CSCI 401: Capstone: Design and Construction of Large Software Systems
Spring 2021, 4 units

Lecture: MW 8:00a.m.-9:50a.m., Zoom (29963R)

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Office Hours: Any day by appointment
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Teaching Assistant: Posted in Blackboard
Contact Info: Posted in Blackboard

Course 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.

Learning Objectives

Course Outcomes (expected after you've finished the course)

i	Experience working in a team to complete a real-world professional software project
ii	The ability to apply knowledge of different areas of computer science to solve a real-world problem
iii	The ability to apply software engineering processes and methodologies in a professional environment
iv	Preparation for professional interviews and jobs

Graduates of the program will have an ability to:

1	Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2	Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3	Communicate effectively in a variety of professional contexts.
4	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Prerequisite(s)
CSCI 270 – Introduction to Algorithms and Theory of Computing
CSCI 310 – Software Engineering

Course Notes
The course primarily consists of students working on a professional project with a stakeholder external to the class. Weekly status meetings are conducted by the course staff with each team to ensure the team is staying focused and completing the project in an appropriate manner. Blackboard will be used for all project submissions, and different software/hardware will be required based on the specific project requirements. Students will give a live presentation/demonstration at the end of the semester.

Technological Proficiency and Hardware/Software Required

Various software and hardware tools will be required in this class based on the project.

Required Readings and Supplementary Materials

There is no textbook required for the class. Students may need to use various books and online resources to complete the selected project.

Grading Breakdown

Assessment	% of Grade
Group Project Deliverables	44%
Peer Reviews	6% (2%/review)
Status Meetings (12 total)	24% (out of 20%)
Status Reports (12 total)	12% (out of 10%)
Final Presentation/Demonstration	20%
TOTAL	100%

Grading Scale

Grades will be based on a curve that operates in favor of the students, with at least the following grades for a given percentage x. If the average in the class is lower than 80%, the average will become the cut-off between a B- and a C+.

$x \geq 93$	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

Grading Timeline

Deliverables must be approved by the stakeholder. After the professor has received an approval from the stakeholder, grades will be entered into Blackboard within 3 days.

Sharing of course materials outside of the learning environment

SCampus Section 11.12(B)

Distribution or use of notes or recordings based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study is a violation of the USC Student Conduct Code. This includes, but is not limited to, providing materials for distribution by services publishing class notes. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the Internet or via any other media. (SeeSection C.1 Class Notes Policy).

Late Policy

There is no late policy for the deliverables, status reports, peer reviews, or final presentation. In extenuating circumstances, students may be allowed to submit something late but only if approved by the professor. This should typically be done prior to the due date, though I understand some situations may arise that do not allow this. For any item that is submitted after 11:59p.m. on the due date, the item will receive a 0.

Final 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, where the number of students varies based on the size of the project. The projects are led by stakeholders external to the class (with possible exceptions for projects organized by the course staff). 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 are due by 11:59p.m. on the due date to the stakeholder and to Blackboard (see Late Policy). Only one student in the group needs to submit each deliverable, though make sure all the students' names in the group are provided so everyone can be given credit.

Status Reports and Weekly Updates

Once a week, the professor or TA will meet with every group to get an update concerning the progress of their project. 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 or TA will assign a grade out of 3% to each person in the group. If you are not present, you can still submit a digital status report worth 1%. The other 2% is for being present and participating during the meeting. The grade each week will be based on how much you have accomplished/demonstrated and how prepared you are for what you plan to accomplish. There are 12 meeting weeks this semester, and since the status reports are worth 30% of the final grade, students can miss two status update without penalty to the final grade. Status updates will be conducted online via video conference.

Final Presentation/Demonstration

During the last 1-2 weeks of the semester, each group will give a final presentation and demonstration. The grading rubric will be provided in Blackboard. The demonstration must be live to receive full credit. Based on the remote nature of the class, the final presentation/demonstration will be recorded and uploaded to Blackboard.

Peer Reviews

Students will review all other members of their group three times throughout the semester. The peer reviews will not be returned to the other members of the team but rather used by the course staff to determine if there is a problem among the team. The comments provided in the peer review will always stay confidential.

Exams

There are no exams in this class.

