SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Object-Oriented Design

CS 151

Fall 2025 Section 02 In Person 3 Unit(s) 08/20/2025 to 12/08/2025 Modified 08/16/2025

Contact Information

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Office: Online

Course materials, including handouts, notes, assignment instructions, and more, are available on the Canvas Learning Management System at https://sjsu.instructure.com.

Students are responsible for checking Canvas regularly—at least once per day—to stay informed about assignments and due dates.

Office Hours

TR 15:00 - 16:30
Online, by appointment

Please send me an email at least six hours before your requested office hour time.

The best ways to ask questions are by starting a discussion on Canvas or posting in the course Discord.

Course Description and Requisites

Design of classes and interfaces. Object-oriented design methodologies and notations. Design patterns. Generics and reflection. Exception handling. Concurrent programming. Graphical user interface programming. Software engineering concepts and tools. Required team-based programming assignment.

Prerequisite(s): MATH 42, CS 46B, and [(CS 48 or CS 49J) if CS 46B was not in Java], each with a grade of "C-" or better; Allowed Declared Majors: Computer Science, Applied and Computational Math, Software Engineering, or Data Science;ï¿½or instructor consent.

Letter Graded

Classroom Protocols

Consent for Recording of Class and Public Sharing of Instructor's Material

- Common courtesy and professional behavior require notifying individuals when you are recording them.
- You must obtain the instructor's written permission to make audio or video recordings in this class.
- Such permission is granted solely for your private study purposes.
- These recordings are the intellectual property of the instructor, and you are not authorized to reproduce or distribute them without explicit written consent.

In-Person Class Protocol

- Please be on time.
- Cell phones must be set to silent mode and kept in your pocket or backpack; they should not be used during lectures.
- Laptops should remain closed unless I indicate they are needed for a specific activity, except when being used for note-taking.
- Activities such as instant messaging, emailing, texting, tweeting, or similar distractions are strictly prohibited in class.
- While attendance is highly recommended, it is not mandatory, except for exam times.

Online Class Protocol

- All microphones will be automatically muted when you join the Zoom meeting.
- If you have any questions, you may unmute yourself and speak or type your question in the chat room.
- The chat room will be private, and the instructor will read your questions aloud and respond.
- Cameras will not be used during lectures but will be required during exams. Therefore, please dress appropriately, adhering to a "Business Casual" dress code.
- Attendance is highly recommended but not mandatory, except for exams.

Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

Course Learning Outcomes (CLOs)

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

Object-Oriented Design

- Follow a systematic object-oriented design methodology.
- Develop use cases, perform noun/verb analysis, interpret, and produce CRC cards.
- Interpret and produce UML diagrams.
- Understand object-oriented concepts.
- Use design patterns.
- Practice SOLID design principles.

Advanced Java Language

- Implement Java fundamental concepts of OOP.
- Implement Java constructs such as: Interfaces, Abstract classes, Nested classes, ...
- Implement Java standard Object methods.
- Implement Java type system, lambda expression, serialization, Java generics, ...
- Implement exception handling.
- Implement threads and thread-safe data structures.

GUI Programming

- Use JavaFX to create graphical user interface (GUI) for **desktop applications**.

Course Materials

This course does not have a required textbook. My lecture notes contain all required materials.

Further Readings

1. Cay Horstmann, "Object-Oriented Design & Patterns," 3rd edition:
   A watermarked edition will be provided in the Canvas.
   The resources of this book can be found online at: http://horstmann.com/oodp3/
2. Stephen Gilbert and Bill McCarty, "Object-Oriented Design in Java," Sams
   ISBN-13: 978-1571691347
3. The references at the end of each lecture note

Course Requirements and Assignments

Requirements

- **Java is the standard programming language for this course.** Having enough Java knowledge and skill is essential for understanding and passing this course.
- A computer with microphone and camera is required for online activities (some lectures, office hours, online exams, etc.).

