CSCI 201: Principles of Software Development
Spring 2023, 4 units

Lecture: Tue, Thu 11:00a.m.-12:20p.m., THH 101 (30381R)
The lectures will also be on Zoom and DEN.

Labs: Tuesday 3:30-5:20p.m., SAL 109 (29929R)
Wednesday 10:00-11:50a.m., SAL 109 (29930R)
Tuesday 5:30-7:20p.m., SAL 109 (29931R)
Friday 8:00-9:50p.m., SAL 126 (30017R)
Monday 12:00-1:50p.m., SAL 109 (30039R)
Thursday 3:00-4:50p.m., SAL 109 (30040R)
Monday 10:00-11:50a.m., SAL 127 (30317R)
Wednesday 10:00-11:50a.m., SAL 126 (30318R)
Wednesday 12:00-1:50p.m., SAL 127 (30380R)

Quiz: Thursday 5:00p.m. - Sunday 11:59p.m. ONLINE (29981R)

Instructor: Marco Papa, Ph.D.
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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 explain software engineering in terms of requirements, design, and implementation;
ii	The ability 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	The ability to explain concurrency and how it works in computer operating systems;
vii	The ability to write multi-threaded programs and correctly solve a mutual exclusion problem 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	The ability to analyze 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's Panopto 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 by students 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 Mac, Windows and Linux laptops. The installations will be done as part of different labs throughout the semester. We will also be using HTML, CSS and JavaScript.

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 Spring classes**).

$x >= 93$	A	$73 <= x < 77$	C
$90 <= x < 93$	A-	$70 <= x < 73$	C-
$87 <= x < 90$	B+	$67 <= x < 70$	D+
$83 <= x < 87$	B	$63 <= x < 67$	D
$80 <= x < 83$	B-	$60 <= x < 63$	D-
$77 <= x < 80$	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. Online Exams are auto graded. Labs will be graded during the lab section in which they are assigned. Final project deliverables will typically be graded within 3 days of the due date. Weekly quizzes will be auto graded by DEN's D2L Quiz Tool.

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's D2L (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 all projects as Eclipse Exported "Archive File" in ZIP format. 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. Once an assignment is graded, an online form will be provided on Piazza, to submit a formal regarding request. 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 2 days after form is 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 **be only one regrade request**, and the score 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. CPs will create project teams based on common interests. Each team is required to submit a project proposal. As a team you will have weekly meetings with your CPs, acting as mentors. The teams 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 record video of the 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 the lectures are responsible for all material covered in the lectures. The lectures will be recorded and posted on DEN, for students to watch if they are unable to attend a lecture or wish to review on demand the material being taught.

Weekly Quizzes

There will be weekly quizzes on 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 0.77% given each week**. There will be 13 weeks that contain weekly quizzes (no weekly quizzes during the midterm week or presentation weeks).

Exams

Exam #1	Tuesday, March 7, 2023	11:30a.m.-12:40p.m.
Exam #2	Tuesday, May 9, 2023	11:00a.m.-12:10p.m.

The written exams are open book and will consist of theoretical questions and may include code to be analyzed. No code will be required to be written. All written exams are ONLINE ONLY (using the DEN's 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 and start time. 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	January 10, 2023	Introduction, Environment, Methods	1-8	No Lab
	2	January 12, 2023	Classes, Packages, File I/O	9-10	
2	3	January 17, 2023	Inheritance, Abstract Classes and Interfaces, Polymorphism	11, 13	DEN D2L, Environment Setup
	4	January 19, 2023	Garbage Collection, Exception Handling, Serialization, Generics	12, 19	
3	5	January 24, 2023	Concurrent Computing	32	Inheritance
	6	January 26, 2023	Thread Methods, Thread Pools, Thread Priorities	32	
4	7	January 31, 2023	Concurrency, Monitors	32	Threads
	8	February 2, 2023	Locks, Conditions	32	
5	9	February 7, 2023	Semaphores, Parallel Computing	32	Locks and Monitors
	10	February 9, 2023	Producer/Consumer, Multi-Threaded Programming Design		
6	11	February 14, 2023	Software Engineering, Testing, Project Description		Parallel Computing
	12	February 16, 2023	Networking Theory	33	
7	13	February 21, 2023	Networking Theory (cont.)	33	Software Engineering, GitHub Tutorial
	14	February 23, 2023	Network Programming	33	
8	15	February 28, 2023	Multi-Threaded Network Programming	33	Networking Worksheet
	16	March 2, 2023	Exam Review - Databases	34	
9		**March 7, 2023, 11:30AM**	**Written Exam #1**	1-13, 19, 32	No Lab
	17	March 9, 2023	SQL	34	
		March 12-19, 2023	**No Class – Spring Break**		
10	18	March 21, 2023	JDBC	34-35	MySQL Installation
	19	March 23, 2023	HTML, CSS		
11	20	March 28, 2023	HTML/CSS Programming	37-38	JDBC
	21	March 30, 2023	Java Servlets	37-38	
12	22	April 4, 2023	JavaScript		Web Server
	23	April 6, 2023	AJAX		
13	24	April 11, 2023	Web Sockets		Java Servlets
	25	April 13, 2023	Cloud Computing, Serverless, Containers		
14	26	April 18, 2023	Hacking The Web		JavaScript and AJAX
	27	April 20, 2023	Agile Computing		
15	28	April 25, 2023	TBD		No Lab
	29	April 27, 2023	TBD		
	30	April 28, 2023	Final Project Demonstrations (On video) + Documentation		
16		**May 9, 2023, 11AM**	**Written Exam #2**	1-13, 19, 32-35, 37-38	

Assessments Schedule

NOTE: The first 8 labs are worth 0.8% each, and the last 4 labs are worth 0.9% each. Quizzes are worth 0.77% each, for a total of 10%. See sections on Labs and Weekly Quizzes for more information.

