ECE 4899
Senior Project Design
Schedule and Requirements

Spring Semester 2013

Director: Dr. Mark Wickert  Office: EN-292  Phone: 255-3500
mwickert@uccs.edu  Fax: 255-3589
http://www.eas.uccs.edu/wickert/ece4899/

Office Hrs:
Friday 9:15 AM – 10:00 AM, others by appointment, or at office hour times posted for other courses.

Schedule:

January 25 – Orientation: Handout Course Requirements (part of this document), Guidelines for Project Proposal Presentation (second part of this document), and Guidelines for Oral and Written Reports (third part of this document).

February 1 – Proposal Presentation: All design teams must have obtained a faculty member(s) to act as an advisor and have defined a project. Each project team presents the Project Proposal before the entire class to his/her advisor, the course director, and other faculty in attendance. Expect the presentations with discussions to run until about 11:00 AM.

TBD – Guest Speaker (required for ECE 4890): Course meets from 8:00 – 9:15 am for an engineering design case study given by an experienced engineer/inventor. As early as February 15th.

March 15 – Design Review Presentation: Each project team presents a Design Review before the entire class to his/her advisor, the course director, and other faculty in attendance. Expect the presentations with discussions to run until about 11:35 AM.

May 10 – Final Oral Presentation & Demonstration: Each team gives an oral presentation, followed by a demonstration. Expect the presentations with discussions to run until about 11:00 AM. The demonstrations will take us past 12:30 PM. Lunch included.

May 13 – Final Project Report: The final report may be turned in to the respective project advisors no later than Monday May 13 12:00 PM, 2013.

If you have a disability for which you are requesting an accommodation, you are encouraged to contact Disability Services within the first week of classes.

If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact your UCCS course instructor no later than the first week of class to discuss the class attendance policy.
**Requirements:**

The major goal of this course is a rigorous design experience that is the culmination of engineering design instruction within the curriculum. A primary objective of such a course is to encourage technical innovation and leadership by individual students and student teams. Thus, the initiation of projects will emphasize student responsibility for conceptualization and subsequent development. In keeping with customary design practice, the following constraints will be observed:

1. There will be an *Orientation* to the course by the Director during the first week of classes. Course requirements as contained in this document will be provided along with handouts of the documents entitled “Project Proposal Presentations” and “Oral and Written Reports.”

2. Each team is required to submit a project abstract/description following the first scheduled class meeting time, preferably via E-mail. The team must also submit a printed version of the abstract which includes the sentence “the team has agreed to meet with the advisor(s) on a regular basis during the course of the project” along with the signature of the team members and the advisor(s).

3. **Weekly Status Reports:** A short written progress/status report (one page or less) is due no later than Friday 12:00 noon of each week, exclusive of presentation weeks. The preferred format is for a team representative to E-mail the report to your project advisor and request the project advisor forward it to me to signify that it has been received and reviewed. The teams need to meet with their advisor regularly in person regardless of how the status report ultimately gets sent to the course director.

4. **Proposal Review:** Each project team will make a presentation at the end of the second week of classes. The purpose of the presentation is to firm up the requirements of the project, identify the role of each member of the team, and get input from the advisor, course director, and other faculty in attendance, as to the feasibility of the project or any suggestions for its improvement. This also allows for clarification between the team and the advisor in the presence of the director. The advisor/director will assign a grade of 15% of the total course grade for this presentation.

5. **Design Review:** Each project will undergo a formal oral review by the director and advisor during the ninth week of classes (seventh week from proposal presentation). The advisor, director, and other faculty in attendance will evaluate the literature search, analysis, and the design progress of the project to date. The fundamental design work on the project should now be complete. Any departure from the project requirements originally defined in the proposal should be well documented and explained. The advisor/director will assign a grade of 30% of the total course grade for this presentation.
6. **Final Presentation/Demonstration**: Each team will orally present his/her projects, followed by a demonstration. One week prior to the demonstration, each team is required to submit the place where the demonstration will take place. The advisor/director will assign 13% of the grade based on this final presentation and 7% for the final demonstration (20% total).

7. **Final Report**: A written report will also be submitted to the advisor and the director. The advisor/director will assign 20% of the grade based on this written report. Note that a critical reading of the final report is primarily in the hands of the project faculty advisor(s).

8. **Project Success**: Upon the completion of step 6 and step 7, the course director will at minimum meet with the project faculty advisor to assign a grade to the overall project success. Project success considers how well the overall objectives of the project have been met with respect to the original design requirements document. If the project changes scope during the semester, as a result of consultation with the faculty advisor and permission of the project sponsor, this will be considered in the project success determination. The remaining 15% of the grade will thus be determined.

