

If you are having problems logging on, please [submit a ticket](https://support.sjsu.edu) at <https://support.sjsu.edu> at <https://guides.instructure.com/m/4212/1/54359-how-do-i-view-instructor-comments>, and [view annotated comment](https://guides.instructure.com/m/4212/1/352349-how-do-i-view-annotation-feedback-comments-from-my-instructor-directly-in-my-assignment-submission) at <https://guides.instructure.com/m/4212/1/352349-how-do-i-view-annotation-feedback-comments-from-my-instructor-directly-in-my-assignment-submission>

Course Goals

To introduce students to the role of an operating system as a hardware resource manager, and where the OS fits into the software application layer

To acquaint students with the need to perform memory management, and to explain to them the various memory management techniques and their tradeoffs

To help students appreciate how the CPU itself is managed by the operating system

To educate students about the computer deadlock problem, how deadlocks are not unique to the computer system, and attempted solutions to fix the deadlock problem

To instruct students about processes, their creation, and the software race condition that can happen when multiple processes are run concurrently and perform IPC

To ensure that students are familiar with the classic IPC problems and how to use semaphores in their software development process to avoid race conditions

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

CLO 1 Understand the role that the operating system software plays in the management of the various hardware subsystems of the computer system.

CLO 2 Understand locality of memory reference and how it is used to perform effective memory hierarchy management.

CLO 3 Understand the various mapping, replacement, and dynamic allocation algorithms for cache and virtual memory management.

CLO 4 Understand the alternative CPU scheduling schemes, their tradeoffs, and their applications to other queue processing situations.

CLO 5 Appreciate the difficult tradeoffs faced when attempting to deal with the resource deadlock problem and distinguish between the different deadlock prevention and avoidance schemes and understand why and how deadlocks can still happen today.

CLO 6 Understand software race conditions, their origin and the problems they can cause, along with knowing how to apply semaphores in software design to solve the race condition problem.

CLO 7 Understand the various issues associated with the operating system's role in performing I/O and file management.

BS in CS Program Outcomes (PO)

(a) An ability to apply knowledge of computing and mathematics to solve problems

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(i) An ability to use current techniques, skills, and tools necessary for computing practice

- (j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices
- (k) An ability to apply design and development principles in the construction of software systems of varying complexity

Required Texts/Readings

Textbook

Final Examination or Evaluation

Refer to the Course Schedule for the datetime of the Final Exam.

Technology Requirements

For any online exams (Midterm Exam, Final Exam, etc.), you **must** have a computer and a **separate** Zoom-device running Zoom. The Zoom-device **must** have a camera and can be a smart phone, tablet, etc. Your computer **must** have a webcam and **must** run either Windows or macOS; Linux and Virtual Machine are not supported. SJSU has a free [equipment loan](#) program available for students.

Students are responsible for ensuring that they have access to reliable Wi-Fi during tests. See [Learn Anywhere](#) website for current Wi-Fi options on campus.

We will use iClicker Cloud to take attendance and conduct polls in class. In order to participate in these activities, you must bring a device (laptop, tablet, or smart phone) to class. Follow the instructions to [setup an iClicker account](#) (or use your existing one if you already have one), and [add this course to your account](#). You can use either the web browser or the iClicker Reef app for free. Visit

Late Penalty

Based on the clock of Canvas, assignments submitted after the deadline earn no credit.

Makeup Exam

NO makeup exams will be given unless (1) you are pre-approved by the instructor **before** the exam, (2) you have **urgent** medical excuse for yourself (with medical **notes covering the exam date**), and (3) you bring the proof to the instructor **within** a week.

Your request **WILL NOT** be granted if you come back after the scheduled exam date and request a makeup exam.

Classroom Protocol

Dress code (in-person and Zoom): business casual.

Students are encouraged to ask questions in the class.

You must take reasonable steps to protect your work (source code, solution, etc.). **You must not share your work in any form with any one or any web sites (github.com, sourceforge.net, coursehero.com, etc.) in this semester or any future semester.** Github repositories are public by default, do **not** put your code there unless you make the repository **private**. Any projects on sourceforge.net must be set to **private**.

Each assignment submission including programming code will be checked for similarity.

Any cheating incident will result in the reporting of such incident to the university office of Student Conduct & Ethical Development, will result in academic sanctions (including failing the course), as well as possible administrative sanctions, in accordance to the [University Academic Integrity Policy](http://www.sjsu.edu/senate/docs/F15-7.pdf) at <http://www.sjsu.edu/senate/docs/F15-7.pdf>.

Spartan Support Network Referral

Our campus has developed Spartan Support Network to bring students together with specific campus resources promoting academic success. The instructor may refer students who need academic or personal support to [Spartan Support Network](https://www.sjsu.edu/peerconnections/programs/support-network.php) at <https://www.sjsu.edu/peerconnections/programs/support-network.php>.

University Policies

Per [University Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on [Syllabus Information web page](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>). Make sure to visit this page to review and be aware of these university policies and resources.

CS 149 Operating Systems, Section 4, Spring 2021, Course Schedule

The schedule is tentative and su

Week	Date	Topics	Textbook	HW
12	4/15	Memory	9	
13	4/20		9	
13	4/22	Virtual Memory	10	
14	4/27			