CSC 131: Computer Software Engineering

California State University, Sacramento (CSUS), Spring 2019 Semester, 3 Credits

Class Times & Locations:

Section **1**: Tu/Th, 12:00PM - 1:15PM, Yosemite Hall 119
Section **4**: M/W, 4:00PM - 5:15PM, Riverside Hall 1013

Your Instructor

Dr. Jingwei Yang

Homepage: http://www.ecs.csus.edu/csc/yang/

Email: yang@csus.edu

Office: Riverside Hall 3006

Phone: (916) 278-7328

Office Hours: TBD

Email Policy

Please email me (yang@csus.edu) directly instead of using Canvas messaging system. Please check your Sac State email at least once a day, in case I reach out to you through email. I do NOT read any emails between Fri 5PM and Mon 8AM.

Course Content

This course is about how to develop high-quality software systems that are delivered on time and within budget using modern development tools. There are two aspects to this task: managing the effort and applying effective tools and techniques. We will survey both aspects and apply them by building a system in teams of 6-7 members during the semester.

Prerequisites:

CSC 130 (may be taken concurrently)

Goals of the Course

The overall objective of this course is survey the field of software engineering. More specifically, by the end of this course you will be able to

1. Define software engineering, name several factors affecting software quality and productivity, and explain common software development processes.
2. Explain phases of a software development effort, including the activities and products of each phase.
3. Understand the differences between traditional and agile software development processes, and be able to use an agile development process (Scrum).
4. Explain and discuss fundamental software project management issues.

5. Explain and use with others in a development project common tools and techniques for planning a project, analyzing risks, estimating effort, and scheduling project work.
6. Explain and use standard techniques and tools for analyzing product requirements, formulating product design, coding, and testing a software product.
7. Recognize and read several common analysis and design notations (such as UML), and write and use these notations properly in specifying software.
8. Explain, recognize, and apply a few common software design patterns.
9. Use basic software development tools, including a modern Interactive Development Environment (IDE), a unit testing tool, a code coverage analysis tool, a version control system, and a debugger.
10. Participate effectively with others in carrying a small software development project from conception through deployment.

Required Texts

The primary textbook for this course is Software Engineering: A Practitioner's Approach, R. Pressman, 8th edition, 2014, McGraw Hill. Other reference books will all be available through library e-book portal, or freely available on the web (in "Reading" section in "Modules" in Canvas).

Attendance and Participation

Attendance is not required except at labs. However, attendance is expected in the sense that material missed because of unexcused absences will not be provided by the instructor on other occasions. In other words, there will be no private lectures during office hours for student who don't bother to come to class. All students are expected to participate in their groups during in-class activities and during class discussions. There are no participation grades, however.

Important Notes: **Appropriate in-class behaviors are expected, including but not limited to:**

- **Take notes.**
- **Use appropriate language when asking questions or during group discussion.**
- **No laptop/tablet/mobile phone/other computational device usage is allowed unless otherwise instructed.**
- **No eating.**
- **Ask for permission if need to leave in the middle of a lecture.**

Methods of Evaluation

Graded work will include a midterm and a final exam, labs, in-class activities, several homework assignments, and a team project. Assignment specifics will be posted on Canvas. The final grade will be computed as follows (subject to change):

Assignments	Weight
Labs + In-class Activities	10%
Homework Assignments	10%
Team Project	25%
Midterm Exam	25%
Final Exam	30%

At the end of the semester, a final percentage will be calculated according to the above criteria. Then, a letter grade according to the following scale will be assigned. (**No curving will be further performed**.)

Range	Letter Grade
93.4-100	A
90.0-93.3	A-
86.7-89.9	B+
83.4-86.6	B
80.0-83.3	B-
76.7-79.9	C+

Range	Letter Grade
73.4-76.6	C
70.0-73.3	C-
66.7-69.9	D+
63.4-66.6	D
60.0-63.3	D-
59.9 or Less	F

Labs

Attendance is required. Please check Canvas "Modules" for lab dates.

Homework Assignments

There will be several homework assignments. These will be written and graded individually, usually not as part of a team.

Missed and Late Assignment Policy

In-class work missed because of absence will only be accepted if arrangements are made **beforehand**. Late project and homework assignments will be accepted within 2 days after due dates, with 25% penalty for each day. Alternate due dates can be arranged in special circumstances provided these arrangements are made **before** the due date. At the end of the semester, one 25% off penalty will be removed from one assignment (homework or lab) when your final grade is calculated. You may choose which assignment this penalty waiver shall be applied to.

Team Project

The team project will be done throughout the semester by a team of 6-7 people. You will be assigned to a team. You will use an agile method called **Scrum**, which we will discuss in class. In Scrum, a self-directed team creates working versions of a product about every two or three weeks in efforts called **Sprints**. Your team will do at least 3-4 sprints, each lasting 1-2 weeks. Your product deliverables will include various Scrum artifacts as well as the software product and its documentation. You will also be asked to evaluate the contributions of all team members at the end of every sprint; these evaluations will be used to weight project grades. We will discuss details about this when we discuss the project in more detail.

