Description of CS4000

The purpose of the Capstone Project is for seniors to bring all of their knowledge and abilities to bear to work in a team environment to create an excellent, professional, and polished software product. This project should form the cornerstone of your portfolio when applying for a job. In order to not only achieve this goal, but to do so with excellence, a great deal of planning, team building, research, review, and formalization must take place. The purpose of the Senior Capstone Design course is to address this need. The course focuses on all of the pre-development steps necessary for defining and developing the final project. These steps include: team formation and ideation, presentations and critique, final idea formation, planning and design work, prototyping, etc. Throughout we will focus on the “soft skills” necessary to create an effective team, design, and project. The class will initially meet two times a week, but this will drop as we move on to latter parts of the course where team-faculty meetings will take place. There will be numerous homework assignments used to develop your ability to design, communicate, and strengthen your soft skills. There will be multiple presentations and opportunities for critique and improvement. You should plan to spend a commensurate amount of time on this class as your other CS electives. Please note that at the end of this process, we want you to have produced a software project that will resonate with and impress members of industry and academics; something that industry would be willing to sell or use internally, something that will impress your favorite professor, something that demonstrates your talents and ingenuity. When we push you, we are pushing you to realize this goal.

Requirements

It is required that students enrolled in CS 4000 also enroll in CS 4500 during the following semester. Therefore, it is also required that all students currently enrolled in CS 4000 be ready to graduate in the next semester, or as a last resort, during the subsequent semester after that. All students in CS 4000 must have completed all but four CS electives or required courses (not counting CS 4000/4500) and completed their upper division writing course.

Meetings

Class sessions are Monday, Wednesday, and Friday from 10:45a - 11:35a in WEB L103. These will consist of lectures, student presentations, and group activities. Attendance is required.

Instructors

- Daniel Kopta: Email: dkopta@cs.utah.edu Office: MEB 3124
- Joe Zachary: Email: zachary@cs.utah.edu Office: MEB 3190A
Learning Objectives
The main learning objectives for this class are:

- Practice oral public communication
- Practice technical writing and documentation
- Improve team building and team formation skills
- Practice design and planning
- Strengthen the soft skills necessary to excel in the computing industry
- Identify and utilize SE design tools and methodologies
- Provide substantial time to evaluate and design the final project
- Create a functional prototype of your system

Class Website
The class web site uses Canvas and is located here: utah.instructure.com. It will contain all pertinent course info and materials, such as lecture slides and class announcements. It will also contain all assignments, and will be where you hand in most of your work. All of your grades will be posted on this site so you can keep up with them throughout the semester. We will send messages to everyone in the class, such as corrections to assignments, changes to due dates, clarifications, etc. through Canvas. Students are required to check their email and the class web page regularly until final grades are posted.

Office Hours
One of the goals of this class is for your team to function as independently as possible, but the course staff are here to help you. We are available outside of scheduled class time by appointment. For sensitive or private issues, please contact us directly via email.

Homework
Homework in CS 4000 will be a combination of written assignments, individual and group oral presentations, team meetings, self-evaluations, prototyping, etc. Most weeks you will be producing documentation and/or presentations about either yourself, your team, or your project. During the last month of the semester, your team will produce a prototype of your proposed software. The goal of the prototype is to show us the scope of your vision and convince us you can get there. You will be graded on how well you perform in the total software development cycle. Final grades will be determined not only by your regular assignments, but will be greatly influenced by the quality of your prototype and your individual contribution to your team over the semester.
Grading

The Capstone Design class grades will follow the official University of Utah guidelines:

- A: Excellent performance, superior achievement
- B: Good performance, substantial achievement
- C: Standard performance and achievement
- D: Substandard performance, marginal achievement
- E: Unsatisfactory performance and achievement

Letter grades will be assigned using the below scale, and scores will not be rounded.

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\begin{align*}
90 & > X \geq 87 & \quad & B+ \\
80 & > X \geq 77 & \quad & C+ \\
70 & > X \geq 67 & \quad & D+ \\
93 & > X \geq 90 & \quad & A- \\
87 & > X \geq 83 & \quad & B- \\
77 & > X \geq 73 & \quad & C- \\
67 & > X \geq 63 & \quad & D- \\
60 & > X \geq 0 & \quad & E
\end{align*}
\]

Final scores will be determined by performance in the following categories:

- 10% Effective Participation (classroom; team; assignments; peer evaluations; progress reports, etc.)
- 10% Other Misc. Assignments
- 30% Presentations
- 20% Design Document
- 20% Prototype
- 10% Overall Modifier

Overall Modifier

During the final letter grade computation, the course staff will evaluate each team member based on the overall quality of the team project, the quality of their contribution, and their contribution as evaluated by their team peers. This will include the team member’s contribution across the entire semester. Individuals on teams that see all members contribute equally and which produce high quality work can expect full points in this category. Individuals on teams where the final project is not superior and/or where certain team members produce less than others, can expect to see their final grade one or two steps lower than their teammates. It should be stressed once again that the senior project is about utilizing the skills you have painstakingly accumulated over your years in the CS program. While it is expected that there will be “growing pains” as you develop your senior project, the learning of new technologies is not an excuse for not producing excellent work. In this course, no credit will be given for effort; it is results that matter.
Teamwork

The first third of the semester will be graded mostly on an individual basis. The second two thirds of the semester (once teams are formed) will be graded mostly on a team basis. In general, the same grade will be given to each member of the team, although the course staff will adjust individual grades of team members with exceptional performance (good or bad).

Once teamwork begins, you will be asked to categorize your team members and yourself both by amount of work achieved and by teamwork/leadership qualities. The following list shows the general types of categorization that you will need to make of your fellow team members.

- Producing more than others on the team
- Pulling their weight
- Working hard but some issues are keeping them from completely contributing
- Not working as hard as you would like
- Not effectively contributing to the project
- Causing some team relations issues
- Causing a complete distraction to the team

Attendance

By enrolling in this course you are implying your availability to complete and attend all lectures, assignments, and meetings. There will be no extensions on assignments due to absence, unless there is a legitimate documented emergency. Specifically, vacation time and job responsibilities are not a legitimate emergency.

College of Engineering Guidelines

For information on withdrawing from courses, appealing grades, and more, see:

coe.utah.edu/students/academic-affairs/academics/semester-guidelines/

Safety

The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.

Violence and harassment based on race, national origin, color, religion, age, disability, sex or gender (which includes sexual orientation and gender identity/expression) is a civil rights offense and will not be tolerated. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776.
Students with Disabilities

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.