Week	Day	Due Date	Assessment	% of Grade
1	Sunday	January 15, 2023	Quiz #1	0.7%
2	Monday	January 16, 2023	No Lab – MLK Day	
	Tuesday-Friday	January 17-20, 2023	Lab #1	0.8%
	Sunday	January 22, 2023	Quiz #2	0.7%
3	Monday-Friday	January 23-27, 2023	Lab #2	0.8%
	Wednesday	January 25, 2023	Assignment #1	4.0%
	Sunday	January 29, 2023	Quiz #3	0.7%
4	Monday-Friday	January 30-February 3, 2023	Lab #3	0.8%
	Sunday	February 5, 2023	Quiz #4	0.7%
5	Monday-Friday	February 6-10, 2023	Lab #4	0.8%
	Sunday	February 12, 2023	Quiz #5	0.7%
6	Monday-Friday	February 13-17, 2023	Lab #5	0.8%
	Friday	February 17, 2023	Assignment #2	6.0%
	Sunday	February 19, 2023	Quiz #6	0.7%
7	Monday	February 20, 2023	No Lab – Presidents' Day	
	Tuesday-Friday	February 21-24, 2023	Lab #6	0.8%
	Monday-Sunday	February 20-26, 2023	FP – Weekly Meeting #1	0.5%
	Sunday	February 26, 2023	FP – Project Proposal	1.0%
	Sunday	February 26, 2023	Quiz #7	0.7%
8	Monday-Friday	February 27-March 3, 2023	Lab #7	0.8%
	Monday-Sunday	February 27-March 5, 2023	FP – Weekly Meeting #2	0.5%
	Sunday	March 5, 2023	FP – High-Level Requirements	2.0%
	Sunday	March 5, 2023	Quiz #8	0.7%
9	Monday-Friday	March 6-10, 2023	No Lab – Exam Week	
	Tuesday-Saturday	March 7-11, 2023	FP – Weekly Meeting #3	0.5%
	Tuesday	March 7, 2023	Written Exam #1	15%
	Sunday	March 12, 2023	FP – Technical Specifications	2.0%
		March 12-19, 2023	No Class – Spring Break	
10	Monday-Friday	March 20-24, 2023	Lab #8	0.8%
	Monday-Sunday	March 20-26, 2023	FP – Weekly Meeting #4	0.5%
	Sunday	March 26, 2023	FP – Detailed Design	3.0%
	Sunday	March 26, 2023	Quiz #9	0.7%
	Sunday	March 26, 2023	Assignment #3	6.0%
11	Monday-Friday	March 27-31, 2023	Lab #9	0.9%
	Monday-Sunday	March 27-April 2, 2023	FP – Weekly Meeting #5	0.5%
	Sunday	April 2, 2023	FP – Testing Plan	2.0%
	Sunday	April 2, 2023	FP – Peer Review #1	1.0%
	Sunday	April 2, 2023	Quiz #10	0.7%
12	Monday-Friday	April 3-7, 2023	Lab #10	0.9%
	Monday-Sunday	April 3-9, 2023	FP – Weekly Meeting #6	0.5%
	Sunday	April 9, 2023	FP – Deployment Document	1.0%
	Sunday	April 9, 2023	Quiz #11	0.7%
13	Monday-Friday	April 10-14, 2023	Lab #11	0.9%
	Monday-Sunday	April 10-16, 2023	FP – Weekly Meeting #7	0.5%
	Sunday	April 16, 2023	FP – Peer Review #2	1.0%
	Sunday	April 16, 2023	Quiz #12	0.7%
14	Monday-Friday	April 17-21, 2023	Lab #12	0.9%
	Monday-Sunday	April 17-23, 2023	FP – Weekly Meeting #8	0.5%
	Sunday	April 23, 2023	FP - Complete Documentation	1.0%
	Sunday	April 23, 2023	FP – Code Complete	2.0%
	Sunday	April 23, 2023	Quiz #13	0.7%
	Sunday	April 23, 2023	Assignment #4	4.0%
15	Friday	April 28, 2023	Final Project Demonstrations	10%
16	Tuesday	May 9, 2023	Written Exam #2	15%

Statement on Academic Conduct and Support Systems

Academic Conduct

Office of Academic Integrity – (213) 764-4163

academicintegrity.usc.edu

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. The course uses the MOSS tool to check for plagiarism. All incidents of plagiarism will be reported to the *Office of Academic Integrity*.

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.

Office of Student Accessibility Services - (213) 740-0776

osas.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 the Office of Student Accessibility Services (OSAS) 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.

OSAS also provides support for deaf/hard of hearing (DHH) students, requesting CART services.

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.

Inclusion Statement
It is my intention that students from all backgrounds and perspectives will be well served by this course, and that the diversity that students bring to this class will be viewed as an asset. I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, socioeconomic background, family education level, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class. Your suggestions are encouraged and appreciated.