CSCI 401
Capstone: Design and Construction of Large Software Systems

Units: 4
Semester: Spring 2022
Section: 29963R
Day: Monday/Wednesday
Time: 8:00-9:50a.m.
Loation: HAR 101 (with a remote option)

Instructor: Jeffrey Miller, Ph.D.
Office: RRB 203 and Zoom
Office Hours: Any day by appointment
Contact Info: jeffrey.miller@usc.edu

Teaching Assistants:
    Yang Chen (chen716@usc.edu)
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Hours of Service: Monday-Friday, 8:30a.m.-5:00p.m.
Phone: 213-740-0517
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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
Do not reproduce, distribute, or post any lecture material, recordings, assignments, or tests publicly without the written consent of the instructor. Students may take notes and make copies of course materials for their own use. They may not post the course materials on sites such as CourseHero. Doing so is a copyright violation and an academic integrity violation that will be dealt with accordingly.

Here is USC's policy that prohibits sharing of any synchronous and asynchronous course content outside of the learning environment from SCampus Section C.1 (https://policy.usc.edu/wp-content/uploads/2021/08/SCampus-Part-C-Academic-Policies.pdf).

> *Notes or recordings made by students based on a university class or lecture may only be made for purposes of individual or group study, or for other usual non-commercial purposes that reasonably arise from the student's membership in the class or attendance at the university. This restriction also applies to any information distributed, disseminated or in any way displayed for use in relationship to the class, whether obtained in class, via email or otherwise on the internet, or via any other medium. Actions in violation of this policy constitute a violation of the Student Conduct Code and may subject an individual or entity to university discipline and/or legal proceedings.*

Academic Integrity

SCampus is USC's Student Guide to Policies and Conduct Code and can be found at http://scampus.usc.edu. Students will be referred to the Office of Student Judicial Affairs and Community Standards (SJACS) for further review, should there be any suspicion of academic dishonesty. More information can be found at https://sjacs.usc.edu/students/academic-integrity/.

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%, which is due on the Sunday prior to the status meeting. 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 updates and reports without penalty to the final grade. No extra credit will be given for additional status updates and reports. Status updates will be conducted remotely.

Final Presentation/Demonstration

During finals week, each group will give a final presentation and demonstration. The grading rubric will be provided in Blackboard. The presentation will be recorded and uploaded to Blackboard and distributed to your stakeholders.

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	January 10, 2022	Class Overview, Project Discussion
1	2	January 12, 2022	Assignment of Projects
2		January 17, 2022	**No Class – Martin Luther King Jr.'s Birthday**
2	3	January 19, 2022	*No Status Updates*
3	4	January 24, 2022	Status Updates #1
3	5	January 26, 2022	Status Updates #1
4	6	January 31, 2022	Status Updates #2
4	7	February 2, 2022	Status Updates #2
5	8	February 7, 2022	Status Updates #3
5	9	February 9, 2022	Status Updates #3
6	10	February 14, 2022	Status Updates #4
6	11	February 16, 2022	Status Updates #4
7		February 21, 2022	**No Class – Presidents' Day**
7	12	February 23, 2022	*No Status Updates*
8	13	February 28, 2022	Status Updates #5
8	14	March 2, 2022	Status Updates #5
9	15	March 7, 2022	Status Updates #6
9	16	March 9, 2022	Status Updates #6
		March 14, 2022	**No Class – Spring Break**
		March 16, 2022	**No Class – Spring Break**
10	17	March 21, 2022	Status Updates #7
10	18	March 23, 2022	Status Updates #7
11	19	March 28, 2022	Status Updates #8
11	20	March 30, 2022	Status Updates #8
12	21	April 4, 2022	Status Updates #9
12	22	April 6, 2022	Status Updates #9
13	23	April 11, 2022	Status Updates #10
13	24	April 13, 2022	Status Updates #10
14	25	April 18, 2022	Status Updates #11
14	26	April 20, 2022	Status Updates #11
15	27	April 25, 2022	Status Updates #12
15	28	April 27, 2022	Status Updates #12
16		**December 8, 2021 from 8:00-10:00a.m.**	**Final Project Presentations** (if in person or submitted on Blackboard if remote))

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 6.0% and still receive full credit.

Week	Day	Due Date	Assessment	% of Grade
1			*Nothing due*	
2	Sunday	January 23, 2022	Status Report #1	1.0%
	Sunday	January 23, 2022	Deliverable #1 (Timeline)	6.0%
3	Monday/Wednesday	January 24/26, 2022	Status Update #1	2.0%
	Sunday	January 30, 2022	Status Report #2	1.0%
4	Monday/Wednesday	January 31/February , 2022	Status Update #2	2.0%
	Sunday	February 6, 2022	Status Report #3	1.0%
	Sunday	February 6, 2022	Deliverable #2	6.0%
5	Monday/Wednesday	February 7/9, 2022	Status Update #3	2.0%
	Sunday	February 13, 2022	Status Report #4	1.0%
	Sunday	February 13, 2022	Peer Review #1	2.0%
6	Monday/Wednesday	February 14/16, 2022	Status Update #4	2.0%
	Sunday	February 20, 2022	Deliverable #3	6.0%
7	Sunday	February 27, 2022	Status Report #5	1.0%
8	Monday/Wednesday	February 28/March 2, 2022	Status Update #5	2.0%
	Sunday	March 6, 2022	Status Report #6	1.0%
	Sunday	March 6, 2022	Deliverable #4	6.0%
9	Monday/Wednesday	March 7/9, 2022	Status Update #6	2.0%
	Sunday	March 6, 2022	Peer Review #2	2.0%
Spring Break	Sunday	March 20, 2022	Status Report #7	1.0%
10	Monday/Wednesday	March 21/23, 2022	Status Update #7	2.0%
	Sunday	March 27, 2022	Status Report #8	1.0%
	Sunday	March 27, 2022	Deliverable #5	6.0%
11	Monday/Wednesday	March 28/30, 2022	Status Update #8	2.0%
	Sunday	April 3, 2022	Status Report #9	1.0%
12	Monday/Wednesday	April 4/6, 2022	Status Update #9	2.0%
	Sunday	April 10, 2022	Status Report #10	1.0%
	Sunday	April 10, 2022	Deliverable #6	6.0%
13	Monday/Wednesday	April 11/13, 2022	Status Update #10	2.0%
	Sunday	April 17, 2022	Status Report #11	1.0%
	Sunday	April 17, 2022	Peer Review #3	2.0%
14	Monday/Wednesday	April 18/20, 2022	Status Update #11	2.0%
	Sunday	April 24, 2022	Status Report #12	1.0%
15	Monday/Wednesday	April 25/27, 2022	Status Update #12	2.0%
	Sunday	May 1, 2022	Deliverable #7 (Final Documentation)	8.0%
16	Monday	**May 9, 2022 by 11:59p.m.**	**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
https://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
https://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
https://studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity. Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086
https://eeotix.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
https://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 Student Accessibility Services (OSAS) - (213) 740-0776
https://osas.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
https://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
https://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
https://dps.usc.edu, https://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
https://dps.usc.edu
Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
https://ombuds.usc.edu
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.