

San José State University
Department of Computer Science
CS151, Section 05

Object Oriented Design

Spring 2017

Course and Contact Information

Instructor:	Vidya Rangasayee
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Office Hours:	T/Th 12:30-1:20 PM. Additional hours by appointment only
Class Days/Time:	T/Th 4:30 - 5:45 PM
Classroom:	MH 222
Prerequisites:	MATH 42, CS 46B, and CS 49J (or equivalent knowledge of Java) (with a grade of "C-" or better in each).
GE/SJSU Studies Category:	

Course Format : Technology Intensive, hybrid.

Faculty Web Page and MYSJSU Messaging: We will use Canvas for all class related materials. Discussions will be facilitated via Piazza. Any general questions must be posted on Piazza for benefit of others. Any specific/personal questions (grade related or personal situations) must be communicated via email.

Course Description

Design of classes and interfaces. Value and reference semantics. Object-oriented design methodologies and notations. Design patterns. Reflection and serialization. Exception handling. Graphical user interface

programming. Frameworks and components. Multithreading. Required team-based programming assignment. Prerequisite: MATH 42, CS 46B, and CS 49J (or equivalent knowledge of Java) (with a grade of "C-" or better in each); Computer Science, Applied and Computational Math or Software Engineering majors only; or instructor consent.

Course Learning Outcomes (CLO):

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

1. OO Design:
 - a. Introduce core UML concepts
 - b. Introduce a simplified OO analysis and design methodology
 - c. Present the concept of design pattern
 - d. Present the concept of a software framework
2. Java Language:
 - a. Make students proficient in the use and creation of interfaces and inheritance hierarchies
 - b. Make students proficient in the Java type system
 - c. Introduce threads and thread safety
3. GUI Programming:
 - a. Introduce a GUI toolkit, including basic widgets and the event handling mechanism.

Student Learning Outcomes

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

1. OO Design
 - a. Interpret and produce UML class diagrams and UML sequence diagrams
 - b. Develop simple use cases, perform noun-verb analysis, interpret and produce CRC cards
 - c. Appropriately select and apply the following design patterns in the construction of a software application: Composite, Decorator, Iterator, Strategy, Template method, and Observer
 - d. Be able to follow a systematic OO design methodology
2. Java language
 - a. Create a class hierarchy involving existing and new interfaces and classes, including inner classes.
 - b. Design, implement, test, and debug programs in an object-oriented language, involving the creation of at least 10 classes and interfaces
 - c. Implement correctly the equals, hashCode, clone, toString methods
 - d. Use serialization, reflection, and generics
 - e. Throw, propagate and catch exceptions
 - f. Implement threads and thread-safe data structures
3. GUI Programming
 - a. Use a GUI toolkit to create a graphical user interface involving frames, buttons, text components, panels, menus, and simple geometric shapes

Required Texts/Readings

Textbook

There are no required textbooks for this class

Other Readings

Design Patterns in Java | Edition: 2

Author: Steven John Metsker, William C. Wake

ISBN: 9780321333025

Publication Date: 04/21/2006

Publisher: Addison-Wesley.

Effective Java (Java Series) | Edition: 2

Author: Joshua Bloch

ISBN: 9780321356680

Publication Date: 05/18/2008

Publisher: Addison-Wesley

Java Concurrency in Practice

Author: Brian Goetz, Tim Peierls, Joshua Bloch

ISBN: 9780321349606

Publication Date: 05/23/2006

Publisher: Addison-Wesley

Other technology requirements / equipment / material

Java 7 or higher. IDE - Eclipse or Netbeans.

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](http://www.sjsu.edu/senate/docs/S12-3.pdf) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

- Each student is expected to be present, punctual, and prepared at every scheduled class and lab session. It is assumed that the students already have basic knowledge of digital Boolean logic and fundamentals of programming.
- Attendance is **NOT** optional. Individual participation is also required. There will be no make-ups for missed midterm or assignments, unless any special arrangements is made with the instructor beforehand.
- There will be 6-7 **homeworks** (some of which are team based), one **final project**, one **midterm** and **final exam**. All home works should be submitted through Canvas. **No scanned copy** of handwritten solution is allowed.

