

Greensheet

CS 160: Software Engineering
Fall 2015

San José State University
Department of Computer Science

Instructor Info

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Office Hours	Friday 1630 - 1800	By appointment

Class Info

	Section 03
Classroom	MacQuarrie Hall 422
Meeting time	TR 1930-2045
Course #	46819
Final exam	Thursday, Dec 10 @ 1945-2200 MacQuarrie Hall 422

Important Dates of Semester

Reason	Day	Month	Day #	Comment
First day of instruction	Thursday	August	20	
Last day to drop	Tuesday	September	01	
Holiday	Monday	September	07	Labor Day
Last day to add	Wednesday	September	09	
Daylight saving time	Sunday	November	01	
Holiday	Wednesday	November	11	Veteran's Day
Holiday	Thursday	November	26	Thanksgiving
Last day of instruction	Tuesday	December	08	

Course Brief Info

Prerequisites

CS 146	Advanced Data Structure and Algorithm	Grade C- or better
CS 151 or CMPE 135	Object-Oriented Design	Grade C- or better
CS 100W	Technical Writing Workshop	Grade C or better

The Department of Computer Science strictly enforces prerequisites. If you are not already pre-enrolled, you must come to the first class meeting and pick up an Add-Form from the instructor. If applicable, show the instructor your card that indicates you're a graduating senior. It will be the instructor's and the department decision whether or not to send you an add-code by email.

Required Texts

Bernd Bruegge and Allen H. Dutoit, "Object-Oriented Software Engineering Using UML, Patterns, and Java," 3rd edition, Prentice Hall

ISBN-13: 978-0-13-606125-0

David Geary and Cay Horstmann, "Core JavaServer Faces," 3rd edition, Prentice Hall

ISBN-13: 978-0-13-701289-3

Further Readings

The references at the end of each lecture note.

Course Detail Info

Catalog Description

Software engineering principles, 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 Objectives

- **Software process:** applying the entire software development process. Creating a software project schedule and using project scheduling like Microsoft Project. Using version control tools like SVN. Using build management like Maven.
- **Requirements engineering:** Eliciting a software specifications and generating use cases.
- **Software design:** Applying appropriate software designs to a team project. Explaining and defending design decisions.

- **Testing and validation:** Understanding the software validation process and using issue-tracking tools. Create and execute test plans.
- **Experiencing an industry-level software product** development process hands-on, to the extent possible within a single semester.
- **Developing a web application** that includes a browser-based user interface, server-side logic, and a database repository.

Student Learning Outcomes

Acquiring **critical job skills** that are immediately applicable in the software industry:

- Work together in a small **team**.
- Understand the challenges of software engineering and its **methodologies and processes**.
- Generate a **project schedule** with achievable milestones.
- Recognize people and **team management** issues.
- Analyze product **requirements** and generate use cases.
- Write **functional specifications** at a level of detail sufficient for software design.
- Make correct architectural and **design** choices.
- **Develop** and **document** a software design at a level of detail sufficient for implementation.
- Draw **UML** package, class, sequence diagrams.
- Do oral **presentations** to explain and defend design decisions.
- Formulate and execute a **test plan**.
- Carry out **code reviews** in a team setting.
- Create **Gantt charts** from a work breakdown structure.
- Identify **task dependencies** and **critical paths**.
- **Track issues** and measure **development progress**.
- Use **version control** software.
- Automate the **build process** for a software project.

Learn to work in a team to build a complete **web application** using the Model-View-Controller (MVC) architectural framework:

- Front-end browser-based user interface composed of dynamically generated web pages
 1. HTML
 2. JavaScript
 3. JavaServer Faces (JSF)
- Server-side middleware logic
 1. GlassFish web and application server
 2. JavaBeans
- Relational database as the back-end data repository
 1. MySQL relational database manager
 2. Logical and physical data modeling
 3. MySQL Workbench and ER diagrams
 4. Database normalization
 5. SQL and JDBC programming

This is a challenging course that will demand much of your time and effort throughout the semester.

