San José State University
Department of Computer Science
CS160, Software Engineering, Section 3, Fall, 2016

Course and Contact Information

Instructor:	Fabio Di Troia
Office Location:	DH282
Telephone:	
Email:	fabio.ditroia@sjsu.edu
Office Hours:	Friday, 11:00 – 13:00
Class Days/Time:	Tuesday/Thursday, 7:30-8:45 A.M.
Classroom:	MH233
Prerequisites:	CS 146, CS 151 (with a grade of "C-" or better in each); CS 100W (with a grade of "C" or better) or instructor consent. Computer Science and Software Engineering Majors only.

Course Format

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on Canvas Leaning Management System course login website at http://sjsu.instructure.com. You are responsible for regularly checking with the messaging system through MySJSU at http://my.sjsu.edu (or other communication system as indicated by the instructor) to learn of any updates.

Course Description

Software engineering principles, software process and process models, requirements elicitation and analysis, design, configuration management, quality control, project planning, social and ethical issues. Required team-based software development, including written requirements specification and design documentation, oral presentation, and tool use.

Learning Outcomes

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

• LO 1: **Software process:** Reason about and apply the entire software development process. Create a software project schedule and use project scheduling like Microsoft Project. Use version control tools like Git.

• LO 2: **Requirements engineering:** Solicit, elaborate, and validate software product specifications and generate meaningful use cases.

• LO 3: **Software design:** Understand what software design architectures are suitable for various software projects. Apply appropriate software designs to a team project. Explain and defend design decisions. Use appropriate software design tools.

• LO 4: **Software verification and validation (V&V):** Understand the software validation process and use issue-tracking tools. Create and execute test plans

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to acquire critical job skills that are immediately applicable in the software industry:

• CLO 1: Work together in a small programming team.

• CLO 2: Understand the challenges of software engineering and its methodologies and processes.

• CLO 3: Recognize people and team management issues.

• CLO 4: Solicit and analyze product requirements and generate use cases.

• CLO 5: Write functional specifications at a level of detail sufficient for software design.

• CLO 6: Make correct architectural and design choices.

• CLO 7: Develop and document a software design at a level of detail sufficient for implementation.

• CLO 8: Draw meaningful UML class and sequence diagrams.

• CLO 9: Do oral presentations to explain and defend design decisions.

• CLO 10: Formulate and execute a test plan.

• CLO 11: Carry out code reviews in a team setting.

• CLO 12: Generate a project schedule with achievable milestones.

• CLO 13: Create Gantt charts from a work breakdown structure.

• CLO 14: Identify task dependencies and critical paths.

• CLO 15: Track issues and measure development progress.

• CLO 16: Use revision control software.

• CLO 17: Automate the build and deploy process for a software project.

Required Texts/Readings

Textbook

Beginning Software Engineering, Rod Stephens; Wrox/Wiley, 2015 (ISBN: 978-1118969144)

Other Readings

Rails Crash Course: A No-Nonsense Guide to Rails Development, Anthony Lewis; No Starch Press, 2015 (ISBN: 978-1593275723)

Course Requirements and Assignments

We will break the class into project teams of 4 students each. **Team membership is mandatory for this class.** During the semester, each team will experience a realistic industry-level software development project by participating in the various development activities and creating **project artifacts**, including:

• Requirements specification
• Functional specification
• Design document
• Test plan
• Project schedule

Each team will also give several **oral presentations** to the class in conjunction with the project artifacts:

• Product pitch
• Design review
• Code review
• Product demo

During an oral presentation, the members of the rest of the class will play the roles of project advisors and potential customers for the presenting team.

Team members will assume various **development team member roles**, such as:

• Project lead
• Chief architect
• User interface developer
• Server logic developer
• Database developer/administrator
• Software quality assurance engineer
• Documentation writer

A key skill to learn is how to make a complete project schedule with achievable milestones.

Final Examination or Evaluation

The final examination occurs in class and will be published on Canvas. If you cannot use a laptop to access Canvas, you can ask for a paper version.

Grading Information

- Homework, 100 points.
- Midterm, 100 points.
- Projects, 100 points.
- Final, 100 points

Note that "All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades." See University Policy F13-1 at http://www.sjsu.edu/senate/docs/F13-1.pdf for more details.

Determination of Grades

Semester grade will be computed as a weighted average of the 4 scores listed above.
No make-up tests or quizzes will be given and no late homework (or other work) will be accepted. Also, in-class work must be completed in the section that you are enrolled in.

Nominal Grading Scale:

Percentage	Grade
92 and above	A
90 – 91	A-
88 – 89	B+
82 – 87	B
80 – 81	B-
78 – 79	C+
72 – 77	C
70 – 71	C-
68 – 69	D+
62 – 67	D
60 - 61	D-
59 and below	F

Classroom Protocol

- **Cheating** will not be tolerated.
- Student must be respectful of the instructor and other students. For example, No disruptive or annoying talking.
- Turn off cell phones
- Class begins on time
- Valid picture ID required at all times

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/

CS160 / Software Engineering, Fall 2016, Course Schedule

This schedule is subject to change. Any change will be communicated via Canvas with fair notice.

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1	8/25	Introduction
1	8/30	Before the beginning
2	9/1	Project Management
2	9/6	Fundamental Programming Structures in Java
3	9/8	Requirement Gathering
3	9/13	Requirement Gathering
4	9/15	High-level Design
4	9/20	High-level Design
5	9/22	Low-level Design
5	9/27	Low-level Design
6	9/29	Ruby Fundamentals
6	10/4	Rails Fundamentals
7	10/6	Models
7	10/11	Controllers
8	10/13	Views
8	10/18	MIDTERM

Week	Date	Topics, Readings, Assignments, Deadlines
9	10/20	Development
9	10/25	Development
10	10/27	Development
10	11/1	Testing
11	11/3	Testing
11	11/8	Testing
12	11/10	Testing
12	11/15	Deployment
13	11/17	Metrics
13	11/22	Maintenance
14	11/29	Predictive Models
14	12/1	Iterative Models
15	12/6	Extreme Programming (XP)
15	12/8	FINAL PROJECTS PRESENTATION
Final Exam	12/16	MH233, 12:15 – 14:30