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CEG 498: Design Experience

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CEG 498 - Design Experience : Syllabus
Department of Computer Science and Engineering
Wright State University
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Brief Description
CEG 498 (Team Projects I and II) is a summative computer engineering design project course that builds upon previous engineering, science, mathematics and communications course work. CEG 498 projects are a minimum of two quarters in length and must be completed in groups of at least three students. Projects are selected under the guidance of the course instructor and are tailored to both student interest and formal classroom preparation. Students are evaluated both on their individual contributions as recorded in graded engineering journals and on the quality of their collective efforts as reflected in group generated products.

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Textbook
There is no required textbook.

Detailed Course Description
CEG 498 is a project-based course. Students will work in groups to complete some significant engineering project of their choosing. In this context, a significant engineering project is defined as a project that applies contemporary technology and methodology to solve a real problem subject to at least two "non-technical" constraints. Acceptable non-technical constraints include performance requirements related to safety, financial, political, regulatory, legal, or ethical considerations. Each project's problem statements and scoping of work will be conducted with the assistance of the course instructor, who will provide project ideas and industry and research contacts for groups desiring them. Project management and conduct, however, will be handled by the student groups themselves, who will be encouraged to treat the instructor as a client and/or stake holder in the project's success.

Each student will be formally evaluated based equally on personal effort and group achievement. Each student will receive a grade that is the sum of a score given to her/his group's communal products and a score given to the student's individual efforts as measured by entries in a personal engineering notebook. This grading methodology is intended to mimic real life. Your personal success as a design engineer is a function of the quality of your products and of your visible contributions to that quality.

Students will meet with the instructor twice each week. The first meeting will include everyone registered in the course. In those meetings, each group is expected to give a progress report to all students in the class. At these meetings, the instructor will also discuss items of use to all groups and/or provide supplementary materials on engineering practice skills. The second meeting will be by appointment between the instructor and each individual project group. That meeting will serve as each group's formal opportunity to assess internal progress and, if necessary, modify member tasking. The instructor will observe, but not run, these meetings.

In addition to a weekly progress report to all members of the class, each group will be responsible for producing a formally evaluated project presentation at the end of each quarter. Details of the requirements for these presentations, along with other elements (group and individual) that are formally evaluated will be discussed later in this syllabus.

Note that beginning in 2011, every group will be required to utilize a formal content management system to manage all group documents and source code.

Attendance Policy

Not attending weekly meetings harms the other members of your group and makes it much more difficult for the instructor to assess your individual contributions to the group. Therefore, attendance and active participation in the weekly group meetings is required. Failure to attend a meeting or gross lateness of arrival (more than 15 minutes late) will result in point deductions and will negatively affect your final grade. Since groups will be given wide latitude in scheduling meeting times, it should be possible to schedule around individual member's commitments. Emergencies, however, do happen. Lateness or absence can be excused if there is a valid reason. The instructor, with the consultation of your engineering group members, reserves the right to determine what constitutes a valid reason.

Grades

You will have an opportunity to earn up to 100 points for various activities relating to your project. Letter grades will be assigned based on the following scale:

A   90 points and up

B   89 - 80 points

C   79 - 70 points

D   69 - 60 points

F   59 points and below

Note that letter grades for the course will be awarded at the end of the second course and will be applied to both quarters (i.e. a grade of 'B' will be a 'B' for both quarters). At the end of the first quarter a grade of 'M' will be entered, which will be changed after the second quarter. However, each individual will be given a written assessment of their status at the end of the first quarter.

Points are earned in three categories. Those categories, and the maximum number of points earnable in each, are:

Individual Performance   50 points

Group Documents   40 points

Group Presentation   10 points

Individual Performance

Points in this category are awarded based on assessments of your personal contributions to the group effort. The instructor will make these assessments based on observations of your participation in group meetings and by examining your personal design journal.

The purpose of the journal is to be an archival record of your personal progress, contributions, and impressions. What you should be shooting for is a document that both you and the instructor can use to determine "what you were doing and thinking" at particular points in the project. In the "real world" such journals are often the basis for patent claims and defenses, and thus may become a legal document. Since the journal is largely a personal document, its format and specific content are up to you. All journals, however, must meet the following minimal standards:

1. Journals must be neat. Handwriting and sketches do not have to be publication quality, but they must be legible. Entries should be in ink, to reflect the legal aspects of the document.
2. One substantive, dated entry must be made per week. Additional entries are encouraged. No detail is too small. "We met today" is not considered substantive.
3. Design ideas should be recorded as they occur to you. Attaching code listings and screen dumps relating to the design idea is encouraged.
4. Results of testing and subsequent revisions of ideas should be recorded.
5. Did you get ideas, code, or techniques from some other person either inside or outside of the group? Record it. Ethics demands you properly attribute intellectual property to its creator.