Procedure

We will break the class into project teams of about 5 students each. 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 overview
- 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. *Class attendance is especially important during oral presentation days.*

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. The goal of this course is not to produce a winning product in one semester (although that could be a very lucrative bonus for the team members!) but to learn team-based software engineering methodologies, processes, and tools.

Term Project

- A major portion of the coursework will be the team projects. Each project will provide opportunities for team members to apply immediately the material taught in the lectures and in the textbooks.
- Students will form project teams of 4 to 5 members each. Please choose your team members wisely! Once teams are formed, students may not move from one team to another.
- Each team will choose its own web application to develop, but it must fit the architectural framework described above.

- Each team must use the assigned project management tools and track its own progress.
- The final web application must be buildable from the command line using Maven script.
- At the end of the semester, all the members of a project team will each receive the same project score. The project grade will be determined by the overall quality of the final version of the project team's artifacts and by how well the team achieved its goals to create a successful web application.
- Each team member is personally responsible for participating and contributing to the team's work, and for understanding each part of the work for every assignment whether or not s/he worked on that part.
- Programs must be appropriately documented via javadoc comments and should adhere to the coding style posted on the CS Department [Java Coding Style](http://www.cs.sjsu.edu/web_mater/java_code.html) page at http://www.cs.sjsu.edu/web_mater/java_code.html.

Homework assignments

The assignments will be to create the various project artifacts during the semester. As described above, some of the assignments will include oral presentations. A project team turns in one copy of each artifact or gives each presentation, and all members of the team will each receive the same score for each assignment.

Late assignments will lose 20% and an additional 20% for each 24 hours after the due date.

Postmortem report

At the end of the semester, each student will turn in an individual postmortem report. The template will be provided later.

Exams

Every Tuesday, there would be a short quiz and there would also be two midterms, and a final exam. All examinations could be partially closed book (concepts) and partially open book (practical).

Instant messaging, e-mails, texting, tweeting, and any other type of communications with anyone else during the exams are strictly forbidden.

Grading Policy

Assignments	10%
Term Project	55%
Quizzes	10%
Mid	10%
Final	15%
Total	100%

Nominal Grading Scale

From	To	Grade
97	100	A+
92	96.99	A
90	91.99	A-
88	89.99	B+
82	87.99	B
80	81.99	B-
78	79.99	C+
72	77.99	C
70	71.99	C-
68	69.99	D+
62	67.99	D
60	61.99	D-
0	59.99	F

Your final grade can be adjusted depending on your level and quality of participation in the class activities and on your team members' assessments of your performance.

To practice time management, late submissions will lose 20% of the assignment total score and an additional 20% for each 24 hours after the due date.

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](http://www.sjsu.edu/senate/docs/F13-1.pdf) for more details at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details.

Workload

Success in this course is based on the expectation that students will spend, at least 6 to 10 hours per week for working on the homework, team works, and the programming 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](http://www.sjsu.edu/senate/docs/S12-3.pdf) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

Classroom Protocol

Please:

- ✓ Be on time!
- ✓ Participate in the class' activities as much as you can.
- ✓ Ask good questions and answer to the questions (in class and in the forum) as much as you can and get extra credit for them!
- ✓ Set your cell phones in silent mode and don't use them during the lectures.
- ✓ Be patient about strange and easy questions from students and me!

Attendance is recommended, but it is not mandatory, except for exam dates. Let's make a comfortable and respectful environment for presenting any idea.

Any student who does not show up during the first two class meetings may be dropped by the instructor.

NOTE that [University policy F69-24](http://www.sjsu.edu/senate/docs/F69-24.pdf) at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that "Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading."

