CSCI 401 Syllabus
Capstone: Design and Construction of Large Software Systems
Fall 2017

Instructor: Jeffrey Miller, Ph.D.
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Office: SAL 342
Phone: 213-740-7129
Lecture: 30227R, Thursday 4:00p.m.-7:50p.m., ZHS 159
Units: 4 units

Office Hours: Tuesday 12:30p.m.-1:30p.m.
Thursday 1:30p.m.-3:45p.m.
Any day by appointment

Textbook: None required

Description: Group project with an outside stakeholder to develop real-world software solutions to large-scale problems. Topics include software engineering, professional preparation, and recent computer science research.

Objectives:
1. Obtain experience working in a team on a real-world software project and completing such a project.
2. Apply knowledge of different areas of CS to solve a real-world problem.
3. Apply software engineering processes and methodologies in a practical setting.
4. Obtain professional preparation for interviews and jobs.

Grades:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Group Project Deliverables</td>
<td>40%</td>
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<tr>
<td>Peer Reviews</td>
<td>6% (2% for three peer reviews)</td>
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<tr>
<td>Reviewing Final Presentations</td>
<td>4% (2% for two reviews)</td>
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<tr>
<td>Status Report with Professor</td>
<td>30% (3% per week)</td>
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<tr>
<td>Group Project Demonstration/Presentation</td>
<td>20%</td>
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Grades will be based on a curve that operates in favor of the students, where the average percentage in the class will be the cut-off between a B- and a C+. If the average percentage is higher than 80%, the following will be the grading scale for a given percentage x:

\[
\begin{align*}
x & \geq 93 & A & 73 \leq x < 77 & C \\
90 \leq x < 93 & A- & 70 \leq x < 73 & C- \\
87 \leq x < 90 & B+ & 67 \leq x < 70 & D+ \\
83 \leq x < 87 & B & 63 \leq x < 67 & D \\
80 \leq x < 83 & B- & 60 \leq x < 63 & D- \\
77 \leq x < 80 & C+ & x < 60 & F
\end{align*}
\]
Outline: Once a week, each group will meet with the professor during one of the lectures to provide a status update from every person on the team. The accomplishments from the previous week should be demonstrated and each person’s individual contribution should be highlighted. The plans for the next week should be provided as well.

Project: The project in the class will be assigned during the first lecture of the semester. The project will consist of a group of students, the number of students which depends on the size of the project. Most of the projects have outside stakeholders leading them, either outside the department or outside the university. There will be deliverables that need to be submitted approximately every two weeks based on an agreement among the group, the stakeholder, and the professor. The project deliverables will be submitted via Blackboard and are due by 11:59p.m. on the due date (see Late Policy below). Only one student in the group needs to submit each deliverable, though make sure all of the students’ names in the group are provided so everyone can be given credit.

Status Report with Professor: Once a week, the professor will meet with every group about the progress of their project. Each group will only need to provide an update once a week. Each member of the team will have to explain and demonstrate what he/she has accomplished over the past week and what he/she plans to accomplish over the next week. The professor will assign a grade out of 3% to each person in the group. If you are not present, you can send your status report with another student in the group, but you will only receive 1% for that week. The other 2% is for actually being present and participating during the meeting. There are 11 weeks during the semester where this will occur, so you can miss one of them without penalty to your final grade (since the status reports are worth 30% of your final grade). The grade will be based on how much you have accomplished/demonstrated and how prepared you are for what you plan to accomplish.

Late Policy: There is no late policy. In extenuating circumstances, students may be allowed to submit an assignment late, but only if approved by the professor. This typically should be done before the due date, though I understand some situations may not allow this. For any assignment or project that is submitted after 11:59p.m. on the due date, the student will receive a 0.

Prerequisites: CSCI 270 – Introduction to Algorithms and Theory of Computing
CSCI 310 – Software Engineering

Students with Disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible.
**Academic Integrity:** The Viterbi School of Engineering’s policy on Academic Integrity can be found at [http://viterbi.usc.edu/academics/integrity/](http://viterbi.usc.edu/academics/integrity/). All students are expected to understand and abide by these principles. SCampus ([http://scampus.usc.edu](http://scampus.usc.edu)), the Student Conduct Code, contains the information about violating University standards in Section 11.00. Any potential violations will be taken seriously and the proper academic process will be followed, including reporting to the USC Student Judicial Affairs and Community Standards (SJACS).

**Viterbi Honor Code:** Engineering enables and empowers our ambitions and is integral to our identities. In the Viterbi community, accountability is reflected in all our endeavors.

Engineering+ Integrity.
Engineering+ Responsibility.
Engineering+ Community.
Think good. Do better. Be great.

These are the pillars we stand upon as we address the challenges of society and enrich lives.

**ABET Program Outcomes (after you have finished your degree and this capstone class)**

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<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>a</td>
<td>An ability to apply knowledge of computing and mathematics appropriate to the discipline;</td>
</tr>
<tr>
<td>b</td>
<td>An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;</td>
</tr>
<tr>
<td>c</td>
<td>An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs;</td>
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<tr>
<td>d</td>
<td>An ability to function effectively on teams to accomplish a common goal;</td>
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<tr>
<td>e</td>
<td>An understanding of professional, ethical, legal, security, and social issues and responsibilities;</td>
</tr>
<tr>
<td>f</td>
<td>An ability to communicate effectively with a range of audiences;</td>
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<tr>
<td>g</td>
<td>An ability to analyze the local and global impact of computing on individuals, organizations and society;</td>
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<td>h</td>
<td>Recognition of the need for, and an ability to engage in, continuing professional development;</td>
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<tr>
<td>i</td>
<td>An ability to use current techniques, skills, and tools necessary for computing practices.</td>
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<tr>
<td>j</td>
<td>An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;</td>
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<tr>
<td>k</td>
<td>An ability to apply design and development principles in the construction of software systems of varying complexity.</td>
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