The above three phases are to be conducted in open sessions. The director will set up a presentation schedule and notify the faculty so that interested persons can attend. The schedule will also be posted on the course web site.

**Notes:**

1. Attendance at all presentations and demonstrations is **mandatory**.

2. All presentations will take place in EN-101.

3. Appropriate dress for the oral presentations is: Male – shirt tie, coat optional; Female – skirt and blazer or suit.
ECE 4899
Project Proposal Guidelines

Meeting #1
(January 25)

Course orientation and assignment of choosing a faculty advisor for your project. Secondly submit via E-mail to the course director ASAP, an abstract of the proposed project for using in presentation announcements on the course Web Site.

Meeting #2
(February 1)

Each team will orally give a 15 minute project proposal presentation. It is suggested that the proposal presentation be prepared using a software tool such as Microsoft Power Point. A sample presentation has been placed on the course web site. The proposal presentation should include:

1. A title page slide giving the names of the student team members and the project advisor(s)

2. An overview slide of what the presentation will cover. This slide will draw the audience in and prepares them for what will follow.

3. A series of body slides which include –
   • Outline of the major tasks and subtasks of the project
   • A block diagram(s) of the project, showing major components and subsystems to be dealt with. Those to be constructed, bought, or available in laboratories should be labeled accordingly
   • A flow chart if the project includes software design

4. A Gantt chart slide showing time to be spent on different tasks and subtasks. Milestones should be shown with special symbols. The time lines for the various tasks and subtasks should also be coded to indicate which team member has primary responsibility. A equal balance of responsibilities should evident. You will need to balance the level of detail this slide shows with the size of the fonts used, so that the Gantt chart is clearly readable by the viewing audience.

5. A slide showing the estimated project budget.

6. A final slide which summarizes the project. This slide should recap the purpose of the project and in a marketing sense make it clear to the audience (perhaps viewed as your investors) that this work is worthy of funding.

Notes:

Electronic slide presentation using Power Point, Acrobat PDF, similar presentation software is mandated.

Please bring your presentations on flash drive if possible to avoid having to avoid wasted time of having teams log-out and log-in to personal accounts. I would like all presentations to be given from the director’s account log-in.
1. Each participant must take part in the oral presentation.

2. The time divided equally among all participants, with 15 (30 for teams of 4) minutes being the maximum time allowed for the report.

3. Use slides designs which are clear and legible in our classroom setting. Realize that we do not have extreme contrast available.

4. Viewgraphs with text should contain information in a short-statement, outline form.

5. Plan on an average of 1 to 2 minutes per slide. A 15 (30) minute talk should be based on no more than 15 (30) slides. A few backup slides should particular questions arise later can be helpful, yet keep the formal presentation lean.

6. If you are right handed, stand to the right of the screen as you face it; if left handed, stand on the opposite side. Use a pointer (laser pointer) and point to the screen to make a point. Do not stand to the side of the projector and point at the slide if using an overhead projector. This typically blocks the view of someone in the audience.

7. It is preferable to have someone change your slides for you unless when using an electronics means the mouse/keyboard is convenient to the speaker. In a pinch, you can change you own slides by walking to the projector and then back to the screen after the new foil is on the projector.

8. Practice before you give your presentation, but do not memorize it. Avoid “ands” and “ahs”, and other space fillers.

9. The final presentation must include two slides; one each on the analysis and synthesis required in the project.

10. Close with a summary slide, not a “thank you.”

11. Students must remain in their seats during all other team’s presentations. It is inappropriate and disrespectful to remove yourself from the lecture hall unless there is a personal emergency.

12. Students may leave the lecture hall only when dismissed by the faculty member running the presentations in the morning.
13. Students will provide advisors and sponsors with free parking passes at least 48-hours prior to the event. Plan accordingly!

14. Appropriate dress for the oral presentations are:
   • Male – shirt and tie, coat optional
   • Female – skirt and blazer or suit

**Additional Considerations Including the Final Presentation**

1. Slides will be made available to the Advisor and the Sponsor 48-hours prior to the presentation. They should be at least 80% complete.

2. Teams are to practice a minimum of two times before presenting in front of their peers and grading faculty.

3. Backup slides should contain critical material that cannot be covered during the presentation due to limited time.

4. Decide before the presentation which team member will focus in which area.

5. Memorize at the very least a strong opening sentence, transition to team member, and closing sentence prior to the presentation. Every team member should cue off these memorized statements to ensure smooth opening, transitory, and closing statements.

