San José State University
College of Science/Computer Science Department
CS 151, Object-Oriented Design, Section 01, Spring, 2020

Course and Contact Information

Instructor(s):	Tejaswini (Teja) Karra
Office Location:	DH 282
Email:	Tejaswini.karra@sjsu.edu
Office Hours:	MW 7:30 – 9:00 PM (by appointment)
Class Days/Time:	MW 6:00 – 7:15 PM
Classroom:	DH 250
Prerequisites:	MATH 42, CS 46B, and CS 49J (or equivalent knowledge of Java) (with a grade of "C-" or better in each)

Course Description

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.

Course Format

Technology Intensive, Hybrid, and Online Courses

This class is technology intensive and you are required to use a computer to access, submit, and work on your course material. You must bring your laptops to every class meeting.

Faculty Web Page and MYSJSU Messaging

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

Course Goals

- OO Design:
  - Introduce core UML concepts
  - Introduce a simplified OO analysis and design methodology
  - Present the concept of design pattern
  - Present the concept of a software framework
- Java Language:
  - Make students proficient in the use and creation of interfaces and inheritance hierarchies

    - Make students proficient in the Java type system
    - Introduce threads and thread safety
- Software Engineering:
    - Introduce a GUI toolkit, including basic widgets and the event handling mechanism
    - Introduce basic software engineering concepts and tools

Course Learning Outcomes (CLO)

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

- OO Design
    - Interpret and produce UML class diagrams and UML sequence diagrams
    - Develop simple use cases, perform noun-verb analysis, interpret and produce CRC cards
    - Appropriately select and apply key design patterns in the construction of a software application
    - Be able to follow a systematic OO design methodology
- Java language
    - Create a class hierarchy involving existing and new interfaces and classes, including inner classes.
    - Design, implement, test, and debug programs in an object-oriented language, involving the creation of at least 10 classes and interfaces
    - Use generic types, reflection, and lambda expressions
    - Implement concurrent programs and use thread-safe data structures
- Software Engineering
    - Use a GUI toolkit to create a graphical user interface involving frames, buttons, text components, panels, menus, and simple geometric shapes
    - Be able to document use cases for a simple team project
    - Be able to plan and track a simple team project
    - Be able to use a version control system and an automated build system

Required Texts/Readings

Textbook

Horstman, Cay. Object-Oriented Design & Patterns. 3rd edition.

Other Readings

Other readings may be assigned from articles and journals. The links for these materials will be provided on Canvas.

Other technology requirements / equipment / material

- Programming Language: Java Platform SE 8 or later
- IDE: eclipse
- Version control: git
- UML design: Lucid chart or Violet

Course Requirements and Assignments

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

There will be three exams (2 midterm and 1 final), one semester long group project, several homework and quizzes. All the exams will be closed book but open notes unless noted. There will be no laptops, or any personal digital devices allowed. I strongly suggest that you attend each class and take good notes during the semester. There will be ***NO*** make-up exams and quizzes.

All programming portions of the project/homework assignments and its related documentations must be handed in electronically. Additional information about the project and how to submit assignments will be given in a separate handout. Your project code must be able to compile and execute before you turn it in.

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

NOTE that University policy F69-24 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."

Homework assignments

In addition to the project work, you are required to do independent assignments. Details on what to submit and how to submit these assignments will be provided in class and on Canvas.

Quizzes

Unannounced brief quizzes will be used to assess your understanding of the material covered throughout the semester.

Exams

Midterm exams and the final exam will cover all the material covered in the class including lectures, homework assignments, and project work.

Grading Information

Your individual grades will be weighted as follows:

HW, labs and quizzes	350 points	35%
Group project	150 points	15%
Midterm exams (2)	300 points	30%
Final Exam	200 points	20%
Total	1000 points	100%

The final "letter" grade will be determined from the table below.

Grade	Points	Percentage
A plus	960 to 1000	96 to 100%
A	930 to 959	93 to 95%
A minus	900 to 929	90 to 92%
B plus	860 to 899	86 to 89 %
B	830 to 859	83 to 85%
B minus	800 to 829	80 to 82%
C plus	760 to 799	76 to 79%
C	730 to 759	73 to 75%
C minus	700 to 729	70 to 72%
D plus	660 to 699	66 to 69%
D	630 to 659	63 to 65%
D minus	600 to 629	60 to 62%

Classroom Protocol

All students are expected to attend every class on time. Bring your laptops to every class meeting. I will ask you to work on labs in class throughout the semester. Your participation in these activities is crucial to the grade you receive. Use of cell phone during the lecture is not allowed. If you need to answer an emergency call, please leave the class quietly and answer your call outside the class. Cheating or plagiarism of any kind will not be tolerated. Any violation will result in 0 points for the assignment and violators will be reported to the Office of Student Conduct and Ethical Development.

University Policies

Per University Policy S16-9 *(http://www.sjsu.edu/senate/docs/S16-9.pdf)*, relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/". Make sure to visit this page, review and be familiar with these university policies and resources.

CS 151 Object-Oriented Design, Spring 202, Course Schedule

The schedule below is subject to change. Make sure to check canvas for the latest version.

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1	Mon Jan 27	Introduction, Crash Course in Java (Ch 1)
1	Wed Jan 29	Object-Oriented Design Process (Ch 2)
2	Mon Feb 3	Object-Oriented Design Process (Ch 2)
2	Wed Feb 5	Object-Oriented Design Process (Ch 2)
3	Mon Feb 10	Guidelines for Class Design (Ch 3)
3	Wed Feb 12	Guidelines for Class Design (Ch 3)
4	Mon Feb 17	Interfaces and Polymorphism (Ch 4)
4	Wed Feb 19	Interfaces and Polymorphism (Ch 4)
5	Mon Feb 24	Interfaces and Polymorphism (Ch 4)
5	Wed Feb 26	**Midterm 1**
6	Mon Mar 2	Design Patterns and GUI Programming (Ch 5)
6	Wed Mar 4	Design Patterns and GUI Programming (Ch 5)
7	Mon Mar 9	Design Patterns and GUI Programming (Ch 5)
7	Wed Mar 11	Design Patterns and GUI Programming (Ch 5)
8	Mon Mar 16	Inheritance and Abstract Classes (Ch 6)
8	Wed Mar 18	Inheritance and Abstract Classes (Ch 6)
9	Mon Mar 23	Inheritance and Abstract Classes (Ch 6)
9	Wed Mar 25	Inheritance and Abstract Classes (Ch 6)
10	Mon Mar 30	Spring Recess; no class
10	Wed Apr 1	Spring Recess; no class
11	Mon Apr 6	**Midterm 2**
11	Wed Apr 8	Java Object Model (Ch 7)
12	Mon Apr 13	Java Object Model (Ch 7)
12	Wed Apr 15	Java Object Model (Ch 7)
13	Mon Apr 20	Java Object Model (Ch 7)

Week	Date	Topics, Readings, Assignments, Deadlines
13	Wed Apr 22	Frameworks (Ch 7)
14	Mon Apr 27	Multithreading (Ch 8)
14	Wed Apr 29	Multithreading (Ch 8)
15	Mon May 4	Multithreading (Ch 8)
15	Wed May 6	Multithreading (Ch 8)
16	Mon May 11	Review
Final Exam	**Wed May 14**	**MQH 223 at 5:15 PM to 7:00 PM**