental results, and to modify the course of the project accordingly.
4. Familiarity with research and design in several disciplines and specialties.
5. Ability to effectively communicate technical issues in written and oral forms.
7. Familiarity with ethical issues in the conduct of research, and the reporting of results.

Schedule

The first class meeting will be Tuesday, September 2, 2014, at 4:00 pm in room 4-146 Keller Hall. After that meeting, we will not have regular meetings for the remainder of the year. Instead, you should arrange a regular meeting with your project advisor at a time convenient for both of you. The oral presentations will be arranged at other times, as described below.

Fall semester (EE4981H)

- Your written proposal is due October 3. You should follow the guidelines for writing your proposal listed later in this syllabus.
- Oral presentation of your proposal will be scheduled some time during the week of September 29. Specific presentation times will be determined when we get closer to this date, but likely will be scheduled during a few afternoons from about 3:00-5:00 pm. Everyone is expected to attend all of the presentations. You will be expected to provide feedback on the presentations of a few of your classmates.
In addition to the meetings above, you will be required to attend a few class meetings with your peers enrolled in the Senior Design project course, EE 4951. The sessions you must attend are listed on the attached form and focus on topics relevant to the overall research and design process, including technical writing, presentation skills, and engineering ethics. **You must check the syllabus for EE 4951 to determine the specific dates and times to attend these sessions. It is your responsibility to have the instructor of EE 4951 sign-off for each session you attend using the attached form.** If you cannot attend some of the sessions, please talk to me. It may be possible for you to attend the corresponding sessions during Spring semester, for instance. You must talk to me first to obtain permission for this change, however.

**Spring semester (EE4982V)**

- Written progress reports are due January 23.
- Oral presentation of progress reports will be scheduled during the week of January 26. Specific presentation times will be determined when we get closer to this date, but likely will be scheduled during a few afternoons from about 3:00-5:00 pm. Everyone is expected to attend all of the presentations. You will be expected to provide feedback on the presentations of a few of your classmates.
- Oral presentation of your final project results will be scheduled during the week of April 27. Specific presentation times will be determined when we get closer to this date, but likely will be scheduled during a few afternoons from about 3:00-5:00 pm. Everyone is expected to attend all of the presentations. You will be expected to provide feedback on the presentations of a few of your classmates.
- You are required to present a poster describing your project at the department’s senior design show. This design show is likely to be during the last week of class – details will be sent to you towards the end of Spring semester.
- Your final written report is due May 8.

**Notes**

1. You will receive a grade of ‘X’ for fall semester, signifying that the spring semester course is a continuation of the fall semester. A-F grades are assigned, separately, to EE4981H and EE4982V at the end of the spring semester, upon the completion of the project. Final grades are based on my own evaluation of your project, heavily guided by input from your project advisor, plus your completion of the items listed above.
2. EE4982V is designated as a writing intensive course. However, written and oral communications are critical components of the entire senior honors project. Your faculty advisor will critically review the proposal and reports, and the suggested corrections must be made prior to submission of the reports to me for further evaluation.
3. You must adhere to the structure of the reports outlined below.
**Project Proposal**

Your written project proposal should include the following items:

a) Title Page - Project title, project adviser, semester, and year.

b) Abstract - One-paragraph summary (100-200 words) of what the project is about.

c) Table of Contents - List and page numbers of the different sections.

d) List of Figures - Figure numbers, figure captions, and page numbers.

e) Introduction – An overview of the proposed project and an explanation of its importance.

f) Background – A summary of the previous work on the subject.

g) Proposed Project – Expected procedures, experiments, goals, and technical details of your approach.

h) Budget - Funds needed to perform the studies.

i) Timeline – Your best estimate of when you will complete the major tasks for the project.

j) List of References - Numbered list of references that must include for each reference: authors, title, name of the source (e.g. conference, journal, etc.), and date of the publication. You should use the citation format that is standard for the primary journals in your specific field of research.

The oral presentation will give you the opportunity to describe your ideas and to show the soundness of your proposed approach to your peers, your project advisor, and the course coordinator. This presentation should include all of the above components.

**Progress Report**

Your progress report should follow the same format as the proposal, updated to describe your progress on the project so far. You should be sure to include any changes in the project goals, experiments, work to be completed, budget, and timeline. The progress report should be entirely self-contained; that is, you should not expect your audience to remember anything from your proposal presentation. Your oral presentation should include all of the above components.

**Final Report**

Your final report is a paper describing the project and its results. It should be written in the style of a technical report, journal, or conference paper, as appropriate for your field of research. It should be about 20-25 double-spaced pages long. This report should be entirely self-contained; that is, you should not expect your audience to remember anything from your previous reports or presentations.

Your report must include at least the following:

a) A cover page with a descriptive title, your name, student ID number, course number, and term.
b) A 200-300 word abstract clearly summarizing the problem you investigated, why this is an interesting problem, your methodology, and a brief summary of your main results and conclusions.

c) Table of Contents - List and page numbers of the different sections.

d) List of Figures - Figure numbers, figure captions, and page numbers.

e) An introduction precisely stating the problem and explaining why what you’ve done is important and interesting.

f) A background and summary of previous work in this area, along with an explanation that places your project in the context of what has been done before (i.e. what is different and similar about what you’ve done compared to what has been done before). You must supply citations within the paper to appropriate previous work. It is important that the previous work is from appropriately peer-reviewed sources, not just a list of web sites, for instance.

g) A thorough description of your methodology.

h) An explanation and interpretation of your results.

i) A conclusion summarizing what you’ve done and what it means in a broader context.

While you do not have to follow this outline exactly, all of these elements must be included in your report. You also must include appropriate figures, graphs, and tables to explain your results. Each figure, graph, and table must be directly referenced in the text. For example, you should say something like, "Figure 3 shows ..." instead of simply inserting the figure into the paper with no explanation. Each figure, graph, and table must have an appropriately descriptive caption.

The final oral presentation should follow a similar format. This presentation will give you the opportunity to convince your fellow students, advisor, and me that you have made appropriate progress towards the goals of the project.

University Policies

Look at the web site below for detailed information about University of Minnesota policies on:

- Student conduct code
- Use of personal electronic devices in the classroom
- Scholastic dishonesty
- Makeup work for legitimate absences
- Appropriate student use of class notes and course materials
- Grading and transcripts
- Sexual harassment
- Equity, diversity, equal opportunity, and affirmative action
- Disability accommodations
- Mental health and stress management
- Academic freedom and responsibility

http://policy.umn.edu/Policies/Education/Education/SYLLABUSREQUIREMENTS_APPA.html
Attendance at EE4951 Senior Design Lectures for Students Registered in EE4981/EE4982

Return this signed form to Professor Lilja after you have attended all of the required lectures.

Your name: ___________________________________________________

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<tr>
<th>Lecture topic</th>
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