San José State University
Department of Computer Science
CS151, Object Oriented Design, Section 01, Spring, 2016 (20194)

Course and Contact Information

Instructor:	Vidya Rangasayee
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Office Hours:	TR 9:00am – 10:30am (Additional hours by appointment)
Class Days/Time:	TR 12:00pm – 1:15pm
Classroom:	MH 233
Prerequisites:	CS 46B – Introduction to Data Structures or equivalent programming experience.

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.

Learning Outcomes

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 [Optional]

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 equipment / material requirements (include if applicable)

- 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.owlnet.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

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 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

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*: Thursday, March 24th during regular class
Final Exam*: Friday, May 20, 09:45am – 12:00pm
* - all exams will be online on Canvas and will be open on the day of the exam.

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."

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.

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

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

General Expectations, Rights and Responsibilities of the Student

As members of the academic community, students accept both the rights and responsibilities incumbent upon all members of the institution. Students are encouraged to familiarize themselves with SJSU's policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arises. See University Policy S90–5 at http://www.sjsu.edu/senate/docs/S90-5.pdf. More detailed information on a variety of related topics is available in the SJSU catalog, at http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html. In general, it is recommended that students begin by seeking clarification or discussing concerns with their instructor. If such conversation is not possible, or if it does not serve to address the issue, it is recommended that the student contact the Department Chair as a next step.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the current academic year calendars document on the Academic Calendars webpage at http://www.sjsu.edu/provost/services/academic_calendars/. The Late Drop Policy is available at

http://www.sjsu.edu/aars/policies/latedrops/policy/**.** Students should be aware of the current deadlines and penalties for dropping classes.

Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.

Consent for Recording of Class and Public Sharing of Instructor Material

University Policy S12-7, http://www.sjsu.edu/senate/docs/S12-7.pdf, requires students to obtain instructor's permission to record the course and the following items to be included in the syllabus:

- "Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material."
    - It is suggested that the greensheet include the instructor's process for granting permission, whether in writing or orally and whether for the whole semester or on a class by class basis.
    - In classes where active participation of students or guests may be on the recording, permission of those students or guests should be obtained as well.
- "Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent."

Academic integrity

Your commitment, as a student, to learning is evidenced by your enrollment at San Jose State University. The University Academic Integrity Policy S07-2 at http://www.sjsu.edu/senate/docs/S07-2.pdf requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sjsu.edu/studentconduct/.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at http://www.sjsu.edu/aec to establish a record of their disability

CS151 / Object Oriented Design, Spring 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.

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1	NA	
1	1/28/2016	Introduction Object Oriented Design
2	2/2/2015	Object Oriented Concepts
2	2/4/2015	Object Oriented Concepts
3	2/9/2015	Guidelines for Class Design
3	2/11/2015	Guidelines for Class Design
4	2/16/2015	Guidelines for Class Design
4	2/18/2015	Interface Types and Polymorphism
5	2/23/2015	Interface Types and Polymorphism
5	2/25/2015	Interface Types and Polymorphism
6	3/1/2015	Inheritance and Abstract Classes
6	3/3/2015	Inheritance and Abstract Classes
7	3/8/2015	Patterns and GUI
7	3/10/2015	Design Patterns
8	3/15/2015	Design Patterns
8	3/17/2015	Design Patterns
9	3/22/2015	Design Patterns
9	3/24/2015	MIDTERM EXAM
	3/28 - 4/1	SPRING BREAK - NO CLASS
10	4/5/2015	Java Object Model and Frameworks
10	4/7/2015	Reflection
11	4/12/2015	MultiThreaded Programming
11	4/14/2015	MultiThreaded Programming
12	4/19/2015	MultiThreaded Programming

12	4/21/2015	Network Programming
13	4/26/2015	Network Programming
13	4/28/2015	Network Programming
14	5/3/2015	Serialization and Document Read/write
14	5/5/2015	Junit
15	5/10/2015	Junit
15	5/12/2015	Project Demos/Review
16	5/20/2015	Final Exam (FRIDAY)