Sketchy, infrequently utilized, sloppy, poorly written journals will have an adverse effect upon your final grade. Journals are subject to informal spot-inspection at any time by the instructor to insure that they are being kept regularly and with appropriate format and content. The instructor will formally review the journals twice during each quarter for detailed examination and evaluation.

Points in the "Individual Performance" Category will be awarded as follows:

Regularity (5 points)	The fraction of weeks for which there is a substantive journal entry times 5.
Group Document Regularity (5 points)	The fraction of weeks in the quarter for which there is at least one commit to your group's document repository times 5. See the special notes on the use of a content management system at the end of this syllabus.
Journal Neatness (10 points)	The instructor's subjective evaluation of the journal's clarity, legibility, and organization
Journaled Design Ideas (10 points)	The instructor's evaluation of the quality of code, algorithm descriptions, and any other figures relating to design ideas as recorded in your journal.
Design Testing and Critical Review (10 points)	The instructor's evaluation of how well you ensured the merit of your ideas. Did you test? How? Why should anyone believe your ideas are workable? Are your ideas safe? You are ethically responsible to protect the users of your product from harm. Have you? Although most actual testing will occur in the second quarter, this includes consideration of testing and test issues as well as paper analysis and prototyping of ideas during the first quarter.
Meeting Contribution (10 points)	Instructor's subjective evaluation of how much you participated in project group and whole class meeting.

Group Documents
Points in this category are awarded based on assessments of documents and products your group collectively authors. The *specific* documents each group will be required to produce are generally a function of the type of project the group selects. Each group will negotiate the manifest of required documents and point values with the instructor early in the first quarter of the project. The results of the negotiation will be recorded and will become a binding part of the syllabus. Typically, the list of documents resembles the following:

Proposal / Requirements (10 points)	This document should explain specifically what you intend to do for your project and which team members will be responsible for what aspects of it. One approved, this document will serve as a "contract" between the instructor and the group. The group's final products will be evaluated against the expectations spelled out in the proposal. The proposal should include a milestone chart covering both quarters, broken down by each individual student. This should include the deliverable dates for the remaining documents. Economic, safety, and/or ethical constraints should also be addressed.
Specification/ Design (10 points)	This document should give a specification for the product(s) your group will deliver as well as a high level discussion of the methods and techniques that will be employed. Pay particular attention to describing how your specification fulfills your requirements and how your design satisfies your specification.
Implementation Notes (5 points)	This document should contain "engineer's notes" that would allow a reasonably skilled engineer to understand, maintain, and modify your group's products. The discussion should be focused and practical.
Users' Manual (5 points)	This document should contain installation and operation instructions for the users of your product(s). It should be aimed at the "average user" and should not require that the reader be an engineering professional.
Testing Plan and Report (5 points)	This document should provide a formalized test plan for your products. How did you ensure they met specifications? What tests did you run and what were the results?
Final Report (5 points)	This document should summarize the project's results and demonstrate that the original goals were met as well as the non-technical constraints. Comments on your group management style are also appropriate. If you were to do the project again, what would you do the same, what would you do differently? Further guidance for this document will be made available at the appropriate time.

Group Presentation
Each quarter your group will give a formal, public presentation of its progress or final results to the college community. Advertising as well as scheduling a room and equipment should be coordinated in a timely manner through the department office. The specific nature of these presentations will be discussed with each group individually as we approach the end of each quarter.

Special Note Regarding the Use of a Content Management System
Starting in 2011, student groups will be required to employ a formal content management system to manage group documents. In this context, group documents refer to everything your group will produce that is to be assessed under the "group performance" category defined above, including group documents, source code, and scanned notebooks should be included in your managed repository. We formally support the use of Subversion (https://subversion.apache.org/). Subversion front ends and IDE integration tools are readily available (e.g. netbeans). Repository space will be provided to support archiving of your work.