SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Object-Oriented Design

CS 151

Spring 2026 Section 07 In Person 3 Unit(s) 01/22/2026 to 05/11/2026 Modified 01/19/2026

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 14:15 - 15:45
Online, by appointment

Please email me **at least 12 hours in advance** if you'd like to request an office hour.

For most questions, the **best and fastest way** to get help is by posting in the course **Discord**, where others can benefit from the discussion as well.

You can find the Discord link in **Canvas → Discussions → 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; or 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** before making any audio or video recordings in this class.
- Any granted permission is strictly for **your personal study purposes**.
- All recordings are the **intellectual property of the instructor** and may not be reproduced, shared, or distributed without explicit written consent.

In-Person Class Protocol

- Please arrive 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 they are needed for a specific in-class activity or for note-taking.
- Activities such as instant messaging, emailing, texting, tweeting, or other similar distractions are strictly prohibited during class.
- While attendance is highly recommended, it is not mandatory, **except during exams**.

Online Class Protocol

- All microphones will be automatically muted upon joining the Zoom meeting.
- If you have a question, you may unmute yourself and speak, or type your question in the chat.
- The chat will be private; the instructor will read questions aloud and respond.
- Cameras are not required during lectures but **are required during exams**. Please dress appropriately, following a *business casual* dress code.
- Attendance is highly recommended but not mandatory, **except during 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 will be able to:

Object-Oriented Design

- Follow a systematic object-oriented design methodology.
- Develop use cases, perform noun–verb analysis, and interpret and produce CRC cards.
- Interpret and produce UML diagrams.
- Demonstrate a solid understanding of object-oriented concepts.
- Apply common design patterns.
- Practice SOLID design principles.

Advanced Java Language

- Implement fundamental object-oriented programming (OOP) concepts in Java.
- Use core Java constructs such as interfaces, abstract classes, nested classes, and related features.
- Implement standard Java object methods.
- Apply Java's type system, including lambda expressions, serialization, and generics.
- Implement robust exception handling.
- Develop multithreaded programs and use thread-safe data structures.

GUI Programming

- Use JavaFX to design and implement graphical user interfaces (GUIs) for desktop applications.

Course Materials

This course does **not** require a textbook. All required materials will be provided in the lecture notes.

Further Readings

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

Course Requirements and Assignments

Requirements

- **Java** is the standard programming language for this course. Sufficient knowledge of Java and object-oriented programming is essential for understanding and successfully completing the course.
- A computer equipped with a **microphone and camera** is required for online activities, including some lectures, office hours, and online exams.

Workload

Success in this course is based on the expectation that students will spend approximately **6–10 hours per week** on course-related work, including:

- Completing programming assignments
- Preparing for exams (quizzes, midterms, and the final exam)
- Working on the term project

✔ Grading Information

- To encourage the good habit of reviewing course materials regularly, there will be a **weekly short quiz**.
- There will be **two midterm exams** and a **final exam**.
- To practice the covered material in a realistic software development context, the course includes a **term project** and several **individual assignments**.
- All examinations will cover material **from the beginning of the semester**.
- All examinations will be **closed-book and closed-notes**.
- **No makeup exams** will be given.
- To promote effective time management, **late submissions will incur a penalty of 20% of the total assignment score**, plus an additional **20% for each subsequent 24-hour period**.

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	01/26	0	Greensheet; A big picture of the course	
2	01/28	1	Enter OOP (Part 1)	Quiz 0 (Preparation)
3	02/02	2	Enter OOP (Part 2)	
4	02/04	3	Software Development Lifecycle (Part 1)	Quiz 1
5	02/09	4	Software Development Lifecycle (Part 2)	
6	02/11	5	Software Development Lifecycle (Part 3)	Quiz 2
7	02/16	6	Software Development Lifecycle (Part 4)	
8	02/18	7	GUI Programming (Part 1)	Quiz 3
9	02/23	8	OOP Fundamentals (Part 1): Abstraction, Inheritance	
10	02/25	9	OOP Fundamentals (Part 2): Encapsulation, Interfaces	Quiz 4

Day	Date	Lec #	Topics	Exams (Fridays)
11	03/02		Review, Study Guide, Q & A	
12	03/04		Exam: Mid 1	Mid 1 (aka Quiz +)
13	03/09	10	OOP Fundamentals (Part 3): Polymorphism	
14	03/11	11	Java Constructs (Part 1); abstract class, nested class	Quiz 5
15	03/16	12	Java Constructs (Part 2); Anonymous class, Lambda expressions	
16	03/18	13	GUI Programming (Part 2)	Quiz 6
17	03/23	14	GUI Programming (Part 3)	
18	03/25	15	OOD Guidelines (Part 1): Design Patterns	Quiz 7
19	03/30		Spring Break	
20	04/01		Spring Break	
21	04/06	16	OOD Guidelines (Part 2): Design Patterns	
22	04/08	17	OOD Guidelines (Part 3): SOLID Principles	Quiz 8
23	04/13		Study Guide, Q & A	
24	04/15		Exam: Mid 2	Mid 2 (aka Quiz ++)
25	04/20	18	Implementation Guidelines (Part 1)	

Day	Date	Lec #	Topics	Exams (Fridays)
26	04/22	19	OOD Guidelines (Part 4): SOLID Principles	Quiz 9
27	04/27	20	Advanced Java (Part 1)	
28	04/29	21	Advanced Java (Part 2)	Quiz 10
29	05/04	22	Advanced Java (Part 3)	
30	05/06	23	Implementation Guidelines (Part 2)	
31	05/11		Study Guide, Q & A	

Final Exam

Date and Start Time	Monday, May 18 @ 3:15 PM
Duration	Will be announced in the Study Guide
Venue	In-Person in the classroom or Online