# San José State University
# Department of Computer Science
# Spring 2018
# CS 160– Software Engineering

**Course and Contact Information**

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| **Instructor:** | Ramin Moazeni |
| **Class Hours:** | TTh: 7:30PM - 8:45PM |
| **Office Hours:** | TTh: 7:00PM – 7:30PM, DH 282 |
| **Email:** | Ramin.Moazeni@sjsu.edu |
| **Classroom:** | MH 233 |
| **Prerequisites:** | CS146, CS151 (with a grade of "C-" or better) or instructor consent.<br>CS100W (with a grade of "C" or better) or instructor consent.<br>Computer Science and Software Engineering Majors only. |

**Catalog 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.

**Course Overview**
Introduction to the software engineering process and software lifecycle. Covers project management, requirements, architecture, design, implementation, testing, and maintenance phase activities in team based projects.

This class will cover the key concepts and best practices of the software engineering discipline. Students will learn about the different phases of the classic software engineering lifecycle and the activities that software engineers perform during each of these phases. This will include project management, software requirements specification, architecture, design, implementation best practices, software testing, and maintenance activities.
Students will also participate in a team-based software engineering project that will span the entire software lifecycle.

**Learning Outcomes**
By the end of this course, a student should be able to:

- 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
- Requirements engineering: Solicit, elaborate, and validate software product specifications and generate meaningful use cases.
- 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.
- Software verification and validation (V&V): Understand the software validation process and use issue-tracking tools. Create and execute test plans.

**Required Texts**
Ian Sommerville
Software Engineering (10th Edition)
Pearson, 2015.
ISBN-10: 0133943038
ISBN-13: 978-0133943030

**Course Requirements and Assignments**

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf. Note that University policy F15-12 at http://www.sjsu.edu/senate/docs/F15-12.pdf states that "Attendance shall not be used as a criterion for grading."… "Students are expected to attend all meetings for the courses in which they are enrolled as they are responsible for material discussed therein, and active participation is frequently essential to ensure maximum benefit to all class members. In some cases, attendance is fundamental to course objectives; for example, students may be required to interact with others in the class. Attendance is the responsibility of the student."… "Participation may be used as a criterion for grading when the parameters and their evaluation are clearly defined in the course syllabus and the percentage of the overall grade is stated."

**Assignments**

Assignments will be given to assess your ability to apply the material covered in class. The last two exercises will be "sprints" intended to build on the solutions you produced based on the prior exercises. Assignments can be team or individual assignments

The submissions are due at midnight on the due date. The assignments are to be submitted on time. A penalty of 10% per day is applied to late submissions. No assignments will be accepted after a week past its due date..

**Quizzes**

Unannounced brief quizzes toward the end of the lecture to assess your understanding of the material covered in that session.

**Exams**

- Absolutely NO items may be shared during the exams, including books, notes, and calculators.
- Absolutely NO usage of cell phones during exams. Cell Phones must in off or silent mode and not within your reach.

Makeup exams will only be granted in case of documented medical emergency with an advanced notice to the instructor.

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

**Supplemental Readings:**

Additional readings will be provided several times during the semester for selected topics that are not adequately covered in the textbook.

**Grading Policy**

Your individual class grade will be weighted as follows:

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| Assignments | 60% |
| Quizzes | 10% |
| Exams (Midterm and Final) | 30% |
| Total | 100% |

The final "letter" grade will be determined by a curve based on class average at the end of the semester.

## 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/

# CS 160, Software Engineering, Course Schedule

### Course Schedule (Tentative)

| Week | Date | Lecture Topic | Readings |
|---|---|---|---|
| 1 | 01/25 | Course introduction | |
| 2 | 01/30 | Software Engineering in a Nutshell | Chapter 1 |
| | 02/01 | Software Lifecycle and Processes | Chapter 2, 3 |
| 3 | 02/06 | Software Requirements and Models | Chapter 4, 5 |
| | 02/08 | Team Formation, Project Requirements Elicitation | |
| 4 | 02/13 | Software Architecture | Chapter 6 |
| | 02/15 | Architectural Design and Modeling | Chapter 17 |
| 5 | 02/20 | Assignment Review, Q&A, Team-Work Session | |
| | 02/22 | Domain-specific Architectures and Product Lines | |
| 6 | 02/27 | Object-Oriented Design | Chapter 7 |
| | 03/01 | Software Implementation - Reuse | Chapter 15 |
| 7 | 03/06 | Software Implementation - Components and Services | Chapter 16, 18 |
| | 03/08 | Midterm Overview, Q&A, Team-Work Session | |
| 8 | **03/13** | **Midterm Exam** | |
| | 03/15 | Software Tools and Environments | Android Architecture Tutorial |
| 9 | 03/20 | Mid Semester Demos | |
| | 03/22 | Mid Semester Demos | |
| 10 | 03/27 | Spring Recess (No Class) | |
| | 03/29 | Spring Recess (No Class) | Android Testing Tutorial |
| 11 | 04/03 | Software Evolution and Maintenance | Chapter 9 |
| | 04/05 | Software Qualities I | Chapter 10, 11 |
| 12 | 04/10 | Software Qualities II | Chapter 12, 13 |
| | 04/12 | Assignment Review, Q&A, Team-Work Session | |
| 13 | 04/17 | Project Management and Planning | Chapter 22, 23 |
| | 04/19 | Project Management and Planning (cont.) | Chapter 22, 23 |
| 14 | 04/24 | Cost Estimation | Supplement |
| | 04/26 | XML and JSON | |
| 15 | 05/01 | Configuration Management | |
| | 05/03 | Technical Debt | |
| 16 | 05/08 | Project Demos | |
| | 05/10 | Project Demos - Final Exam Overview | |
| 17 | **05/17** | **Final Exam** | |