CSCI 201: Principles of Software Development
Fall 2022, 4 units

Lecture: Mon, Wed 2:00p.m.-3:20p.m., THH 101 (29979D)
The lectures will also be on DEN.

Labs: Wednesday 6:00-7:50p.m., SAL 109 (29904R)
Tuesday 4:00-5:50p.m., SAL 126 (30134R)
Tuesday 2:00-3:50a.m., SAL 126 (30237R)
Wednesday 12:00-1:50p.m., SAL 127 (30238R)
Wednesday 10:00-11:50a.m., SAL 126 (30239R)
Tuesday 6:00-7:50p.m., SAL 109 (30241R)
Wednesday 4:00-5:50p.m., SAL 109 (30385R)
Tuesday 6:00-7:50p.m., SAL 126 (30396R)

Quiz: Friday 6:00-7:50p.m., ONLINE (30028R)
Only used for exams and final presentations.

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Course Producers: Listed in DEN and Piazza

Course Description

Object-oriented paradigm for programming-in-the-large in Java; writing sophisticated concurrent applications with animation and graphical user interfaces; using professional tools on team project.

Learning Objectives

Course Outcomes (expected after you've finished the course)

i	The ability to understand software engineering in terms of requirements, design, and implementation;
ii	An understanding of how to use interaction diagrams to help define requirements;
iii	The ability to produce a software design based on requirements;
iv	The ability to produce software, including graphical user interfaces, from a design;
v	The ability to unit test a module;
vi	An understanding of concurrency and how it works in computer operating systems;
vii	The ability to write multi-threaded programs and correctly solve a mutual exclusion problems using semaphores or monitors;
viii	The ability to use Java in writing programs;
ix	The ability to use HTML and CSS in designing graphical user interfaces;
x	The ability to use messaging as a communication method;
xii	The ability to apply a software engineering process to a large software project;
xiii	The ability to work effectively on a team;
xiv	An understanding of the ethical issues in working within a group;

Graduates of the program will have an ability to:

1	Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2	Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3	Communicate effectively in a variety of professional contexts.
4	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Prerequisite(s): CSCI 104L – Data Structures and Object-Oriented Design

Course Notes

The course will have both lectures and labs. The lectures will be given live but they will also be recorded and made available on DEN to students who are unable to attend the live lecture. DEN's D2L will be used for the course material and grades, and Zoom will be used for live streaming the lectures. DEN's D2L will be used for uploading completed assignments and taking quizzes and exams.

Online Lectures

Lectures will be held live in THH 101, and on Zoom.

Zoom Meeting link will be available on DEN.

Technological Proficiency and Hardware/Software Required

We will be using Java, Eclipse, IntelliJ IDEA (optional), Tomcat, and MySQL in this class. Those pieces of software are available for free and will run on both Mac and Windows laptops. The installations will be done as part of different labs throughout the semester.

Required Readings and Supplementary Materials

The following textbook will be used for reference and is optional to purchase.
Liang, Y. Daniel. Introduction to Java Programming and Data Structures, Comprehensive Version, 11th Edition, Prentice Hall, Inc., 2017. ISBN 978-0134670942

Grading Breakdown

Assessment	% of Grade
Labs	10%
Assignments	20%
Weekly Quizzes	10%
Group Project	30%
Written Exam #1	15%
Written Exam #2	15%
TOTAL	100%

Grading Scale (Preliminary)

Grades will be based on a curve that operates in favor of the students, with at least the following grades for a given percentage x. If the average in the class is lower than 80%, the average will become the cut-off between a B- and a C+. (**Important Note: this grading scale is subject to change before the start of Fall classes**).

$x \geq 93$	A	$73 \leq x < 77$	C
$90 \leq x < 93$	A-	$70 \leq x < 73$	C-
$87 \leq x < 90$	B+	$67 \leq x < 70$	D+
$83 \leq x < 87$	B	$63 \leq x < 67$	D
$80 \leq x < 83$	B-	$60 \leq x < 63$	D-
$77 \leq x < 80$	C+	$x < 60$	F

Grading Timeline

Assignments will typically be graded within 7 days of the due date. Exams are usually graded within a few hours of being completed. Labs will be graded during the lab section in which they are assigned. Final project deliverables will typically be graded within 2 days of the due date. Weekly quizzes will be graded by Blackboard automatically.

