Location: THH 201

Instructor:

Chao Wang   wang626@usc.edu

Office: SAL 334
Office Hours: Wed, 2:00pm - 4:00pm

Teaching Staff:

Teaching Assistants (4 PhD students)
Office Hours: will be posted on Blackboard and Piazza

Course Producers (16 MS/undergrad students)
Office: SAL first-floor computer lab
Help Hours: Monday to Friday (10:00am to 6:00pm)

Course Description

Introduction to software engineering processes and the software development lifecycle, covering project planning, requirement analysis, architectural design, detailed design, implementation, validation and verification (V&V), and maintenance, through a combination of individual and team-based software development projects.

Learning Objectives

Students will gain a basic understanding of the processes, methods, and tools for professional software development, and learn how to use some of these methods and tools in practical settings. Major objectives include

1. Understanding the importance of requirements, to make sure the software does what customers want it to do
2. Understanding the basic object-oriented (OO) design principles, to make sure the software is flexible to change
3. Understanding the basic OO design patterns, to make sure the software is maintainable and reusable
4. Understanding the development processes, to work efficiently with customers and other developers

Prerequisites

CSCI 201 (Principles of Software Development)
CSCI 104 (Data Structures and Object Oriented Design)
CSCI 103 (Introduction to Programming)

Textbook and Supplementary Readings

Textbook:
- Software Engineering (10th Edition), Ian Sommerville, Pearson, 2015

Supplementary Reading:
- Head First Software Development, Pilone and Miles, O'Reilly, 2008 (optional)
- Head First Design Patterns, Freeman and Robson, O'Reilly, 2014 (optional)

Assignments and Examinations

Your final grade will be based on completion of quizzes, two examinations, an individual coding project, and a team-based software development project.

- **Quizzes**: Unannounced quizzes will be used to check class attendance, and to assess your understanding of the lecture materials (each quiz will focus only on the lecture materials of the day when the quiz is given).

- **Examination #1**: This exam will cover materials taught in the first half of the semester.

- **Examination #2**: This exam will cover materials taught in the second half of the semester, although students are expected to understand the topics covered by the first exam.

- **Project #1**: This individual coding project will a "warming-up exercise" for all students in the class to get familiar with **Android Studio** (which will to be used to complete the team-based Project 2). It will also develop your ability to use modern software development tools.

- **Project #2**: This team-based coding project will develop your ability to collaborate with other students and use the *iterative (agile) software development* process. The project consists of 5 tasks, resulting in 5 deliverables. The last task, called "sprint", is an "implementation" task that allows you to quickly improve the software that you've implemented in the first four tasks.

Grading Breakdown

Since you will learn most of the techniques **through lectures** and then practice a subset of them **through projects**, your final grade will be based on your performance in both **quizzes/examinations** (45%) and **projects** (55%).

Assignment	% of Grade
Quizzes	5%
Examination #1	20%
Examination #2	20%
Individual Coding Project (Project #1)	10%
Team Project (Project #2)	45%
• *Deliverable #1 - 5% (requirements)* • *Deliverable #2 - 5% (design)* • *Deliverable #3 - 20% (implementation)* • *Deliverable #4 - 10% (testing)* • *Deliverable #5 - 5% (sprint)*	
TOTAL	**100%**

While the team project (Project #2) is a collaborative exercise, each student will receive an individualized grade based on (1) the team's overall performance and (2) the student's individual contribution; thus, an individual's grade may deviate from the team's grade, although (ideally) all team members are expected to contribute equally.

No students are allowed to miss either examinations. Failure to take an exam during its scheduled time will result in a grade of zero on that exam.

Without penalty, students are allowed to miss up to four (4) pop-up quizzes during the entire semester – missing four quizzes indicates that you've missed (at least) two weeks of lectures. The way we implement this "leniency" policy is to drop four (4) of your lowest-graded quizzes at the end of the semester, when we calculate your final grade.

If you have serious issues that need accommodation, please notify the instructor (examples include death of parents, being hospitalized, or going on a business trip for the university). However, if you have to miss a class (and therefore is worried of missing a pop-up quiz) due to minor issues (travel/illness/interview/etc.) there is NO need to notify us because the leniency policy of "dropping-four-lowest-graded-quizzes" is designed primarily to account for such issues.

Additional Policies

Late homework submissions will still be accepted within 24 hours after the announced deadline, but with a penalty of 20%. Assignments more than 24 hours late will not be accepted, and will result in a grade of 0.

After grading is completed for an assignment, if you notice a grading error, please notify the TAs within one week. After one week (7 calendar days), requests for regrading will no longer be allowed.

Course Schedule *(tentative)*

Week	Date	Topic	Textbook *(Sommerville)*	Supplement *(Head First)*	Homework
1	08/21	Introduction	Ch.1-2		
	08/23	Android I			
2	08/28	Android II			Project 1
	08/30	Tools: version control and issue tracking	Ch. 25	Ch.6-8	
3	09/04	NO CLASS – Labor Day Holiday			
	09/06	Tools: build and unit testing			
4	09/11	Tools: test-driven development (TDD)			
	09/13	Iterative development I	Ch. 3-5	Ch. 1-5	
5	09/18	Iterative development II & Requirements			Project 2.1
	09/20	Iterative development III		Ch. 9-11	
6	09/25	Architectural design	Ch. 6		
	09/27	Detailed design	Ch. 7		Project 2.2
7	10/02	OO Design Principles			
	10/04	OO Design Patterns I			
8	10/09	Review for Exam 1			Project 2.3
	10/11	**Exam 1** *– at 10 -11:50AM (before Fall Recess 10/12-13)*			
9	10/16	Guest Lectures			
	10/18	Short lecture + Team Meeting for Project 2.3			
10	10/23	OO Design Patterns II			
	10/25	Refactoring			
11	10/30	Testing I	Ch. 8		
	11/01	Testing II			
12	11/06	Testing III			Project 2.4
	11/08	Automated Testing			
13	11/13	NO LECTURE – Team Meeting for Project 2.4			
	11/15	Program Analysis I			
14	11/20	Program Analysis II			Project 2.5
	11/22	NO LECTURE -- Team Meeting for Project 2.5			
15	11/27	Program Analysis III			
	11/29	Wrap Up – Review for Exam 2			Project 2.5 due on 12/01
16	12/04	NO CLASS – Study Days (12/02 - 12/05)			
	12/06	**Exam 2 –** *at 11:00AM-1:00PM*			

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" https://policy.usc.edu/student/scampus/part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Discrimination, sexual assault, intimate partner violence, stalking, and harassment are prohibited by the university. You are encouraged to report all incidents to the *Office of Equity and Diversity/Title IX Office* http://equity.usc.edu and/or to the *Department of Public Safety* http://dps.usc.edu. This is important for the health and safety of the whole USC community. Faculty and staff must report any information regarding an incident to the Title IX Coordinator who will provide outreach and information to the affected party. The sexual assault resource center webpage http://sarc.usc.edu fully describes reporting options. Relationship and Sexual Violence Services https://engemannshc.usc.edu/rsvp provides 24/7 confidential support.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* http://ali.usc.edu, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://dsp.usc.edu provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* http://emergency.usc.edu will provide safety and other updates, including ways in which instruction will be continued by means of Blackboard, teleconferencing, and other technology.