

CSCI-201: Principles of Software Development

Summer 2025

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Course Description:

This course provides an introduction to backend and frontend web development in Java. Creating web applications requires various approaches and involves the integration of numerous technologies. The topics covered include object-oriented paradigm for programming (in Java); writing sophisticated concurrent network applications; managing data from relational databases using SQL and JDBC; building modern web pages with HTML, CSS, servlets, JSP and JavaScript; using professional tools on team project.

Learning Objectives:

- The ability to use Java in writing programs
- The ability to produce a software design based on requirements
- Understanding of concurrency
- The ability to write multi-threaded programs
- Understanding networking (socket) programming
- Understanding databases (MySQL) and SQL
- The ability to use HTML and CSS in designing graphical user interfaces
- The ability to utilize servlets, JSP and JavaScript for building web pages
- The ability to work effectively on a team

Prerequisites:

CSCI 104L – Data Structures and Object-Oriented Design

Recommended Textbooks:

No textbook

Computing Environment:

To be able to do program development in this class, it is necessary to install

1. JDK (Java Development Kit)
2. Eclipse (an integrated development environment)
3. GSON (JSON data-binding support for Java from Google)
4. Tomcat (a web server designed to host and run Java-based web applications)
5. MySQL (relational database management system)
6. Workbench (a visual tool for database architects)
7. JDBC (an API for accessing database)
8. Java.servlet (an API for the HTTP protocol)

Lectures:

All lectures are in-person. The lecture slides will be available.

Programming Labs:

There will be 45 mins long labs on Tuesdays and Thursdays led by the course TAs. The labs are designed to reinforce the topics covered in the lectures - no new material will be taught. The TAs will help you with installation and coding. Use your time in lab wisely. Each lab implementation must be submitted to Brightspace (by 11:59p.m. on the due date) for grading. Due to the manual grading, we require you to submit Eclipse project. **If we cannot run your submission, you will get a zero.** No late submission will be accepted.

Programming Assignments:

There will be two large programming assignments. Assignments must be completed individually. Discussion among students is fine, but no copying of other student's code is allowed. The program needs to compile, and grading will only occur if the program is able to be run. Assignments shall be submitted to Brightspace and due by 11:59p.m. on the due date. Grading criteria will be provided with the assignment description. CPs will grade the assignments. Due to the manual grading, we require you to submit Eclipse

project. **If we cannot import your project or if it contains errors after importing, or we cannot run it, you will get a zero.**

There is no late policy. Any assignment is submitted after 11:59pm on the due date late will receive a 0. No late assignments will be accepted except for extenuating circumstances with supporting documentation and a letter of support from your academic adviser. I understand that things happen, students get sick, accidents occur, computers crash, and so on, so budget your time appropriately considering any risk factors.

Quizzes:

There will be online quizzes in Brightspace. The quizzes are an individual effort. You may not use any means to communicate to other students on quizzes for any reason. The goal of quizzes is to ensure that students are attending/watching the lectures and understanding some of the concepts covered. There are no makeup quizzes. The quiz length is set to 15 mins. Each quiz has 10 questions. You will have 24 hours to take a quiz. Students can take the quiz (only once) at any time during this time frame. Accommodations for students with letters from DSP/OSAS will be provided (“Students should make arrangements directly with their faculty member at least one week in advance of the quiz, test or exam date”).

Exams:

There will be two midterm online exams. The exams are closed book and will consist of theoretical questions. The exams are an individual effort. You will have 12 hours to take an exam. The exams can only be taken within the scheduled time period. The exam length is set to 2 hours. Accommodations for students with letters from OSAS will be provided. There are no makeup exams. If you miss an exam due to an emergency, official written documentation, whatever that may be based on the situation, will need to be submitted to me as soon as you are physically able (before the exam if possible).

Grading:

Labs	15%
Assignments	20%
Quizzes	15%
Midterm exam-1	25%
Midterm exam-2	25%

Letter Grade Distribution:

≥ 93	A	73 – 77	C
90 – 93	A-	70 – 73	C-
87 – 90	B+	67 – 70	D+
83 – 87	B	63 – 67	D
80 – 83	B-	60 – 63	D-
77 – 80	C+	<60	F

Schedule:

This schedule is meant as an outline.

Depending on progress, material may be added or removed. Each lecture is 2hrs 05 mins long.

Day	Date	Topics Covered
Wed	May 21	Lecture 1: Introduction. OO design Install Java/Eclipse
Thu	May 22	Lecture 2: Garbage Collector. Generics Lab 0, Quiz 0
Mon	May 26	Memorial Day (no class)
Tue	May 27	Lecture 3: Arrays. Cloning. Iterator. Comparator
Wed	May 28	Lecture 4: I/O. Exceptions Lab 1, Quiz 1
Thu	May 29	Lecture 5: Collections. Functional Programming
Mon	June 2	Lecture 6: HTML. CSS Lab 2
Tue	June 3	Lecture 7: Java Servlets Install Tomcat, Quiz 2
Wed	June 4	Lecture 8: JSP
Thu	June 5	Lecture 9: JavaScript. DOM Lab 3
Mon	June 9	Lecture 10: MySQL
Tue	June 10	Lecture 11: SQL Install MySQL, Quiz 3
Wed	June 11	Lecture 12: JDBC
Thu	June 12	Review for Exam PA1 due, Lab 4 Midterm Online Exam (open June 6, 1pm – June 8, 1pm)

Mon	June 16	Lecture 13: Threads	
Tue	June 17	Lecture 14: Synchronization. Pools.	Lab 5
Wed	June 18	Lecture 15: Locks. Conditions.	
Thu	June 19	Juneteenth (no class)	
Mon	June 23	Lecture 16: Semaphores. Concurrent Collections.	Lab 6
Tue	June 24	Lecture 17: Networking	
Wed	June 25	Lecture 18: Multi-Threaded Network	Lab 7, Quiz 4
Thu	June 26	Lecture 19: Parallel Computing	
Mon	June 30	Review for Exam	Lab 8, PA2 due
Tue	July 1	Midterm Online Exam (open June 24, 1pm – June 25, 10 pm)	

Disclaimer:

Although the instructor does not expect this syllabus to drastically change, he reserves every right to change this syllabus any time in the semester.

Academic Integrity:

In this course we encourage students to study together. This includes discussing general strategies to be used on individual assignments. However, all work submitted for the class is to be done individually. Some examples of what is not allowed by the conduct code: copying all or part of someone else's work (by hand or by looking at others' files, either secretly or if shown), and submitting it as your own; giving another student in the class a copy of your assignment solution; consulting with another student during an exam. If you have questions about what is allowed, please discuss it with the course staff.

The USC Student Conduct Code prohibits plagiarism. All USC students are responsible for reading and following the Student Conduct Code, which appears on <https://policy.usc.edu/files/2018/07/SCampus-2018-19.pdf>.

The Viterbi School of Engineering's policy on Academic Integrity can be found at <http://viterbi.usc.edu/academics/integrity/> All students are expected to understand and abide by these principles.