FSU COP 5611 Advanced Operating Systems (Spring 2026)

Course Syllabus (version 11/3/2025)
Lecture: TTh 11:35pm – 12:50pm   LOV 307

Contact Information
Andy Wang (aawang@fsu.edu)
Zoom office hours: https://fsu.zoom.us/j/94916718263, MTh 4-5, after class, and by appointment
Class website: http://www.cs.fsu.edu/~awang/courses/cop5611_s2026

Objectives
At the end of the course, the student will demonstrate familiarity with current and classic operating systems literature in writing and in oral discussions, research and critique a specific topic in modern operating systems design, develop a research project, and write a research paper in an area of operating systems that is appropriate to the graduate student level.

Prerequisites
- COP 4610 or an equivalent level of maturity in understanding the principles of operating systems design and implementation
- CDA 3100 or an equivalent level of maturity in understanding the principles of computer hardware design and implementation
- Working knowledge of the UNIX programming environment
- Proficiency in C

Delivery Mode
Traditional

Course Material
- Lecture notes (posted on the class website)
- Papers (posted on the class website)
- No required textbook
- Recommended textbooks
    - Andrew Tanenbaum and Maarten van Steen, *Distributed Systems Principles and Paradigms*
    - Mukesh Singhal and Niranjan Shivaratri, *Advanced Concepts in Operating Systems*
    - Arpaci-Dusseau, Arpaci-Dusseau, Operating Systems: Three Easy Pieces (background)
    - Tanenbaum, *Modern Operating Systems* (background)
    - Silberschatz, Galvin, Gagne, *Operating System Concepts* (background)
    - Gary Nutt, *Operating Systems: A Modern Perspective* (background)
    - Gary Nutt, *Kernel Projects for Linux* (background)
    - Kernighan, Ritchie, *The C Programming Language* (background)
    - Maxwell, *Linux Core Kernel Commentary* (background)
    - Corbet, Rubini, and Kroah-Hartman, *Linux Device Drivers*, 3rd edition (background)

Class Grading

Paper summaries and critiques	5%
Project	40%
Peer evaluation of projects	5%
Exam 1	10%
Exam 2	10%
Final	30%

Every week during the first ten weeks, you will submit a one-page critique of papers from specified venues in class and through Turnitin.com (via Canvas). You will develop a project of your interest and skill level in teams of two or three. Each week, each team must submit a one-page progress report to show steady advancement. By the fifth week, you will

submit a two-page proposal for your term project and deliver a short presentation in class. In the final two weeks of the course, you will submit a 15-page final paper and present your final project. Each team member needs to identify which pages (at least five) they wrote. Additionally, you will submit critiques on two class projects that are not your own.

We will hold in-class, closed-book examinations, unless specified otherwise. Examinations will likely be in the form of essays or short answers that involve applying the knowledge and concepts learned in class.

Computer Accounts
You will need an account at fsu.edu to receive class emails and use the discussion board.

Your Responsibilities
- Understand the lecture slides and assigned papers
- Uphold academic honesty in completing your assignments and exams
- Attend office hours for extra help
- Turn in your projects on time
- Check the class web page regularly

Course Calendar (Tentative)

Lecture	Week	Date	Lecture	Due Dates
1	1	1/8	Course overview, Advanced file systems issues	
2	2	1/13	FFS, LFS, and RAID	
3		1/15	File system extensibility, non-disk file systems	Hw1
4	3	1/20	F2FS, Nova, Aerie, Strata	
5		1/22	Memory management and caching for file systems; possible course projects	Hw2
6	4	1/27	Threads, events, and scheduling, interprocess communications, large address space	
7		1/29	Networks	Hw3
8	5	2/3	Exam 1	
9		2/5	Project proposal presentations	Hw4
10	6	2/10	Operating systems organization	
11		2/12	Operating systems organization part II	Hw5
12	7	2/17	Distributed operating systems part I	
13		2/19	Distributed operating systems part II	Hw6
14	8	2/24	Distributed operating systems part III	
15		2/26	IPC in distributed systems	Hw7
16	9	3/3	Distributed file systems	
17		3/5	Distributed file systems part II	Hw8
18	10	3/10	Exam 2	
19		3/12	The Google File System, OceanStore	Hw9
	11	3/17	Spring Break	
		3/19	Spring Break	
20	12	3/24	Facebook Photo Storage, SPOCA	
21		3/26	RAMCloud, CORFU	Hw10
22	13	3/31	Owl, MemLiner, S3-FIFO	
23		4/2	Operating systems security	
24	14	4/7	Operating systems security part II	
25		4/9	Automated worm fingerprinting	
26	15	4/14	Bitcoin, Cashtags	
27		4/16	Operating systems reliability, failure oblivious computing	
28	16	4/21	Project presentations	
29		4/23	Project presentations	
		4/24		Peer evaluations and project

				report due
	17	4/27	Final exam in LOV 307	10 am-noon

Course Policies

University attendance policy: Excused absences include documented illness, deaths in the family, and other documented crises, as well as calls to active military duty or jury duty, religious holy days, and official university activities. These absences will be accommodated in a way that does not arbitrarily penalize students with valid excuses. Consideration will also be given to students whose dependent children experience serious illness.

Academic honor policy: The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and...[to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at http://fda.fsu.edu/Academics/Academic-Honor-Policy)

ADA: Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type. Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from the Student Disability Resource Center has been provided. This syllabus and other class materials are available in an alternative format upon request. For more information about services available to FSU students with disabilities, contact the Student Disability Resource Center, 874 Traditions Way, 108 Student Services Building, Florida State University, Tallahassee, FL 32306-4167 (850) 644-9566 (voice) (850) 644-8504 (TDD) sdrc@admin.fsu.edu http://www.disabilitycenter.fsu.edu.

Syllabus change policy: Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.