Syllabus for CSE 138:

Distributed Systems (Fall 2023)

(Last Revision: September 27, 2023)

Instructor Information

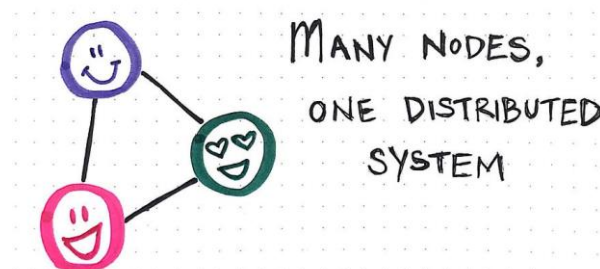| Instructor Name:	Prof. Liting Hu
Course Hours:	Tuesday / Thursday, 7:10 PM - 8:45 PM (5 Unit Course)
Course Location:	Rachel Carson College Room 240
Office Hours:	TBD
Email:	liting@ucsc.edu
Piazza (for Q&A):	https://piazza.com/ucsc/fall2023/cse138

TA Information

Instructor Name:	Cheng-Wei Ching
Lab Hours:	01A: Monday 8:00 AM - 9:05 AM. 01B: Tuesday 8:30 AM - 9:35 AM. 01C: Wednesday 10:40 AM - 11:45 AM.
Lab Location:	01A: Engineering 2 194. 01B: Social Science 2 075. 01C: Social Science 2 071.
Office Hours:	Friday 2:00 PM - 3:00 PM virtual meeting on Zoom. https://ucsc.zoom.us/j/2449146992?pwd=SlVwTjVFNlJRNzVoMHpwbHdPTi9qUT09
Email:	cching1@ucsc.edu

General Information

Description

Welcome to Distributed Systems! This course covers topics in distributed computing including communication, naming, synchronization, consistency and replication, fault tolerance, and security. Examples drawn from peer-to-peer systems, online gaming, the World Wide Web; other systems also used to illustrate approaches to these topics. Students implement simple distributed systems over the course of the quarter.

(Photo from https://medium.com/baseds)

Prerequisites

The prerequisites for this course are either CSE 130 (Principles of Computer Systems Design) or CSE 131 (Introduction to Operating Systems).

Course Requirements & Grading

We will measure your knowledge of the material for the course in the following ways:

Category	Weight	Description
Lecture Quizzes	20%	The lecture quizzes will help you assess how well you are learning course material and will cover both lecture concepts, clarify project questions, and ask you to apply ideas to new areas.
Projects	50%	There will be four programming projects. You will show how well you can apply the concepts in class to real-world scenarios.
Midterm Exam	10%	The midterm exam will take place in week 5 (**Thursday, November 2, 2023, 7:10 PM - 8:45 PM**) and evaluate how well you are learning course material from the first half of the course.
Final Exam	20%	The final exam will take place on **Wednesday, December 13, 7:30 PM - 10:30 PM** (assigned date/time by the registrar).

Grading Scale

Your final grade will be assigned as a letter grade according to the following scale:

Letter Grade	Percentage
A+	97–100%
A	93–96%
A−	90–92%
B+	87–89%
B	83–86%
B−	80–82%
C+	77–79%
C	73–76%
C−	70–72%
D+	67–69%
D	63–66%
D−	60–62%
F	0–59%

Course Materials

Course Textbook

The textbook for this course is: Maarten van Steen, Andrew S. Tanenbaum. Distributed Systems (4th Edition), ISBN-13: 978-9081540636.

Course Website and Other Classroom Management Tools

We will use Canvas for communication/assignments and Piazza for Q&A.

Canvas: https://canvas.ucsc.edu/courses/64879
Piazza: https://piazza.com/ucsc/fall2023/cse138

Course Schedule

Below is the current course schedule, which is subject to some change as the quarter progresses.