University Policies

General Expectations, Rights and Responsibilities of the Student

As members of the academic community, students accept both the rights and responsibilities incumbent upon all members of the institution. Students are encouraged to familiarize themselves with SJSU's policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arises. See [University Policy S90-5](http://www.sjsu.edu/senate/docs/S90-5.pdf) at <http://www.sjsu.edu/senate/docs/S90-5.pdf>. More detailed information on a variety of related topics is available in the [SJSU catalog](http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html), at <http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html>. In general, it is recommended that students begin by seeking clarification or discussing concerns with their instructor. If such conversation is not possible, or if it does not serve to address the issue, it is recommended that the student contact the Department Chair as a next step.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's [Catalog Policies](http://info.sjsu.edu/static/catalog/policies.html) section at <http://info.sjsu.edu/static/catalog/policies.html>. Add/drop deadlines can be found on the current academic year calendars document on the [Academic Calendars webpage](http://www.sjsu.edu/provost/services/academic_calendars/) at http://www.sjsu.edu/provost/services/academic_calendars/. The [Late Drop Policy](http://www.sjsu.edu/aars/policies/latedrops/policy/) is available at <http://www.sjsu.edu/aars/policies/latedrops/policy/>. Students should be aware of the current deadlines and penalties for dropping classes.

Information about the latest changes and news is available at the [Advising Hub](http://www.sjsu.edu/advising/) at <http://www.sjsu.edu/advising/>.

Consent for Recording of Class and Public Sharing of Instructor Material

[University Policy S12-7](http://www.sjsu.edu/senate/docs/S12-7.pdf), <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor's permission to record the course and the following items to be included in the syllabus:

- "Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material."
 - It is suggested that the greensheet include the instructor's process for granting permission, whether in writing or orally and whether for the whole semester or on a class by class basis.
 - In classes where active participation of students or guests may be on the recording, permission of those students or guests should be obtained as well.
- "Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent."

Academic integrity

Your commitment, as a student, to learning is evidenced by your enrollment at San Jose State University. The [University Academic Integrity Policy S07-2](http://www.sjsu.edu/senate/docs/S07-2.pdf) at <http://www.sjsu.edu/senate/docs/S07-2.pdf> requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The [Student Conduct and Ethical Development website](http://www.sjsu.edu/studentconduct/) is available at <http://www.sjsu.edu/studentconduct/>.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. [Presidential Directive 97-03](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf requires that students with disabilities requesting accommodations must register with the [Accessible Education Center](http://www.sjsu.edu/aec) (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability.

Course Schedule

Day	Date	Topics, Readings, Assignments, Deadlines
1	08/20	Greensheet in detail; My background; Knowing about students
2	08/25	What is software engineering; Forming teams
3	08/27	Software engineering concepts; A short team meeting
4	09/01	Quiz 1; Software lifecycle; Requirement elicitation 1; term project specs
5	09/03	Requirement elicitation 2; Functional spec content and format;
6	09/08	Quiz 2; Announcing teams projects approved; Team meeting to announce their goals
7	09/10	Web programming basics 1
8	09/15	Quiz 3: Web programming basics 2
9	09/17	Web programming basics 3; Scheduling first teams' presentation; guideline about how to present
10	09/22	1 st teams presentations (3 teams)
11	09/24	1 st teams presentations (3 teams)
12	09/29	Quiz 4; Version control 1
13	10/01	Version control 2
14	10/06	Quiz 5; Maven 1
15	10/08	Maven 2
16	10/13	Midterm 1
17	10/15	1 st students' feedback about the course; Design overview 1
18	10/20	Quiz 6; Design overview 2
19	10/22	Team meeting and preparation for second presentation; scheduling teams' 2 nd presentations
20	10/27	2 nd teams presentations (3 teams)
21	10/29	2 nd teams presentations (3 teams)
22	11/03	Quiz 7; Managing software lifecycle, an overview
23	11/05	Project management, an overview
24	11/10	Quiz 8; Testing
25	11/12	Managing software lifecycle, in detail
26	11/17	Quiz 9; Project management in detail
27	11/19	Design in detail
28	11/24	Quiz 10; Team meeting; scheduling the 3 rd and final teams' presentations
29	11/26	Thanksgiving Holiday
30	12/01	3 rd teams presentations (3 teams)
31	12/03	3 rd teams presentations (3 teams)
32	12/08	2 nd students' feedback about the course; Wrapping up the semester; where we are; what would be the next step? Review for final
Final Exam		Thursday, Dec 10 @ 1945-2200 MacQuarrie Hall 422