

# CSCI 350 Introduction to Operating Systems

## Spring 2022 Syllabus

CSCI 350 Introduction to Operating Systems class teaches the core operating system concepts, mechanisms, and their implementations.

Instructor	Email	Office Hours	Lecture
Tatyana Ryutov	tryutov@usc.edu	Thursday 3-5pm via Zoom In-person by request, PHE 336	Friday 12:00-3:20pm SAL 101

### Required Textbooks

**T1:** “Operating Systems: Principles and Practice” by Thomas Anderson and Mike Dahlin, 2<sup>nd</sup> edition

**T2:** “Operating System Concepts” by Abraham Silberschatz, Peter Galvin, and Greg Gagne, 9<sup>th</sup> edition

**T3:** “Distributed Systems” by M. van Steen and A.S. Tanenbaum, 3<sup>rd</sup> edition.

### Paper:

**MapReduce:** Jeffrey Dean and Sanjay Ghemawat, “MapReduce: Simplified Data Processing on Large Clusters”.

### Course Website: <https://piazza.com/usc/spring2022/csci350>

Blackboard will be used for exam submission and posting of grades.

Piazza will be used for lectures, announcements, assignments, and intra-class communication.

Messages that do not need a particular instructor’s attention should be posted to Piazza with the appropriate privacy setting.

### Grading

Artifact	Weight	Date
Exam 1	20%	February 18
Exam 2	20%	April 15
Final Exam	20%	May 6
Programming Projects	35%	Various
Class participation	5%	Continuous

During each class there will be about 8 in-lecture discussion questions that require answer via Google forms using a link posted on the course Piazza page. You will have a **48-hour** window to submit your response. Each student will receive a private code repository on the course's GitHub Organization to use for the development and submission of all assignments. We will only accept work submitted through this organization; in order to gain access, you must first complete our online quiz about the project rules. This quiz will be posted and pinned on Piazza.

### **Academic Honesty and Programming Projects**

Please see the programming project regulations posted on Piazza in Resources for a description of what collaboration is and is not acceptable in programming assignments, as well as how to credit acceptable assistance on these assignments.

### **Exams**

Both non-final exams will be held *at the start of lecture* on the designated days. Exams will be individual effort, closed-book and closed-notes. You will be allowed **one** 8.5x11 inch **handwritten** note sheet (front & back) on the exams.

Students requiring alternate exam arrangements must make such requests within **the first two weeks of the term**, or as soon as possible after knowing of the conflict or requirement.

### **Regrade requests**

For non-final exams and projects 1-4 you will have **seven** days since the date exam or project grades are released to request a regrade. For final exam and project 5 you will have **two** days to request a regrade. You must submit a form (which will be provided). After the designated period no regrade requests will be honored.

### **Late Policy and Grace Days**

Five times during the semester, a student may extend the due date of a programming assignment by twenty-four hours without needing prior permission. These are known as “grace days.” In order to use a grace day, you must submit a form (which will be provided) before the project's non-extended deadline.

If you request additional grace days from the instructor, you must have a documented reason for each grace day used to accompany your request. Once you have used your grace days, any late submission will not be accepted and graded as a 0.

Note: **There is no grace period.** Even if you submit a few minutes after the deadline, you will need to use a grace day (even if the wireless network in your dorm room is down or you have a GitHub issue, etc.). It is your job to be on time and not cut it too close. Remember Murphy's Law and leave time for things to “go wrong.” The due time of 11:59 PM is Pacific time and is based on our clock.

## Projected Schedule

Class sequence, dates, reading assignments, and topics are subject to change as the semester proceeds. Any revisions will be noted and announced in class.

Lec.	Day	Topic	Readings
1	1/14	Introduction, Process abstraction, Context switch	T1: Chapters 1.1; 1.2; 2.1
2	1/21	The Kernel abstraction	T1: Chapters 2.2-2.8; 2.10
3	1/28	System calls	T1: Chapters 3.1-3.3; 3.5
4	2/4	Concurrency and threads	T1: Chapters 4.1-4.8
5	2/11	Synchronization	T1: Chapters 5.1-5.5; 5.7; 5.8
	<b>2/18</b>	<b>Midterm1</b>	
6	2/25	Advanced Synchronization	T1: Chapters 6.1-6.6
7	3/4	Scheduling	T1: Chapters 7.1; 7.2 T2: Chapters 6.1-6.3, 6.5
8	3/11	Memory Management	T1: Chapters 8.1-8.3 T2: Chapters 9.1-9.3, 9.7, 9.9
	3/18	Spring break	
9	3/25	Storage Devices, File System implementation	T1: Chapter 11; 12.1; 12.2
10	4/1	COW File Systems, Reliable Storage, Distributed Systems intro	T1: Chapters 13.1-13.3.4; 14 T3: 1.1-1.3
11	4/8	Remote Procedure Call Distributed Mutual exclusion	T3: 4.2 T3: 6.3 (pp. 321-329)
	<b>4/15</b>	<b>Midterm2</b>	

<b>12</b>	4/22	Distributed parallel computing Map-reduce computing paradigm	MapReduce paper
<b>13</b>	4/29	Protection and Security Trusted system design	T2: Chapters 14.4-14.6; 15.1-15.3; 15.6-15.7
	<b>5/6</b>	<b>Final Exam 11:00-1:00pm</b>	

### **Synchronous session recording notice**

Live class sessions will be recorded and made available to students through Blackboard (including transcriptions). Please remember that USC policy prohibits sharing of any synchronous and asynchronous course content outside of the learning environment. As a student, you are responsible for the appropriate use and handling of these recordings under existing SCampus policies regarding class notes (<https://policy.usc.edu/scampus-part-c/>). These rules will be strictly enforced, and violations will be met with the appropriate disciplinary sanction.

### **Learning Experience Evaluations**

Learning Experience Evaluations will be completed during the last day of class. This will be your opportunity to provide feedback about your learning experience in the class. This feedback helps the instructor determine whether students are having the intended learning experiences for the class. It is important to remember that the learning process is collaborative and requires significant effort from the instructor, individual students, and the class as a whole. Students should provide a thoughtful assessment of their experience, as well as of their own effort, with comments focused on specific aspects of instruction or the course. Comments on personal characteristics of the instructor are not appropriate and will not be considered. For this feedback to be as comprehensive as possible, all students should complete the evaluation.

### **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-part-b](https://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, [policy.usc.edu/scientific-misconduct](https://policy.usc.edu/scientific-misconduct).

### **Students with Disabilities**

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. Your letter must be specific as to the nature of any accommodations granted. DSP is located in STU 301 and is open 8:30 am to 5:30 pm, Monday through Friday. The telephone number for DSP is (213) 740-0776.

### **Support Systems**

*Counseling and Mental Health - (213) 740-9355 – 24/7 on call*  
[studenthealth.usc.edu/counseling](http://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](http://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 Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call*  
[studenthealth.usc.edu/sexual-assault](http://studenthealth.usc.edu/sexual-assault)

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

*Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298*  
[equity.usc.edu](http://equity.usc.edu), [titleix.usc.edu](http://titleix.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.

*Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298*  
[usc-advocate.symplcity.com/care\\_report](http://usc-advocate.symplcity.com/care_report)

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

*The Office of Disability Services and Programs - (213) 740-0776*  
[dsp.usc.edu](http://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.

*USC Campus Support and Intervention - (213) 821-4710*  
[campussupport.usc.edu](http://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](http://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](http://dps.usc.edu), [emergency.usc.edu](http://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](https://dps.usc.edu)

Non-emergency assistance or information.

*Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)*  
[ombuds.usc.edu](https://ombuds.usc.edu)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.