Chapter 1: Introduction	Week 1 (10/3/2023, 10/5/2023)
Chapter 2: Architectures	Week 2 (10/10/2023, 10/12/2023)
Chapter 3: Processes	Week 3 (10/17/2023, 10/19/2023)
Chapter 4: Communication	Week 4 (10/24/2023, 10/26/2023)
Midterm review and exam	Week 5 (10/31/2023, 11/2/2023)
Chapter 5: Coordination	Week 6 (11/7/2023, 11/9/2023)
Chapter 6: Naming	Week 7 (11/14/2023, 11/16/2023)
Chapter 7: Consistency and Replication	Week 8 (11/21/2023, ~~11/23/2023~~)
Chapter 8: Fault Tolerance	Week 9 (11/28/2023, 11/30/2023)
Chapter 9: Security	Week 10 (12/2/2023, 12/4/2023)

Course Project

This course has a significant project component. For the course project, you'll collaborate with a team to implement a distributed, fault-tolerant system. The project will be done in a series of cumulative assignments, with each assignment building on the previous one. Most of the project work will be done in teams, except for the first warm-up assignment, which you'll complete individually.

Teams must have a minimum of two and a maximum of three students; we recommend having three. That way, if someone on your team drops the class, the remaining people should still be able to handle the workload. If, by some chance, everyone else on your team drops the class, talk to the course staff ASAP.

Details about the project assignments will be provided gradually throughout the quarter.

Course Expectations & Guidelines

Getting Help

The material in this class is complex, so we provide a number of ways to get help, ranked in the order of how quickly they will be addressed:

1. Attend and ask questions during lectures, lab sections, tutoring sessions, or office hours.
2. Post a public question in Piazza.
3. Send a private message to course staff on Piazza.

Extensions & Late Assignments

Assignments/Projects are due at the time listed in the schedule. There are no undocumented exceptions. If you have an emergency situation or a school-sanctioned exception, please contact us before the due date so we can adjust your assignment deadlines (some documentation may be needed).

Academic Integrity

The Baskin School of Engineering has a zero-tolerance policy for any incident of academic dishonesty.

If cheating occurs, consequences may range from getting a zero on a particular assignment to failing the course. In addition, every case of academic dishonesty is referred to the student's college Provost, who sets in motion an official disciplinary process. Cheating in any part of the course may lead to failing the course, suspension, or dismissal from the Baskin School of Engineering or from UCSC.

What is cheating? In short, it is presenting someone else's work as your own. Examples would include copying written homework solutions from another student or allowing your own work to be copied. Sharing any kind of information on an exam would also be considered cheating. You may discuss your homework solutions with fellow students, but your collaboration must be at the level of ideas only. You may freely give and receive help with any example discussed in class, in the text, or in one of the handouts. However, you may not share in the act of writing your solutions to homework problems.

Please see the following links for the official UCSC policies on Academic Misconduct at
https://www.ue.ucsc.edu/academic_misconduct

COVID-19 Information

Each individual at UC Santa Cruz should act in the best interests of everyone else in our community. If you are ill or suspect you may have been exposed to someone who is ill, or if you have symptoms that are in any way similar to those of COVID-19, please err on the side of caution and stay home until you are well or have tested negative after an exposure. Please communicate with us if you experience an illness or exposure that requires you to miss an examination.

Accessibility

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to the instructor of your section. The DRC now uses the accommodate system to manage these

requests; we ask that you work with the DRC to upload these letters as soon as possible. We encourage all students who may benefit from learning more about DRC services to contact the DRC by phone at 831-459-2089 or by email at drc@ucsc.edu.

Intellectual Property

The materials in this course are the intellectual property of their creators. As a student, you have access to many of the materials in the course for the purpose of learning, engaging with your peers in the course, completing assignments, etc. You have a moral and legal obligation to respect the rights of others by only using course materials for purposes associated with the course. For instance, you are not permitted to share, upload, stream, sell, republish, share the login information for, or otherwise disseminate any of the course materials, such as: video and audio files, assignment prompts, slides, notes, syllabus, simulations, data-sets, discussion threads.