Assignment Policy

Assignments will be discussed in class and worked on 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 will be submitted to DEN (instructions will be provided in class and on Piazza) and are due by 11:59p.m. on the due date (see Late Policy below). Grading criteria will be provided with the assignment description. Graders will grade the assignments. Due to the manual grading, we require you to submit an Eclipse project. All grades will be posted to DEN's gradebook.

Once grades are entered into DEN's gradebook, students will be able to request a regrade if they think a mistake has been made in the grading through the following process:

1. Within three days of receiving the grade on an assignment, submit a formal request with the online form provided on Piazza. Note that this is the only request that can be made to regrade that specific assignment, so be sure to include all relevant information. If the request is submitted more than five days after the grades are posted, the request will be denied.
2. The TA will review the request and determine if a regrade will be granted.
   a. If the regrade request is denied, the original grade will stand.
   b. If the regrade request is granted, the TA will forward the request to a grader (possibly a different one than who originally graded it). The grader will conduct a regrade and send the updated grade to the TA, who will then enter it into Blackboard.
3. There will **only be one regrade request**, and the grade after the regrade is final. If any questions arise beyond that, the student will need to speak with the professor in person.

Late Policy

Each student will have **three (3) grace days** to use during the semester for submitting assignments late. Grace days can only be used on *assignments* (**not** labs, final project deliverables, exams, weekly quizzes, etc.), and the days can be used in any combination. For example, you could use two grace days on assignment 1 and one grace day on assignment 2. All submissions other than for assignments in accordance with this policy must be submitted by 11:59p.m. on the due date or will receive a 0.

After the three grace days have been used, any assignment submitted late will receive a 0. A grace day will be counted for any assignment submitted after 11:59p.m. on the due date. To state that another way, if an assignment is submitted at 12:00a.m. (midnight) or later, grace days will be used. The grace days do not need to be approved by the professor, but any exceptions other than grace days will need professor approval.

Final Project

The project in the class will be assigned approximately half-way through the semester. You are required to submit a project proposal. Once we receive all proposals, CPs will create project groups. As a group you will have weekly meetings with your CPs/TAs. The project will consist of between 6-8 students. Formal documentation following the software engineering process will be required. The project will be discussed in class with the corresponding due dates. The project deliverables will be submitted via DEN by ZIP files and recorded video and are due by 11:59p.m. on the due date (see Late Policy).

Labs

The TA/CPs will lead the lab section each week. There will be an assigned lab program each week that reinforces the topics covered in the lectures. The lab assignments will be graded based on effort, attendance, completion, and understanding. The labs are intended to be completed during the lab period, and you are expected to work **individually** on the lab during the section. The lab assistants are there to answer any questions and help you, so use your time in lab wisely. You will be asked one or more questions by the lab assistants at the end of each lab to ensure you understood what was covered. If you cannot answer the questions, the lab assistants can deduct points from your lab grade. Each lab 1-8 is worth 0.8% of the final grade, and each lab 9-12 is worth 0.9% of the final grade and the total lab score is out of 10%. We will not video record labs, because during the lab no new material will be taught.

Attendance

There is no lecture attendance requirement that counts towards your grade in the class. However, students who do not attend lecture are responsible for everything covered in lecture. The lectures will be recorded and posted on DEN for students to watch if they are unable to attend a lecture.

Weekly Quizzes

There will be weekly quizzes in DEN that must be completed each week. This will ensure that students are attending/watching the lectures and understanding some of the concepts covered. The weekly quizzes are worth 10% of the course grade, with 1% given each week. There will be 13 weeks that contain weekly quizzes (no weekly quizzes during the midterm week or presentation weeks). There is no extra credit if more than 10% is earned for weekly quizzes.

Exams

Exam #1	Wednesday, October 19, 2022	2:00p.m.-3:10p.m.
Exam #2	Saturday, December 10, 2022	11:00a.m.-12:10p.m.

The written exams are open book and will consist of theoretical questions and may have code to be analyzed. No code will be required to be written. All written exams are ONLINE ONLY (using the D2L Quiz Tool).