Important Note: **Quality documentation is critical for the success of the project and counts toward your project grade. All work submitted must be typed.**

Exams

The midterm examinations will cover the material since the beginning of the semester, but the final examination will cover the entire semester.

If you are unable to take an exam at the scheduled time because of illness or other problems, you must contact me **beforehand** to arrange to take the exam at a different time. Failure to make prior arrangements for a missed exam will result in a grade of 0 for the exam.

Tentative Schedule

The following schedule is a plan, not a contract. Modifications will be posted on Canvas as the semester progresses.

Week #	Topic
1 (1/22)	Introduction; Activity Diagrams
2 (1/28)	Processes
3 (2/4)	Scrum; Software Quality; Requirements
4 (2/11)	User Interface/Interaction Design; Engineering Design Principles;
5 (2/18)	Architecture Styles; Design Patterns
6 (2/25)	Design Patterns(cont.); Java Swing
7 (3/4)	Java Swing(cont.); Version Control
8 (3/11)	Verification & Debugging; **Midterm Exam**
(3/18)	Spring Recess (3/18-22)
9 (3/25)	Static Analysis & Refactoring; Scrum Tools
10 (4/1)	Deploy & Maintenance; Project Management; Sprint 1 Planning
11 (4/8)	Sprint 1 Review; Risk Management; Measurements; Sprint 2 Planning
12 (4/15)	Sprint 2 Review; Scheduling; Sprint 3 Planning
13 (4/22)	Sprint 3 Review; Software Economics; Sprint 4 Planning
14 (4/29)	Sprint 4 Review; Code Inspection; Sprint 5 Planning
15 (5/6)	Sprint 5 Review, Final Product Demonstration; Review for Final Exam
16 (5/13)	**Final Exam**

Important Dates*

1/22, 2019	Instruction Begins
2/4-15, 2019	Spring 2019 Late Registration and Change of Schedule
2/12, 2019	Lincoln's Birthday (Holiday Observed in Dec. 2019) Campus Open and Classes Held
2/18, 2019	Census Date
2/18, 2019	Presidents' Day (Holiday Observed in Dec. 2019) Campus Open and Classes Held
3/18-22, 2019	Spring Recess
4/1, 2019	Cesar Chavez Birthday Observed (Holiday, Campus Closed)
5/10, 2019	Last Day of Instruction
5/13-17, 2019	Final Week
5/20-22, 2019	Evaluation Days (Academic Workdays)
5/22, 2019	Spring 2019 Grades Due By Faculty – students will see grades posted the following day at noon

*Please note that not all important deadlines are listed on this calendar. Visit the University Academic Calendar (www.csus.edu/acaf/calendars) for additional deadlines. +See Add/Drop Form for all add/drop deadlines and instructions.

University Policies

Academic Honesty

If you violate the University's Honor Code (https://www.csus.edu/umanual/student/stu-0100.htm), you will receive a reduced or failing grade in the course, other penalties may be imposed, and the violation will be reported to the Student Conduct Officer. Automated tools may be used on any assignment, at any time, to detect inappropriate collaboration and to determine the originality of submissions.

Adding/Dropping

You are responsible for enrolling in courses and verifying your schedule on MySacState. The deadline for adding a semester course is Friday, 02/15/2019. The last day to withdraw from a course with a W grade is Friday, 04/19/2019. I do not give "Incomplete" grades to students requesting a drop after the deadline except in extraordinary circumstances.

Disability Services

If you have a documented disability and need accommodations in this course, please register with the Office of Services to Students with Disabilities (https://www.csus.edu/sswd/). They will verify your need for services and make recommendations for the course. I will be happy to discuss any accommodations I can provide to assist your learning with you.

Religious Observation Accommodations

If you cannot satisfy a requirement of the course for religious reasons you must let me know at least two weeks in advance. In some cases you will be required to make up the requirement; in other cases the requirement may be waived with suitable adjustment in grading criteria.

Excused Absences

Students who are unable to attend class due to Sac State sponsored activities (such as sports, band, academic competition, field trips, etc.) or personal religious observances may request reasonable accommodations. Please notify me during the first week of class regarding potential absences so that we can determine alternative methods for you to complete the required work.

Housing & Food Security

If you experience difficulties with financial, housing or food security, please contact Basic Needs Division of Student Affairs (https://www.csus.edu/basicneeds/) for assistance.

Parents & Families

If you are students with children, please feel free to let me know your needs. Also, please reach out to Parents & Families Division of Student Affairs (https://www.csus.edu/student/parents/student-parents/) for all resources available on campus.

Changes to this Document

I reserve the right to change any information on this document or course materials at any time.