Religious Accommodation

UC Santa Cruz welcomes diversity of religious beliefs and practices, recognizing the contributions differing experiences and viewpoints can bring to the community. There may be times when an academic requirement conflicts with religious observances and practices. If that happens, students may request a reasonable accommodation for religious practices. The instructor will review the situation in an effort to provide a reasonable accommodation without penalty. You should discuss the conflict and your requested accommodation with your instructor early in the term.

Principles of Community

The University of California, Santa Cruz expressly prohibits students from engaging in conduct constituting unlawful discrimination, harassment or bias. We are committed to providing an atmosphere for learning that respects diversity and supports inclusively. We need to work together to build this community of learning. We ask all members of this class to:

- Be open to and interested in the views of others and consider the possibility that your views may change over the course of the term
- Be aware that this course asks you to reconsider some "common sense" notions you may hold to honor the unique life experiences of your colleagues.
- Appreciate the opportunity that we have to learn from each other listen to each other's opinions and communicate in a respectful manner.
- Keep personal or professional discussions confidential.
- Ground your comments in the work we are studying. Refer frequently to the texts and make them the focus of your questions, comments, and arguments. This is the single most effective way to ensure respectful discussion and to create a space where we are all learning together.

Title IX and CARE

UC Santa Cruz is committed to providing a safe learning environment that is free of all forms of gender discrimination and sexual harassment, which are explicitly prohibited under Title IX. If you have experienced any form of sexual harassment, sexual assault, domestic violence, dating violence, or stalking, know that you are not alone. The Title IX Office, the Campus Advocacy, Resources & Education

(CARE) office, and Counseling & Psychological Services (CAPS) are all resources that you can rely on for support.

Please be aware that if you tell me about a situation involving Title IX misconduct, we are required to share this information with the Title IX Coordinator. This reporting responsibility also applies to course TAs and tutors (as well to all UCSC employees who are not designated as "confidential" employees, which is a special designation granted to counselors and CARE advocates). Although I have to make that notification, you will control how your case will be handled, including whether or not you wish to pursue a formal complaint. The goal is to make sure that you are aware of the range of options available to you and that you have access to the resources you need.

Confidential resources are available through CARE. Confidentiality means CARE advocates will not share any information with Title IX, the police, parents, or anyone else without explicit permission. CARE advocates are trained to support you in understanding your rights and options, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more. You can contact CARE at (831) 502-2273 or care@ucsc.edu.

Student Services

In addition to CARE, there are many resources available to you. I list many below, but if you need help figuring out what resources you or someone else might need, visit the resources page from the Title IX Office:

- Counseling & Psychological Services (CAPS) can provide confidential counseling support. Call them at (831) 459-2628.
- You can report gender discrimination and sexual harassment and violence directly to the University's Title IX Office, calling (831) 459-2462, or using their online reporting tool.
- The Hate/BIas response team is a group of administrators who support and guide students seeking assistance in determining how to handle bias involving other students, staff members, or a faculty member. You can report an incident to them using this form.
- Student Success and Engagement Hub The Division of Student Success provides campus-wide coordination and leadership for student success programs and activities across departments, divisions, the colleges, and administrative units.
- Slug Support Program College can be a challenging time for students and during times of stress it is not always easy to find the help you need. Slug Support can give help with everything from basic needs (housing, food, or financial insecurity) to getting the technology you need during remote instruction. To get started with SLUG Support, please contact the Dean of Students Office at 831-459-4446 or you may send us an email at deanofstudents@ucsc.edu.
- Slug Help/Technology The ITS Support Center is your single point of contact for all issues, problems or questions related to technology services and computing at UC Santa Cruz. To get technological help, simply email help@ucsc.edu.
- On-Campus Emergency Contacts Slug Help/Emergency Services. For all other help and support, including the health center and emergency services, start here. Always dial 9-1-1 in the case of an emergency.