An exam can only be taken on the scheduled date and at the scheduled starting time. Accommodations for students with letters from DSP will be provided, though the exam will still need to be taken on the scheduled date. 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). Approval will be solely based on my discretion though it should be based on a documented illness or emergency. Based on the exam, here are the rules that will be followed:

- If an excuse is not approved, you will be given a 0 on the exam.
- If there is an approved excuse for written exam #1, the percentage for that exam will be added to the percentage for written exam #2.
- If there is an approved excuse for written exam #2, you will receive an Incomplete grade in the course and must make up the exam based on the conditions of an Incomplete.

Lecture and Exam Schedule

Chapter references are from Y. Daniel Liang, <u>Introduction to Java Programming and Data Structures,</u> <u>Comprehensive Version, 11th Edition</u>, Prentice Hall, 2017. ISBN 978-0134670942. Low-cost, digital rental link available here: https://redshelf.com/book/753012/introduction-to-java-programming-and-data-structures-comprehensive-version-subscription-753012-9780134700144-y-daniel-liang

Week	Lecture	Date	Lecture Topic	Chapter	Lab Topic
1	1	August 22, 2022	Introduction, Environment, Methods	1-8	No Lab
	2	August 24, 2022	Classes, Packages, File I/O	9-10	
2	3	August 29, 2022	Inheritance, Abstract Classes and Interfaces, Polymorphism	11, 13	DEN D2L, Environment Setup
	4	August 31, 2022	Garbage Collection, Exception Handling, Serialization, Generics	12, 19	
3		September 5, 2022	No Class – Labor Day		Inheritance
	5	September 7, 2022	Concurrent Computing	32	
4	6	September 12, 2022	Thread Methods, Thread Pools, Thread Priorities	32	Threads
	7	September 14, 2022	Concurrency, Monitors	32	
5	8	September 19, 2022	Locks, Conditions	32	Locks and Monitors
	9	September 21, 2022	Semaphores, Parallel Computing	32	
6	10	September 26, 2022	Producer/Consumer, Multi-Threaded Programming Design		Parallel Computing
	11	September 28, 2022	Software Engineering, Testing, Project Description		
7	12	October 3, 2022	Networking Theory	33	Software Engineering, GitHub Tutorial
	13	October 5, 2022	Networking Theory (cont.)	33	
8	14	October 10, 2022	Network Programming	33	Networking Worksheet
	15	October 12, 2022	Multi-Threaded Network Programming	33	
9	16	October 17, 2022	Exam Review - Databases	34	No Lab
		October 19, 2022, 2PM	**Written Exam #1**	1-13, 19, 32	
10	17	October 24, 2022	SQL	34	MySQL Installation
	18	October 26, 2022	JDBC	34-35	
11	19	October 31, 2022	HTML, CSS		JDBC
	20	November 2, 2022	HTML/CSS Programming	37-38	
12	21	November 7, 2022	Java Servlets	37-38	Web Server
	22	November 9, 2022	JavaScript		
13	23	November 14, 2022	AJAX		Java Servlets
	24	November 16, 2022	Web Sockets		
14	25	November 21, 2022	Cloud Computing, Serverless, Containers		JavaScript and AJAX
		November 23-27, 2022	**No Class – Thanksgiving Break**		
15	26	November 28, 2022	Guest lecture: Agile Computing, Mark DuVall, CTO		No Lab
		November 30, 2022	**No Class – Study Day**		
	27	November 30, 2022	Final Project Demonstrations (On video) + Documentation		
16		**December 10, 2022, 11AM**	**Written Exam #2**	1-13, 19, 32-35, 37-38	

Assessments Schedule

NOTE: The first 8 labs ar worth 0.8% each, and the last 4 labs are worth 0.9% each. The percentages add to 103% because the quizzes add to 13.0%. See sections on Labs and Weekly Quizzes for more information.