Workload

- Success in this course is based on the expectation that students will spend at least 6 – 10 hours per week for:
  - Working on assignments.
  - Preparation for the exams (quizzes, midterms, and final).
  - Working on the term project.
- More details about student workload can be found in University Policy S16-9 available at http://www.sjsu.edu/senate/docs/S16-9.pdf.

✔ Grading Information

- **To make the good habit of reviewing the materials regularly**, there will be a weekly short quiz.
- There will be two midterms, and a final exam.
- **To practice the covered materials in a real software project**, there will be a term project and several individual assignments.
- All examinations would cover from the beginning of the semester.
- All examinations would be closed-all-materials.
- **There won't be any makeup for the exams.**
- **To practice time management**, **late submissions** will lose 20% of the total assignment score and an additional 20% for each 24-hour afterward.

Assignments	10%
Term Project	25%
Quizzes	20%
Midterm #1	10%
Midterm #2	15%
Final	20%
Total	**100%**

Nominal Grading Scale

From	To	Grade
97	100	A plus
93	96.99	A
90	92.99	A minus
87	89.99	B plus
83	86.99	B
80	82.99	B minus
77	79.99	C plus
73	76.99	C
70	**72.99**	**C minus**
67	69.99	D plus
63	66.99	D
60	62.99	D minus
0	59.99	F

University Policies

Per University Policy S16-9 (PDF) (http://www.sjsu.edu/senate/docs/S16-9.pdf), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the Syllabus Information (https://www.sjsu.edu/curriculum/courses/syllabus-info.php) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

Note: This is a tentative schedule and is subject to change but with fair notice.

Day	Date	Lec #	Topics	Exams (Fridays)
1	08/20	0	Greensheet; A big picture of the course	
2	08/25	1	Enter OOP (Part 1)	
3	08/27	2	Enter OOP (Part 2)	Quiz 0
4	09/01		Labor Day Holdiday	
5	09/03	3	Software Development Lifecycle (Part 1)	Quiz 1
6	09/08	4	Software Development Lifecycle (Part 2)	
7	09/10	5	Software Development Lifecycle (Part 3)	Quiz 2
8	09/15	6	Software Development Lifecycle (Part 4)	
9	09/17	7	GUI Programming (Part 1)	Quiz 3
10	09/22		Review, Study Guide, Q & A	

Day	Date	Lec #	Topics	Exams (Fridays)
11	09/24		Exam: Mid 1	Quiz +
12	09/29	8	OOP Fundamentals (Part 1): Abstraction, Inheritance	
13	10/01	9	OOP Fundamentals (Part 2): Encapsulation, Interfaces	Quiz 4
14	10/06	10	OOP Fundamentals (Part 3): Polymorphism	
15	10/08	11	Java Constructs (Part 1); abstract class, nested class	Quiz 5
16	10/13	12	Java Constructs (Part 2); Anonymous class, Lambda expressions	
17	10/15	13	GUI Programming (Part 2)	Quiz 6
18	10/20	14	GUI Programming (Part 3)	
19	10/22	15	OOD Guidelines (Part 1): Design Patterns	Quiz 7
20	10/27	16	OOD Guidelines (Part 2): Design Patterns	
21	10/29	17	OOD Guidelines (Part 3): SOLID Principles	Quiz 8
22	11/03		Study Guide, Q & A	
23	11/05		Exam: Mid 2	Quiz ++
24	11/10		Solution of Mid 2; Disucssions	
25	11/12	18	Implementation Guidelines (Part 1)	Quiz 9

Day	Date	Lec #	Topics	Exams (Fridays)
26	11/17	19	OOD Guidelines (Part 4): SOLID Principles	
27	11/19	20	Advanced Java (Part 1)	Quiz 10
28	11/24	21	Advanced Java (Part 2)	
29	11/26		Thanksgiving Holiday	
30	12/01	22	Advanced Java (Part 3)	
31	12/03	23	Implementation Guidelines (Part 2)	
32	12/08		Study Guide, Q & A	

Final Exam

Date and Start Time	Fri, December 12 @ 3:15 PM
Duration	Will be announced in Study Guide
Venue	Our Classroom