6. The final presentation should …
   • Explain the original problem.
   • Discuss the proposed solution.
   • Provide a detailed list of objective requirements for the team’s solution.
   • Show how the objectives were or were not met, justifying the final result.
   • Communicate a Test Strategy with Results.
   • Show objective data on how their solution performed.
   • Demonstrate meeting (or not meeting) the project budget.
   • Demonstrate meeting (or not meeting) the project schedule.
   • Give insight as to what the team has learned and what they would do differently could they do it all over again.

7. The majority of time during the final presentation should focus on the final result and not a “rehashing” of older information. Move succinctly through opening slides explaining the problem and proposal, and spend more time fleshing out the final result.

**Demonstration**

Following are expectations for the demonstration:

1. A plan summarizing the sequence for the demonstration will be made available to the Advisor and the Sponsor 48-hours prior to the dem-
onstration. This plan should be at least 80% complete.

2. Decide on who will demonstrate which parts of the final project. This should be noted in the plan.

3. Major highlights of the demonstration should be noted in the plan—what are the key two or three things that you want to communicate and show during this time?

4. During presentation, it is expected that all team members give full attention to the demonstration and are all available at any time during the presentation to answer questions. Team members should not be diverted with side questions but instead address the entire group of evaluators and onlookers.

5. Create a printed, poster board that contains at least a block diagram of the solution. It should also contain data gathered during the project, etc. This must be available in the case of a failed demo. This poster board should “tell the tale” and “stand on its own” in terms of explaining your project, your solution, and your final result. It should focus only on technical details.

6. If a demo does fail, the team should have thought out a Plan “B” as well as a Plan “C”.

7. If a demo does fail, the individual presenting needs to excuse themselves to try and get the device running while another team member seamlessly picks up the train of thought and engages the audience. Plan for problems on demonstration day!

8. It is expected that you will allow ample time for Questions and Answers. Engage your audience during your demonstration of the final project.

9. You will have 15-minutes to demonstrate your solution. Plan as carefully for this time as you did for your Final Presentation!

10. It is poor form in a failed demo to ask for all evaluators and spectators to come back later. You had plenty of time to create your demonstration; this is your one chance to deliver for this important part of your grade.

11. Materials borrowed from UCCS, faculty, your advisor, or your sponsor must be returned no later than the end of Final Exam week.

Written Reports

1. Double space

2. Contents should include:
   a. Title page with title of project, name of investigators, name of advisor(s), and date.
   b. Abstract giving a clear statement of purpose and a summary of results.
c. Introduction which includes purpose, overview of the approach, and a survey of the applicable literature. Refer to references by numbers in brackets [ ]. References should appear in the list in the order that they first appear in the text.
d. Body which lays out the details of the procedure.
e. Results. The results should be such that a clear evaluation of the success of the project is possible.
f. Discussion of results and conclusion. The concluding section should also contain a discussion of the time table for the project.
g. List of references.
h. Appendices which may consist of detailed mathematical calculations or other information which supports the main report but would interrupt the flow.
i. Figures can be placed at the end of the report or after the first reference to a given figure in the text. All figures must have a number and a title e.g., Figure 1: Block diagram of the gizmo. The figure caption is always at the bottom of the figure.
j. The last figure should be the Gantt chart for the project.
k. Tables follow the same convention as figures, except the caption occurs at the top of the able, e.g., Table 1: Bill of materials for the daughter card.
l. If you use equations, number each one to the right of the equation using a parenthesis around it. Refer to equations in the text by number.
m. Number all pages except the title page and the abstract page. Put numbers in the top middle of each page except the first page for which the number is centered on the bottom.

Additional Considerations

1. One bound, paper copy, is due to the project advisor. AN electronic copy (PDF preferred) is to be provided to the faculty responsible for the class. Please do run this to the wire to prevent “drama.”
2. It is respectful to offer a soft or hard copy to your sponsor.
3. If agreed to ahead of time, your device should be given to your advisor or sponsor immediately after turning in your final report.
4. Your report should cover every detail of your project, including:
   • Executive Summary
   • Problem Statement
   • Theory of Operation for Solution
   • Implementation Design Details for Solution (including schematics, layouts, Bills of Material, etc)
• Proposed vs. Final Budget Analysis
• Proposed vs. Final Schedule Analysis
• Summary of Results
• Conclusions
• Credit to the Sponsor
• Appendices (full schematics, full board designs, firmware, lab measurements, small-scale experiment data, etc.)