Week	Day	Due Date	Assessment	% of Grade
1	Sunday	August 28, 2022	Quiz #1	1.0%
2	Tuesday-Wednesday	August 30-31, 2022	Lab #1	0.8%
2	Sunday	September 4, 2022	Quiz #2	1.0%
3	Monday	September 5, 2022	No Lab – Labor Day	
3	Tuesday-Wednesday	September 6-7, 2022	Lab #2	0.8%
3	Wednesday	September 7, 2022	Assignment #1	4.0%
3	Sunday	September 11, 2022	Quiz #3	1.0%
4	Tuesday-Wednesday	September 13-14, 2022	Lab #3	0.8%
4	Sunday	September 18, 2022	Quiz #4	1.0%
5	Monday-Wednesday	September 19-21, 2022	Lab #4	0.8%
5	Sunday	September 25, 2022	Quiz #5	1.0%
6	Tuesday-Wednesday	September 27-28, 2022	Lab #5	0.8%
6	Friday	September 30, 2022	Assignment #2	5.0%
6	Sunday	October 2, 2022	Quiz #6	1.0%
7	Tuesday-Wednesday	October 4-5, 2022	Lab #6	0.8%
7	Monday-Sunday	October 3-9, 2022	FP – Weekly Meeting #1	0.5%
7	Sunday	October 9, 2022	FP – Project Proposal	1.0%
7	Sunday	October 9, 2022	Quiz #7	1.0%
8	Tuesday-Wednesday	October 11-12, 2022	Lab #7	0.8%
8	Monday-Sunday	October 10-16, 2022	FP – Weekly Meeting #2	0.5%
8	Sunday	October 16, 2022	FP – High-Level Requirements	2.0%
8	Sunday	October 16, 2022	Quiz #8	1.0%
9	Monday-Sunday	October 17-23, 2022	FP – Weekly Meeting #3	0.5%
9	Wednesday	October 19, 2022	Written Exam #1	15%
9	Sunday	October 23, 2022	FP – Technical Specifications	2.0%
10	Tuesday-Wednesday	October 25-26, 2022	Lab #8	0.8%
10	Monday-Sunday	October 24-30, 2022	FP – Weekly Meeting #4	0.5%
10	Sunday	October 30, 2022	FP – Detailed Design	3.0%
10	Sunday	October 30, 2022	Quiz #9	1.0%
10	Sunday	October 30, 2022	Assignment #3	5.0%
11	Tuesday-Wednesday	November 1-2, 2022	Lab #9	0.9%
11	Monday-Sunday	October 31-November 6, 2022	FP – Weekly Meeting #5	0.5%
11	Sunday	November 6, 2022	FP – Testing Document	2.0%
11	Sunday	November 6, 2022	FP – Peer Review #1	1.0%
11	Sunday	November 6, 2022	Quiz #10	1.0%
12	Tuesday-Wednesday	November 8-9, 2022	Lab #10	0.9%
12	Monday-Sunday	November 7-13, 2022	FP – Weekly Meeting #6	0.5%
12	Sunday	November 13, 2022	FP – Deployment Document	1.0%
12	Sunday	November 13, 2022	Quiz #11	1.0%
13	Tuesday-Wednesday	November 15-16, 2022	Lab #11	0.9%
13	Monday-Sunday	November 14-20, 2022	FP – Weekly Meeting #7	0.5%
13	Sunday	November 20, 2022	FP – Peer Review #2	1.0%
13	Sunday	November 20, 2022	Quiz #12	1.0%
14	Monday-Tuesday	November 21-22, 2022	Lab #12	0.9%
14	Wednesday-Sunday	November 23-27, 2022	No Lab – Thanksgiving Break	
15	Monday-Wednesday	November 28-30, 2022	FP – Weekly Meeting #8	0.5%
15	Thursday	November 30, 2022	FP - Complete Documentation	1.0%
15	Thursday	November 30, 2022	FP – Code Complete	2.0%
15	Monday	November 28, 2022	Quiz #13	1.0%
15	Wednesday	November 30, 2022	Assignment #4	6.0%
15	Friday	December 2, 2022	Final Project Demonstrations	10%
16	Saturday	December 10, 2022	Written Exam #2	15%

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention and Services (RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call
studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX)- (213) 740-5086
eeotix.usc.edu/
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

Reporting Incidents of Bias or Harassment - (213) 740-5086
usc-advocate.symplicity.com/care_report
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title IX *Public CARE Report* for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776
dsp.usc.edu
Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. For exams, we will set up Quiz Tool to allow 1.5 or 2.0 total time, as appropriate.

Campus Support & Intervention - (213) 821-4710
campussupport.usc.edu
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101
diversity.usc.edu
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.