Final Examination or Evaluation

There is a written Final Exam for this course. Please check the university Final Exam schedule for the exact date and time of the final exam (<http://info.sjsu.edu/static/catalog/final-exam-schedule-spring.html>).

Grading Information (Required)

1. Homework carries **60%** towards final score. Average of 2 score from homework will be contributed.
2. Midterm carries **15%** towards final score.
3. Final carries **25%** towards final score.

Submission is allowed till 11:59 pm on due date. You will lose 20% of the score for every day that your submission is LATE.

I first try scores of 90, 80, and 70 to cut off letter grades of A-, B-, and C-, respectively. If overall class performance is too low to use these cut offs, I set a cut off of C- to a lower score than the class total average but a higher score than 60 (this number may change), and divide the students' group above the cut off of C- into A+, A, A-, B+, B, B-, C+, C, C-. The rest of students will be given by a grade of D+, D, D-, F or WU depending on their class performance.

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

Classroom Protocol

1. **You must come to class on time!** Students entering the classroom late disrupt the lecture and / or the students already in class who may be engaged in lab or discussion. Late students will not be accepted in class.
2. If you miss a lecture you are still responsible for any material discussed or assignments given. A large portion of each class will be used for hands-on lab / discussion. All students are expected to participate in class activities. Students who are often absent will find themselves at a disadvantage during the tests.
3. No audio / video recording or photography in the classroom without prior permission of instructor.
4. No personal discussion or cell phone activity during class time. Please set the cell phone on **silent/vibrate** mode.
5. All e-mail communication to the instructor must have the subject line start with **[CS-146, 08]**
6. Email to be sent to the instructor's SJSU email ID (vidya.rangasayee@sjsu.edu) only.
7. Start on your homework early and stay on top of them. Some assignments take way more time than you expect.
8. Have fun learning.

University Policies (Required)

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 151 Object Oriented Design, Spring 2017, Course Schedule

List the agenda for the semester including when and where the final exam will be held. Indicate the schedule is subject to change with fair notice and how the notice will be made available.

All sections refer to the required textbook.

Week	Date	Topics, Readings, Assignments, Deadlines	Additional Notes
1	1/26/2017	Intro to CS151	
2	1/31/2017	Intermediate Java, Collections	HW01 Assigned
2	2/2/2017	Collections, Unit Testing	
3	2/7/2017	Object Oriented Concepts - Encapsulation and Inheritance, Abstract Classes	
3	2/9/2017	Object Oriented Concepts - Polymorphism	
4	2/14/2017	Object Oriented Concepts - Polymorphism, Interfaces	HW02 Assigned
4	2/16/2017	Guidelines for Class Design	HW01 Due
5	2/21/2017	Guidelines for Class Design	
5	2/23/2017	GUI Programming	
6	2/28/2017	GUI Programming	HW03 Assigned
6	3/2/2017	GUI Programming	HW02 Due
7	3/7/2017	Design Patterns	
7	3/9/2017	Design Patterns	
8	3/14/2017	Design Patterns	HW04 Assigned
8	3/16/2017	Java Object Model and Frameworks	HW03 Due
9	3/21/2017	Midterm review	
9	3/23/2017	Midterm	
10	3/28/2017	SPRING RECESS - NO CLASS	
10	3/30/2017	SPRING RECESS - NO CLASS	
11	4/4/2017	Serialization	HW04 Due
11	4/6/2017	Reflection	HW05 Assigned

Week	Date	Topics, Readings, Assignments, Deadlines	Additional Notes
12	4/11/2017	Reflection	
12	4/13/2017	MultiThreaded Programming	
13	4/18/2017	MultiThreaded Programming	Project Assigned
13	4/20/2017	MultiThreaded Programming	HW05 Due
14	4/25/2017	Network Programming	
14	4/27/2017	Network Programming	
15	5/2/2017	Web Programming	HW06 Assigned
15	5/4/2017	Web Programming	
16	5/9/2017	Project Demo	
16	5/11/2017	Project Demo	Project Due
17	5/16/2017	Review	HW06 Due
Final Exam	5/18/2017	MH 422 1445 - 1700	