

San José State University
College of Science/Department of Computer Science CS151, Object-
Oriented Design, Section 5, Spring, 2019

Course and Contact Information

Instructor:

Linsey Pang (Xiaolin Pang)

Office Location:

Telephone:

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Office Hours: M 7:15-8:15pm | W 7:15-8:15pm | by appointment

Class Days/Time: M 6-7:15pm | W 6-7:15pm

Classroom: Science Building 253

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. 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 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
- GUI Programming:
 - Introduce a GUI toolkit, including basic widgets and the event handling mechanism

Course Learning Outcomes (CLO)

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

1. 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 the following design patterns in the construction of a software application: Composite, Decorator, Iterator, Strategy, Template method, and Observer
- Be able to follow a systematic OO design methodology

2. 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
- Implement correctly the equals, hashCode, clone, toString methods
- Use serialization, reflection, and generics
- Throw, propagate and catch exceptions

3. GUI Programming

- 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

C. Horstmann, Object-Oriented Design & Patterns, 3rd edition.

Other technology requirements / equipment / material

- Software
 - Programming Language: [Java Platform SE 8](#)

- Download at <http://www.oracle.com/technetwork/java/javase/downloads/index.html>
- IDE:
 - Eclipse at <http://eclipse.org/>
- Version control (for group projects)
 - Git at <https://git-scm.com/>
 - Git for Eclipse at <https://www.eclipse.org/egit/>
- UML design
 - Lucidchart
 - Violet

Course Requirements and Assignments

- **University Policy S16-9:** “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.”
- Team project – design and implement an application (topics will be given later in the semester). Apply object-oriented design process (CRC and UML), design patterns, GUI programming and concurrency (detailed requirements will be presented at the lecture). Documentation and collaboration tools required.

Final Examination or Evaluation

Final exam with multiple choice questions and short answer questions and questions that require pseudocode and/or computations. Students must obtain >50% in each component of the course (homework, project, quizzes & written exams) in order to be eligible for a passing grade.

Grading Information Determination of Grades

- Total points for the course will be weighted by:
 - Mid term Exams : 20%
 - Final Exam: 30%
 - Quiz: 5%

- Assignments 25%
- Project 20%
- Letter grades will be assigned according to the following policy: 100 -99-----A+
93 – 98 ---- A
89 -- 92 ---- A-

87 -- 88---- B+ 83 -- 86 ---- B 80 -- 82 ---- B- 77 -- 79 ---- C+ 73 -- 76 ---- C 70 -- 72 ---- C- 67 -- 69 ---- D+ 63 -- 66 ---- D 60 -- 62 ---- D- 0 -- 59 ---- F
- No late work accepted or make-ups.
- Classroom Protocol
 - Arrival: students are expected to arrive on time.
 - Behavior: eating, personal loud discussions, cell phones, laptops are not allowed in the classroom. Skateboards are not allowed inside or outside the classroom.

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](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>.

- Policy on Academic Integrity
“Your commitment, as a student, to learning is evidenced by your enrollment at San Jose State University. The [University Academic Integrity Policy F15-7](#) 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. Visit the [Student Conduct and Ethical Development](#) website for more information.”

Week	Lecture#	Date	Topics
1	1	08/21/19	Object-Oriented Design Process
2	2	08/26/19	Object-Oriented Design Process
2	3	08/28/19	Object-Oriented Design Process
3		09/2/19	LABOR DAY – NO CLASS
3	4	09/04/19	Guidelines for Class Design
4	5	09/9/19	Guidelines for Class Design
4	6	09/11/19	MidTermI
5	7	09/16/19	Interface Types and Polymorphism
5	8	09/18/19	Interface Types and Polymorphism
6	9	09/23/19	Interface Types and Polymorphism

6	10	09/25/19	Interface Types and Polymorphism
7	11	09/30/19	Patterns and GUI Programming
7	12	10/02/19	Patterns and GUI Programming
8	13	10/07/19	Patterns and GUI Programming
8	14	10/09/19	Patterns and GUI Programming
9	15	10/14/19	Patterns and GUI Programming
9	16	10/16/19	MidTermII
10	17	10/21/19	Inheritance and Abstract Classes
10	18	10/23/19	Inheritance and Abstract Classes
11	19	10/28/19	Inheritance and Abstract Classes
11	20	10/30/19	Inheritance and Abstract Classes
12	21	11/04/19	The Java Object
12	22	11/06/19	The Java Object
13		11/11/19	VETERAN'S DAY – NO CLASS
13	23	11/13/19	The Java Object
14	24	11/18/19	Frameworks and Multithreading
14	25	11/20/19	Frameworks and Multithreading
15	26	11/25/19	Frameworks and Multithreading
15		11/27/19	THANKSGIVING – NO CLASS
16	27	12/02/19	Class Presentation
16	28	12/04/19	Class Presentation
17	29	12/09/19	Class Presentation- Last Day of Instruction – Last Day of Classes
18	30	12/16/19	Final Exam