

# SE 490— Senior Project I

Software Engineering  
Fall 2021

Section 001:            M W            1:30 - 2:20P            Synchronous Virtual Instruction  
                              F            1:30 - 2:20P            Synchronous Virtual Lab  
ZOOM: <https://csusm.zoom.us/j/83961921713>

## Instructor

Dr. Xiaocong Fan  
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## Office Hours:

Monday            3:30 pm-4:30 pm  
Wednesday       1:00 pm-2:00 am

Office Hour ZOOM: <https://csusm.zoom.us/j/97495539024>  
ZOOM ID: 974 9553 9024


**With Waiting room enabled:** Be patient if another student is in.

**Weekly meeting with Faculty Advisor (once assigned): It is required that each team schedule weekly meeting with your faculty advisor.**

## CapStone Web Site:

Cougar Courses is NOT used for our Capstone Projects. Another Web application called **CapStone** (<https://MyCapstone.csusm.edu/>) is in use instead.

In particular, CapStone is used for

- (1) Distribution of course materials (schedules, slides, video links)
- (2) Submission of assigned works
- (3) Project management (clock-in/clock-out)
- (4) CASE tools for design artifacts
- (5) Communication with faculty advisors and industry mentors.
- (6) Help desk : Questions and Answers

## Course Description

Collaborates on team-based projects with realistic constraints from clients. Exercises the incremental software development process, periodically conducting project and code reviews and frequently collecting feedback from stakeholders. Provides hands-on experience in managing projects, making team decisions, documenting design artifacts, applying modern construction technologies, as well as presenting and demonstrating project progress to stakeholders. Senior project is a year-long process and it will be completed in SE 491 in the following semester.

## Textbook(s) and Supplemental Material Required

Clean Architecture, Robert C. Martin, Pearson, 2017, ISBN-13: 978-0134494166

**Prerequisite(s):** SE 461: Software Testing and Quality  
SE 471: Software Architecture

**Corequisites:** SE 481: Software Project Planning and Management

### Course Learning Objectives

Upon successful completion of this course, students will be able to:

Course Learning Objectives (CLOs)		Relevant Topics Covered
<b>O1</b>	Collaborate on a team-based project to meet project milestones and user needs	Agile project management, trade-off analysis, risk analysis, and impact analysis
<b>O2</b>	Communicate effectively as part of a software team	Interacting with stakeholders, make team decisions, technical presentation, reflection on software process
<b>O3</b>	Apply software engineering principles in eliciting and refining requirements	requirements elicitation, requirements management and Traceability, Dealing with uncertainty and ambiguity
<b>O4</b>	Apply a software process model to develop a software product of good quality	Agile approach, architectural trade-offs, Architectures for network, mobile, and embedded systems, Database design, Test-driven development
<b>O5</b>	Commit to ethical and professional responsibilities throughout the software process	ACM/IEEE software engineering code of ethics, Social, legal, cultural and professional issues and concerns
<b>O6</b>	Use appropriate CASE tools to support software development activities.	Modeling tools, version control systems, project management tools, open source tools
<b>O7</b>	Utilize domain knowledge, business process, and techniques that are necessary to meet user needs	Technology Stacks, Platforms, regulations, Intellectual Property, Non-Disclosure Agreement

### Program Learning Outcomes (With Maps to CLOs)

Program Learning Outcomes (PLOs)		CLOs
<b>SE 2</b>	to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	O3 O4
<b>SE 3</b>	to communicate effectively with a range of audiences	O2
<b>SE 4</b>	to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	O5
<b>SE 5</b>	to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	O1
<b>SE 7</b>	to acquire and apply new knowledge as needed, using appropriate learning strategies	O6 O7

**Prepared by and date of preparation: Xiaocong Fan, August 26, 2021**

### Grading Criteria:

Grading is based on your weekly progress, project reports and your performance in project presentation. The following table gives the different assessed components of the course (based on 100 points):

