SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Operating Systems

CS 149

Spring 2026 Section 03 In Person 3 Unit(s) 01/22/2026 to 05/11/2026 Modified 01/25/2026

Contact Information

Instructor: Dr. Faramarz Mortezaie

Email: faramarz.mortezaie@sjsu.edu

Office Hours

Tuesday, 10:00 AM to 10:50 AM, Online

Office hour Zoom Link:

https://sjsu.zoom.us/j/89315845920

Instructor: Dr. Faramarz Mortezaie

Email: faramarz.mortezaie@sjsu.edu

Course Information

Lecture Time	MW 10:30 - 11:45 AM
Classroom:	MacQuarrie Hall 225
Prerequisite:	CS 146 or SE 146 (with a grade of "C-" or better) CS 47 or CMPE 102 (with a grade of "C-" or better) Computer Science, Applied and Computational Math or Software Engineering Majors only; or Instructor Consent.

Course Description and Requisites

Fundamentals: Contiguous and non-contiguous memory management; processor scheduling and interrupts; concurrent, mutually exclusive, synchronized and deadlocked processes; parallel computing; files. Substantial programming project required.

Prerequisite(s): CS 47 or CMPE 102 (with a grade of "C-" or better), and CS 146 (with a grade of "C-" or better). Allowed Declared Majors: Computer Science, Applied and Computational Math, Forensic Science: Digital Evidence, or Software Engineering Majors only; or Instructor Consent.
Grading: Letter Graded

✱ Classroom Protocols

Attendance

Students are expected to attend the lectures and participate in the discussion.

Instructors may drop students from class if they fail to attend respond to instructor email.

Technical Difficulties and Internet Connection issues

Canvas AutoSaves responses a few times per minute if there is an internet connection. If your internet connection is lost, Canvas will warn you but allow you to continue working on your exam. A brief loss of internet connection is unlikely to cause you to lose your work. However, a longer loss of connectivity or weak/unstable connection may jeopardize your exam. Other technical difficulties: Immediately email the instructor a current copy of the state of your exam and explain the problem you are facing. Your instructor may not be able to respond immediately or provide technical support. However, the copy of your exam and email will provide a record of the situation.

Contact the SJSU technical support for Canvas:

Technical Support for Canvas

Email: ecampus@sjsu.edu

Phone: (408) 924--2337

https://www.sjsu.edu/ecampus/support/

If possible, complete your exam in the remaining allotted time, offline if necessary. Email your exam to your instructor within the allotted time or soon after.

Phone: (408) 924--2337

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Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

Course Goals

Course Learning Outcomes (CLOs)

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

- Understand the role that the operating system software plays in the management of the various hardware subsystems of the computer
- Understand locality of memory reference and how it is used to perform effective memory hierarchy management.
- Understand the various mapping, replacement, and dynamic allocation algorithms for cache and virtual memory
- Understand the alternative CPU scheduling schemes, their tradeoffs, and their applications to other queue processing
- 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
- 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
- Understand the various issues associated with the operating system's role in performing I/O and file management.

Course Materials

Operating System Concepts

Author: Abraham Silberschatz
Publisher: Wiley
Edition: 10
ISBN: 13: 978-1119800361

Course Requirements and Assignments

SJSU classes are designed such that to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

University policy F69-24 at http://www.sjsu.edu/senate/docs/F69-24.pdf states, "Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading."

Descriptions of Assignments/Exams

Exams: Exams will be in the form of multiple choice, short answer, and programming/coding questions and will be based on the individual assignments and course material. The exams are individual work with closed books/handouts/laptops/calculators.

A course schedule is provided towards the end of this document providing a tentative schedule for Labs, Project and Exams. This schedule is subject to change with fair notice.

NO LATE WORK IS ACCEPTED.

Grading Information

Criteria

Homework, Weekly Quiz, discussion	25%
Exam-1	25%
Exam-2	25%

Comprehensive Final Exam	25%

Breakdown

A+	98 – 100%
A	93 – 97%
A-	90 – 92%
B+	88 – 89%
B	83 – 87%
B-	80 – 82%
C+	78 – 79%
C	73 – 77%
C-	70 – 72%
D+	68 – 69%
D	63 – 67%
D-	60 – 62%
F	59% and less

University Policies

Per University Policy 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 the Syllabus Information (https://www.sjsu.edu/curriculum/courses/syllabus-info.php) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

MW 10:30 AM - 11:45 AM

MacQuarrie Hall 225

When	Topic	Notes
Lecture Week-1	Orientation, Interrupts, DMA and Memory Devices	Chapter-1 Review of Computer Architecture
Lecture Week-2	System Calls, Linux and shell programming	Chapter-2 Review of C programming Review of Linux Commands
Lecture Week-3	Inter process Communication	Chapter-3 Process creating using fork exec and wait system calls
Lecture Week-4	Inter process Communication	Chapter-3 Process Communication using pipe Process Communication using shared memory
Lecture Week-5	Threads and Concurrency Multithreading	Chapter-4
Lecture Week-6	Review and Exam-1	
Lecture Week-7	Race Conditions – Critical section problem Semaphores	Chapter-6
Lecture Week-8	Monitors – signal and wait	Chapter-7
Lecture Week-9	Dining philosopher Problem, Producer and Consumer Problem	Chapter-7
Lecture Week-10	CPU Scheduling Multi-process Scheduling	Chapter-5
Week-11	Spring Recess	March-30 to April-3

When	Topic	Notes
Lecture Week-12	Deadlock characterization Deadlock in Multithreaded Applications	Chapter-8
Lecture Week-13	Review and Exam-2	
Lecture Week-14	Contiguous Memory Allocation Paging and TLB	Chapter-9
Lecture Week-15	Virtual Memory	Chapter-10
Lecture Week-16	File System	Lecture Notes
Lecture Week-17	Review	All topics
Final Exam	Wednesday May-13	10:45 am to 12:45 pm