



CS-6510-601 Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: <https://catalog.uvu.edu/>

Semester: Spring

Year: 2025

Course Prefix: CS

Course and Section #: 6510-601

Course Title: Design and Simulation of Operating System

Credits: 3

Course Description

Analyzes current topics in operating systems design and simulation. Covers modern computer architecture; several types of memory management; current scheduling algorithms for multiple processes; disk management; virtual memory and interprocess communication.

Course Attributes

This course has the following attributes:

- General Education Requirements
- Global/Intercultural Graduation Requirements
- Writing Enriched Graduation Requirements
- Discipline Core Requirements in Program
- Elective Core Requirements in Program
- Open Elective

Other: *Click here to enter text.*

Instructor Information

Instructor Name: Jingpeng Tang

Student Learning Outcomes

1	Articulate the principles of modern operating systems design.
2	Design a modern operating system on a virtual machine environment.
3	Build a multi-tasking operating system from scratch that runs on a virtual machine.
4	Optimize modern operating system design using data and experiments.

Course Materials and Texts

Required:

(1) Operating System Concepts, Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Ninth Edition, ISBN: 978-1-118-06333-0

Reference Books:

(1) Structured Computer Organization, Andrew S. Tanenbaum, sixth Edition, ISBN-13: 978-0132916523

(2) Software Engineering A Practitioner's Approach, Roger S. Pressman, Bruce R. Maxim, Eighth Edition, ISBN 978-0-07-802212-8.

(3) Software Testing, Ron Patton, Second Edition, Sams Books, ISBN-13, 9780672327988

Course Requirements

Course Assignments, Assessments, and Grading Policy

In this course majority part of your grade will be based on the programming projects. You are free to choose one of the three major computer language, C++, Java, or C#. Make a decision before you start the first milestone then stick with it throughout the semester. Your performance on programming projects will be measured as follows:

- Programs must meet specifications.
- Programs must be turned in on time.
- See grading criteria for specifics

Milestone 1	100
Milestone 2	100
Milestone 3	100
Milestone 4	100
Milestone 5	100
Total	500

This class has five programming assignments. Assignments are graded for full credit up to the assignment submission deadline. **This deadline is 11:59 pm in the due date. After that time, the assignment will lose 20% per day the submission is late. If Canvas says you submitted your assignment at 12:00am, you will be graded one day late.** The only exception to this rule is when you contact me 24 hours before the assignment submission deadline and request an extension. You get one extension for this term.

In this course you will be working alone developing your OS. However, you are allowed to discuss with your classmates in and out the classroom, you are not allowed to share code, nor are you allowed to use any code from the internet, without express written permission from the instructor. Because of the integrated nature of the Operating System, and the emphasis on this project for your grade, violations of this policy will probably result in failure of the course.

Final grades will be assigned on the following scale:

93% and above A

90% - 92% A-

87% - 89% B+

83% - 86% B

80% - 82%	B-
77% - 79%	C+
73% - 76%	C
70% - 72%	C-
67% - 69%	D+
63% - 66%	D
60% - 62%	D-
less than 60%	E

Required or Recommended Reading Assignments

Textbook and references.

General Description of the Subject Matter of Each Lecture or Discussion

Week	Topics	Due Dates	
1	Introduction to simulated machine		
2	Operating System Shell		
3	Intra-process memory management	Milestone 1	
4	Inter-process communication		
5	Kernel thread		
6	Process thread		
7	Multi-process scheduling algorithms and metrics	Milestone 2	
8	Global memory management		
9	Virtual Memory part 1		
10	Spring Break		
11	Virtual Memory part 2	Milestone 3	
12	Disc management: whole disc		
13	Disc management: interface	Milestone 4	
14	File system part 1		
15	File system part 2		
16	Final presentation	Milestone 5	
17	Final presentation		

Required Course Syllabus Statements

Generative AI

Not applicable.

Using Remote Testing Software

This course does not use remote testing software.

This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU [Accessibility Services](#) at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their [rights and responsibilities](#). In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in [UVU Policy 541: Student Code of Conduct](#).

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a [specially dedicated space](#) for meditation, prayer, reflection, or other forms of religious expression.