Intro. to Operating System

CSCI 4300A/6150A

Instructor Info —

👤 Kelvin Gao

🕐 Office Hrs: Tue & Thu 1:30p-3:30p

📍 TBD

ℹ️ TBD

@ zgao1@aum.edu

Course Info ———

⚡ Prereq: CSCI 3100 (Unix and C) and CSCI 2100 (Introduction to Computer Architecture)

📅 Tues & Thurs

🕐 3:35p-4:50p

📍 Room 205 GH

Lab Info ———

📅 Tues

Thurs

🕐 3:35p-4:50p (after lecture)

📍 Room 205 GH

TA Info ———

👤 TBD

🕐 Office Hrs: TBD

📍 TBD

Overview

An introduction to fundamental concepts in operating systems. Topics include process management, main memory management, virtual memory, I/O and device drivers, file systems, secondary storage management, introduction to critical sections and deadlocks.

Material

Required Texts

Thomas Anderson, Michael Dahlin. *Operating Systems: Principles and Practice*. 2nd Edition. Recursive Books. 2014.

Grading Scheme

5%	Attendance/Participation
15%	Quiz
40%	Programming Assignment (Paper Review for CSCI 6150)
20%	Midterm Exam
20%	Final Exam

Grades will follow the standard scale: A = 89.5-100; B = 79.5-89.4; C = 69.5-79.4; D = 60-69.4; F <60. Curving is at the discretion of the professor.

Review Paper

For CSCI 6150 only: Students will choose a scientific article concerning a topic or species that we covered in class. For this assignment, you will write a summary of the paper and a review: strengths of the paper, things they could improve, perhaps any holes that they did not address, etc. You will then give your review to two classmates to independently review (if applicable), and you will incorporate their edits into your final draft. You will turn in an abstract of the original paper, the names of people whose papers you reviewed, and your final draft. Your grade will depend on how thoughtfully and thoroughly you reviewed your peers' papers.

Late Submission Policy

Except in the cases outlined above for excused absences, programming assignments must be submitted before the specified deadline in order to receive full credit.

- 0 to 24 hours late: 10% of points will be deducted from the original score.
- 24 to 48 hours late: 20% of points will be deducted from the original score.
- Others: No acceptance.

Note: No late submissions will be accepted after the final exam.

Learning Objectives

- Understand the fundamental concept of operating system
- Learn the critical features of operating system
- Understand process management, main memory management, virtual memory, I/O and device drivers, file systems, secondary storage management, introduction to critical sections and deadlocks
- Learn the new features of mobile operating system

FAQs

? What is Operating System?

! An operating system (OS) is system software that manages computer hardware and software resources and provides common services for computer programs. [Wikipedia: `https://en.wikipedia.org/wiki/Operating_system`]

? Any programming work in this course?

! Yes, we do have several class project that require programming works.

? What is the difference between CSCI 4100A and CSCI 6150A?

! CSCI 6150A is for graduate students. It may require more research-related works, e.g., paper review.

? Will it include mobile operating system?

! Yes, we will have a week or two discussing mobile operating system.

Make-up Policy

Make-up exams or assignments will only be allowed for students who have a substantiated excuse approved by the instructor *before the due date*. Leaving a phone message or sending an e-mail without confirmation is not acceptable.

Diversity and Inclusivity Statement

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability - and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Accommodations for Students with Disabilities

Students who need accommodations are asked to arrange a meeting during office hours to discuss your accommodations. If you have a conflict with my office hours, an alternate time can be arranged. To set up this meeting, please contact me by e-mail. If you have not registered for accommodation services through the Center for Disability Services (CDS), but need accommodations, make an appointment with CDS, 147 Taylor Center, or call 334-244-3631 or e-mail CDS at cds@aum.edu.

Free Academic Support

All students have the opportunity to receive free academic support at AUM. Visit the Learning Center (LC) in the WASC on second floor Library or the Instructional Support Lab (ISL) in 203 Goodwyn Hall. The LC.ISL offers writing consulting as well as tutoring in almost every class through graduate school. The LC may be reached at 244-3470 (call or walk-in for a session), and the ISL may be reached at 244-3265. ISL tutoring is first-come-first served. Current operating hours can be found at www.aum.edu/learningcenter

Blackboard support: Students may seek technology assistance from the ITS Help Desk located in the computer lab on the first floor of the Taylor Center. You may also call 334-244-3500 or email helpdesk@aum.edu.

Academic Integrity

The University Code of Academic Integrity is central to the ideals of this course. Students are expected to be independently familiar with the Code and to recognize that their work in the course is to be their own original work that truthfully represents the time and effort applied. Violations of the Code are most serious and will be handled in a manner that fully represents the extent of the Code and that befits the seriousness of its violation.

Class Schedule

MODULE 1: Introduction

Week 1	Introduction	Aug 20&22: introduction.pptx, syllabus, ch1-kernel-a.pptx

MODULE 2: Kernels and Processes

Week 2	The Kernel Abstraction	Aug 27&29: ch1-kernel-b.pptx, Reading Assignment 1
Week 3	The Programming Interface	Sep 5: ch2-structure.pptx, Programming Assignment 1
		Due: Reading Assignment 1

MODULE 3: Concurrency

Week 4	Concurrency and Threads	Sep 10&12: ch3-currency.pptx, Reading Assignment 2
Week 5	Synchronizing Access to Shared Objects	Sep 17&19: ch4-sychronization.pptx
Week 6	Advanced Synchronization	Sep 24&26: ch5-asynch.pptx, Programming Assignment 2
		Due: Programming Assignment 1
Week 7	Review &Midterm Exam	Oct 1&3: Module 1-3 (excluded scheduling)
Week 8	Scheduling	Oct 8&10: ch6-scheduling.pptx
		Due: Reading Assignment 2

MODULE 4: Memory Management

Week 9	Address Translation	Oct 15&17: ch7-address.pptx, Reading Assignment 3
Week 10	Caching and Virtual Memory	Oct 22&24: ch8-caching2.pptx, Programming Assignment 3
		Due: Programming Assignment 2
Week 11	Applications of Memory Management	Oct 29&31: ch9-advmem.pptx
		Due: Reading Assignment 3

MODULE 5: Persistent Storage

Week 12	File Systems: Introduction and Overview	Nov 5&7: ch10-11-storage.pptx, Reading Assignment 4
Week 13	Storage Devices	Nov 12&14: ch10-11-storage.pptx
Week 14	Files and Directories	Nov 19&21: ch12-filesys.pptx
Week 15	Holiday	Nov 25&29: Thanksgiving
Week 16	Review & FINAL EXAM[1]	Dec 3: Module 4&5
		Due: Programming Assignment 3, Reading Assignment 4

---

[1] Dec. 10 (1 pm to 4:30 pm)