

San José State University
Department of Computer Science
CS151, Object Oriented Design, Section 04, Fall, 2016 (42968)

Course and Contact Information

Instructor:	Vidya Rangasayee
Office Location:	MH229
Telephone:	(408) 924-5060
Email:	vidya.rangasayee@sjsu.edu
Office Hours:	TR 9:30am – 10:30am (Additional hours by appointment)
Class Days/Time:	TR 10:30am – 11:45am
Classroom:	Science 164
Prerequisites:	CS 46B – Introduction to Data Structures or equivalent programming experience.

Course Format : Technology Intensive

Faculty Web Page and MYSJSU Messaging

Course materials will be available on Canvas at <https://sjsu.instructure.com> Please use piazza for all course discussions including private messages to the instructor

Course Description

Introduce students to the basic principles of OO Design, plus elements of UML and design patterns. Cover the Java language features not yet seen in CS1 and CS2. Teach basic GUI programming.

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

Cay Horstmann, "Object-Oriented Design & Patterns," 2nd edition, Wiley Publishers, Inc.

ISBN-13: 978-0471744870

(This textbook is optional and used more as a guideline for the order of topics rather than content)

Other Readings

1. *E. Gamma et al., Design Patterns: Elements of Reusable Object-Oriented Software, Addison-Wesley.*
2. *K. Arnold, J. Gosling and D. Holmes, The Java Programming Language, 4th Ed., Addison-Wesley.*
3. *M. Fowler, UML Distilled, 3rd Ed., Addison-Wesley.*
4. *X. Jia, Object-Oriented Software Development Using Java: Principles, Patterns, and Frameworks, 2nd Ed., Addison-Wesley.*

Other **technology requirements** / equipment / material

- *Programming Language: Java Platform SE 7 or higher*
 - *It is available on all Department machines.*
 - *Download: <http://www.oracle.com/technetwork/java/javase/downloads/index.html>*

- *StarUML*
 - *Download: <http://staruml.sourceforge.net/en/download.php>*
 - *StarUML Tutorial (to start off): <http://www.owl.net.rice.edu/~comp201/07-spring/info/staruml/>*
 - *StarUML User Guid: <http://staruml.sourceforge.net/en/documentations.php>*
- *Violet: <http://horstmann.com/violet>*
- *IDE:*
 - *Eclipse: <http://eclipse.org/>*
 - *NetBeans: <http://netbeans.org/>*

Course Requirements and Assignments

Programming assignments

There will be several programming assignments some of which are team based. For team based assignments, all members will get the same grade. Each team is responsible for choosing a team lead and dividing up the work among the team members. You are personally responsible for participating and contributing to your team's work, and for understanding each part of the work for every assignment whether or not you worked on that part.

Programs must be appropriately documented via javadoc comments and should adhere to the coding style posted on the CS Department web page: http://www.cs.sjsu.edu/web_mater/java_code.html.

Unless asked for specifically, all assignments must be submitted electronically. Instructions for this will be on the first assignment.

To learn time management, each assignment is worth a maximum of 100 points. Late assignments will lose 20 points and an additional 20 points for each 24 hours after the due date.

Exams

The midterm and final examinations will be open book, open notes. Instant messaging, e-mails, texting, tweeting, or other communication with anyone else during the exams will be considered cheating and strictly forbidden.

The current schedule for exams is

Midterm*: see Course Schedule

Final Exam*: See Course Schedule

* - all exams will be online on Canvas and will be open on the day of the exam.

Grading Policy

Your individual class grade will be weighted as follows:

60% Individual and Team Assignments

15% Midterm exam

25% Final exam

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.

Classroom Protocol

Please:

- Be on time!
- No texting!
- Set your cell phones in silent mode!
- Participate in the class activities as much as you can.
- Be patient about strange, easy questions from students. Feel free to ask questions yourself.
- Let's make a comfortable and respectful environment for presenting any idea.
- **Start on your homework early and stay on top of them. Some assignments take way more time than you expect.**
- Have fun learning.

University Policies

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/>

CS151, Fall 2016 - Course Schedule

This is a tentative schedule for this semester. This is subject to change with sufficient notice and will be informed through Canvas/Piazza

Week	Date	Topics, Readings, Assignments, Deadlines
1	NA	
1	8/25/2016	Introduction Object Oriented Design
2	8/30/2016	Object Oriented Concepts
2	9/1/2016	Object Oriented Concepts
3	9/6/2016	Guidelines for Class Design
3	9/8/2016	Guidelines for Class Design
4	9/13/2016	Guidelines for Class Design
4	9/15/2016	Interface Types and Polymorphism
5	9/20/2016	Interface Types and Polymorphism
5	9/22/2016	Interface Types and Polymorphism
6	9/27/2016	Inheritance and Abstract Classes

6	9/29/2016	Inheritance and Abstract Classes
7	10/4/2016	Patterns and GUI
7	10/6/2016	Junit
8	10/11/2016	Design Patterns
8	10/13/2016	Design Patterns
9	10/18/2016	Design Patterns
9	10/20/2016	MIDTERM (ONLINE)
10	10/25/2016	Java Object Model and Frameworks
10	10/27/2016	Reflection
11	11/1/2016	MultiThreaded Programming
11	11/3/2016	MultiThreaded Programming
12	11/8/2016	MultiThreaded Programming
12	11/10/2016	Network Programming
13	11/15/2016	Network Programming
13	11/17/2016	Network Programming
14	11/22/2016	Serialization and Document Read/write
14	11/24/2016	THANKGIVING NO CLASS
15	11/29/2016	PROJECT WORK
15	12/1/2016	PROJECT WORK
16	12/6/2016	Databases and JDBC
16	12/8/2016	Project Demos/Finals Review
17	12/13/2016	Project Demos/Finals Review
17	12/15/2016	Final Exam (WEDNESDAY) - ONLINE