#### 2021 Fall Semester Grading Rubrics

Category	Variable	Percentage	InputFrom	Type	Points Earned		Final Points
System	G0	15%	Advisor	Team	0	× T	
Report Version 1.0	G1	10%	Advisor	Team	0	× T	
Report Version 1.5	G2	10%	Advisor	Team	0	× T	
Report Version 2.0	G3	10%	Advisor	Team	0	× T	
Report Version 2.5	G4	10%	Advisor	Team	0	× T	
Presentation Phase 1	G5	10%	(Co-)Advisor	Individual	0		0.00
Presentation Phase 2	G6	10%	(Co-)Advisor	Individual	0		0.00
Quiz	G7	15%	Instructor	Individual	0		0
Discussion Forum	G8	10%	Instructor	Individual	0		0.00
Attendance Penalty (negative means bonus)	G9	Up to 10 points	Instructor	Individual	0		0
My Final Grade	0 (missing teamwork parts)			What if	T =	<input type="text"/>	0

#### Teamwork Performance Factor T

Variable	InputFrom	Range	Value
$\alpha$	Peer Evaluation Average	[0, 0.70]	
$\gamma$	Weekly Progress/Effort	[0, 0.25]	
$\delta$	Peer Evaluation Quality	[0, 0.05]	
$T = \alpha + \gamma + \delta$	Sum of three factors	[0, 1]	

#### Final Grade Calculation G=

$$(G0 \times 15\% \times T) + (G1 \times 10\% \times T) + (G2 \times 10\% \times T) + (G3 \times 10\% \times T) + (G4 \times 10\% \times T) + (G5 \times 10\%) + (G6 \times 10\%) + (G7 \times 15\%) + (G8 \times 10\%) - G9$$

#### Final Letter Grade

F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A
[0, 52)	[52, 56)	[56, 60)	[60, 64)	[64, 68)	[68, 72)	[72, 76)	[76, 80)	[80, 84)	[84, 88)	[88, 92)	[92, 100)

## Course Policies

- **Effort:** Each student should budget about **10 hours per week** (excluding class time) to work on your project. For a team of 3 students, the team would have  $3 \times 10 \times 15 \times 2 = 900$  hours (assuming 15 weeks per semester) to work on your two-semester project.
- **Assignments:** If not otherwise stated, all works should be submitted through the CapStone system (<https://MyCapstone.csusm.edu/>). When writing project reports, each team should use the report cover page and design artifacts generated by the CapStone system.
- **In-class activities:** Be prepared to discuss and ask questions about the covered topics. You should *actively participate* in the class activities and discussions. You can demonstrate your intellectual engagement in a number of ways including speaking up in class, bringing interesting and relevant material in to the class, and discussing the material being covered with peers.
- **Attendance Policy:** Punctual attendance is mandatory for all class periods. All excused absences must be supported by written documentation, such as a doctor's receipt, athletics travel notice, etc. **Each student will be allowed 2 unexcused absences – for each absence after that, there will be a deduction of 2% points from your final class grade.**
- **Makeup Policy:** Only if the makeup is arranged before the scheduled quiz/exam period, and only in the case of an excused emergency.

## Academic Integrity

Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity, and everyone is expected to act in accordance with this principle.

- Weekly assignments are designed for reinforcing student learning. Students are encouraged to seek support from the instructor, peers, or tutors on understanding the assignments and how to develop solutions (design, algorithm, code, etc.). However, your submissions must be your original work; taking solutions (or slightly modified ones) from others and sharing your solutions (or nearly completed ones) to others are both considered violation of academic integrity.
- In particular, if you make use of code from outside resources, you must provide clear reference to the sources. If not clearly stated, any copying of any part of another's work will be deemed as cheating and plagiarism, which will be treated very seriously. Incidents of Academic Dishonesty will be reported to the Dean of Students, and students involved will receive a 0 grade for the assignment and potentially a failing grade for the course. Sanctions at the University level may include suspension or expulsion from the University.

## DISABILITY ACCOMMODATION

Students with disabilities who require academic accommodations must be approved for services by providing appropriate and recent documentation to the Office of Disabled Student Services (DSS). This office is located in Craven Hall 4300 and can be contacted by phone at (760) 750-4905, TDD (760) 750-4909 or by email at: [dss@csusm.edu](mailto:dss@csusm.edu).