Lecture and Exam Schedule

Week	Lecture	Date	Lecture Topic
1	1	August 23, 2021	Class Overview, Project Discussion
1	2	August 25, 2021	Class Overview, Project Discussion
2	3	August 30, 2021	Status Updates #1
2	4	September 1, 2021	Status Updates #1
3	5	September 6, 2021	No Class – Labor Day
3	6	September 8, 2021	*No Status Updates*
4		September 13, 2021	Status Updates #2
4	8	*September 15, 2021*	Status Updates #2
5	9	September 20, 2021	Status Updates #3
5	10	September 22, 2021	Status Updates #3
6	11	September 27, 2021	Status Updates #4
6	12	September 29, 2021	Status Updates #4
7	13	October 4, 2021	Status Updates #5
7	14	October 6, 2021	Status Updates #5
8	15	October 11, 2021	Status Updates #6
8	16	October 13, 2021	Status Updates #6
9	17	October 18, 2021	Status Updates #7
9	18	October 20, 2021	Status Updates #7
10	19	October 25, 2021	Status Updates #8
10	20	October 27, 2021	Status Updates #8
11	21	November 1, 2021	Status Updates #9
11	22	November 3, 2021	Status Updates #9
12	23	November 8, 2021	Status Updates #10
12	24	November 10, 2021	Status Updates #10
13	25	November 15, 2021	Status Updates #11
13	26	November 17, 2021	Status Updates #11
14		**November 22, 2021**	**No Class - Thanksgiving**
14		**November 24, 2021**	**No Class - Thanksgiving**
15	27	November 29, 2021	Status Updates #12
15	28	December 1, 2021	Status Updates #12
16		**December 8, 2021**	**Final Project Demonstrations Due**

Assessments Schedule

NOTE: The Status Report and Status Update percentages add to 36.0% when the total is out of 30.0%, allowing students to miss up to 3.0% and still receive full credit.

Week	Day	Due Date	Assessment	% of Grade
1	Sunday	August 29, 2021	Status Report #1	1.0%
2	Monday/Wednesday	August 30/September 1, 2021	Status Update #1	2.0%
	Sunday	September 5, 2021	Deliverable #1 (Timeline)	6.0%
3	Sunday	September 12, 2021	Status Report #2	1.0%
4	Monday/Wednesday	September 13/15, 2021	Status Update #2	2.0%
	Sunday	September 19, 2021	Status Report #3	1.0%
	Sunday	September 19, 2021	Peer Review #1	2.0%
	Sunday	September 19, 2021	Deliverable #2	6.0%
5	Monday/Wednesday	September 20/22, 2021	Status Update #3	2.0%
	Sunday	September 26, 2021	Status Report #4	1.0%
6	Monday/Wednesday	September 27/29, 2021	Status Update #4	2.0%
	Sunday	October 3, 2021	Status Report #5	1.0%
	Sunday	October 3, 2021	Deliverable #3	6.0%
7	Monday/Wednesday	October 4/6, 2021	Status Update #5	2.0%
	Sunday	October 10, 2021	Status Report #6	1.0%
8	Monday/Wednesday	October 11/13, 2021	Status Update #6	2.0%
	Sunday	October 17, 2021	Status Report #7	1.0%
	Sunday	October 17, 2021	Deliverable #4	2.0%
	Sunday	October 17, 2021	Peer Review #2	2.0%
9	Monday/Wednesday	October 18/20, 2021	Status Update #7	2.0%
	Sunday	October 24, 2021	Status Report #8	1.0%
10	Monday/Wednesday	October 25/27, 2021	Status Update #8	1.0%
	Sunday	October 31, 2021	Status Report #9	2.0%
	Sunday	October 31, 2021	Deliverable #5	6.0%
11	Monday/Wednesday	November 1/3, 2021	Status Update #9	1.0%
	Sunday	November 7, 2021	Status Report #10	2.0%
12	Monday/Wednesday	November 8/10, 2021	Status Update #10	1.0%
	Sunday	November 14, 2021	Status Report #11	2.0%
	Sunday	November 14, 2021	Deliverable #6	6.0%
	Sunday	November 14, 2021	Peer Review #3	2.0%
13	Monday/Wednesday	November 15/17, 2021	Status Update #11	2.0%
14	Sunday	November 28, 2021	Status Report #12	1.0%
15	Monday/Wednesday	November 29/December 1, 2021	Status Update #12	2.0%
	Sunday	December 5, 2021	Deliverable #7 (Final Documentation)	8.0%
16	Wednesday	December 8, 2021	Final Presentations Due	20.0%

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call
studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298
equity.usc.edu, titleix.usc.edu
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298
usc-advocate.symplicity.com/care_report
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity |Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776
dsp.usc.edu
Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention - (213) 821-4710
campussupport.usc.edu
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101
diversity.usc.edu
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.