

Jump to Today

CS 570 Operating Systems SDSU Summer 2021 Syllabus

Instructor: Guy Leonard

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Off: 11/17/2014 11:17 AM

Pre-requisites: CS 310 (Data Structures) and CS 370 (Computer Architecture) or consent of

instructor. Familiarity with the C/C++ programming language, Unix/Linux, and edoras.sdsu.edu is a plus as we will use these tools in this course.

Course Objectives/Overview: This course is designed to introduce the student to the

Course Topics: This course will cover the following operating systems topics:

1. Operating systems organization and structure

2. Processes
 3. Memory Management
 4. File Systems
 5. Input/Output
 6. Deadlock Management
- Class Format:** This course of study will use the on

will include readings, quizzes/exams, and (software) projects. All work and quiz/exam responses must be your own. Students are encouraged to discuss the concepts and technology being learned in this class with other students, be careful not to share any project files, solutions, design, or, answers from quizzes/exams.

Attendance: In this on-line format, attendance is through your participation in the virtual meetings. These meetings will be recorded to aid you in study preparation for the quizzes or for those rare times you can't meet with us. The meetings will be hosted on Zoom, please use the chat window for comments and questions, or raise your hand if you want to be unmuted to use your microphone. I will make a Canvas Announcement prior to each meeting with the details of how to join each meeting (I use a different, new meeting ID for each meeting).

Canvas: The syllabus and slides for each lecture will be posted on Canvas as will additional reading/study/reference material. The scores for your quizzes and assignments will also be posted on Canvas. Important class announcements will be posted occasionally on Canvas as needed.

Evaluation: You will take six quizzes and turn-in three (software) projects. The course has 6 modules, one for each course topic, and a short quiz at the end of each module/topic. The quizzes will be 55% of your grade, the projects will be 35% of your grade, participation will be 10% of your grade.

Quizzes (6): There will be six (6), quizzes which you will take on canvas, each one worth 40 points. Quizzes are open book in this on-line modality. Lockdown browser will not be required but, be you should be mindful to maintain and practice academic integrity. The decisions you make, you will live with and remember.

Projects (3): You will be assigned three (3) (software) projects, each worth 30 points. You are encouraged to work in teams of two for these assignments.

Participation: You should plan to participate in all meetings. If you can't make a meeting, let me know and plan to watch the recording. I will also have a Discussion Page in each module. You are encouraged to ask questions, answer questions, prepare for the quiz, post interesting/helpful information that you would like to share, and other uses.

Final Grade: The final grade will be calculated by adding all points you earned during the course as follows (I do not use a curve):

92% + = A	78 - 79% = C+
90 - 91% = A-	72 - 77% = C
88 - 89% = B+	70 - 71% = C-
82 - 87% = B	60 - 69% = D
80 - 81% = B-	00 - 59% = F

Make-Up Exam Policy: Make-up exams may be allowed at the sole discretion of the instructor. Make-up exams will likely be approved for serious, unforeseen events, such as an unexpected illness/injury, legal, or military obligation happens. In these cases, written documentation from the health services provider, court, clergy, or commanding officer will be needed. Requests for make-up exams for other reasons will likely not be approved.

Plagiarism, Cheating, and Academic Integrity: All incidents of plagiarism/cheating will be handled according to University Policy:

http://go.sdsu.edu/student_affairs/srr/cheating-plagiarism.aspx

Schedule: The course schedule will be detailed in the activities on Canvas. A few important times to plan for:

Quizzes will be on Mondays. All quizzes will be timed (most will be somewhere between 60 - 90 minutes). Some of you may have day jobs so I will use evening hours for the


Students with Disabilities:

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that I cannot provide accommodations based upon disability until I have received an accommodation letter from Student Disability Services. Your cooperation is

Learning Objectives:

1. Understand operating system organization and structure:
 1. Operating system definition
 2. Hardware architecture
 3. Monolithic Operating System structure
 4. Multiprogramming Operating System structure
 5. System Calls
 6. C/C++ run time system
2. Understand processes and concurrent programming:
 1. Process model and states
 2. Process structure (memory and organization)
 3. Thread (lightweight process) model
 4. Thread structure and implementation
 5. IPC (pipes, message passing, signals, shared memory, files, sockets)
 6. Critical Sections (mutual exclusion, progress, bounded waiting)
 7. Process/thread synchronization mechanisms (TSL, semaphores, monitors)
 8. Peterson's algorithm
 9. The Producer-Consumer problem
 10. The Readers-Writers problem
 11. Dining Philosophers Algorithm
3. Understand memory systems
 1. Virtual Memory organization and components
 2. Swapping
 3. Paged memory components and addressing
 4. Paged memory Replacement Algorithms
 5. Page sizes, Belady's Anomaly, shared pages
 6. Segmented memory management
 7. Paged-segmented memory management
4. Understand files and filesystems
 1. File system model
 2. File types (regular, directory, pipe, socket, link, special (device))
 3. File properties
 4. File operations
 5. Directory file construction and operations
 6. File system architecture: MBR, Boot block, Superblock, inodes, data nodes
 7. Free block allocation and maintenance
 8. Caching
5. Understand Input and Output
 1. I/O diversity (and therefore challenges)
 2. I/O abstraction: block, and char (byte)
 3. I/O system architecture
 4. I/O Controllers
 5. Programmed I/O
 6. Interrupt-Driven I/O
 7. DMA (Direct Memory Access I/O)
 8. Interrupt handling
 9. Device drivers
 10. Clock and timers
6. Understand Deadlocks
 1. Resources: preemptive and non-preemptive
 2. Deadlock model
 3. Deadlock detection
 4. Deadlock avoidance (Bankers algorithm)

Course Summary:

Date	Details	Due
Wed May 26, 2021	 Quiz 1: OS Concepts & Org	due by 9pm
Wed Jun 2, 2021	 Quiz 2: Process Sub-System	due by 9pm
Wed Jun 9, 2021	 Quiz 3: Memory Sub-System	due by 9pm
Fri Jun 11, 2021	 Programming Assignment #1	due by 8am
Wed Jun 16, 2021	 Quiz 4: Files and File Management	due by 9pm
Mon Jun 21, 2021	 Programming Assignment #2	due by 5pm
Wed Jun 23, 2021	 Quiz 5: Input/Output Sub-System	due by 9pm
Wed Jun 30, 2021	 Quiz 6: Deadlock Management	due by 9pm
	 Participation	due by 11:59pm
Thu Jul 1, 2021	 Programming Assignment	due by 11:30pm