CIS450 / ECE478 Operating Systems
4 Credit Hours, Winter 2022
Lectures: Internet Instruction

Contact Information:

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Office Hours on Zoom:
Wed & Thurs: 5:00 PM – 6:30 PM (https://umich.zoom.us/j/97258705211), or by appointments

Course Description:

This course presents the main functions of an operating system as a manager of resources, including file systems, disk and storage, CPU and memory. The concepts of process and thread, synchronization mechanisms, scheduling strategies and deadlock detection/avoidance are covered in detail, along with an introduction to protection and security and distributed systems.

Prerequisites: CIS 310 and (CIS 350/3501 or (ECE 370 and ECE/MATH 276)) and previous or concurrent enrollment in IMSE 317.

Course Objectives/Outcomes:

- Knowledge of general principals and concepts of operating systems, in particular: virtualization, concurrency, and persistence.
- Ability to design some basic operating system components.

Program Goals/Outcomes:

https://umdearborn.edu/cecs/departments/computer-and-information-science/undergraduate-programs/bs-computer-and-information-science/educational-objectives

Required Materials and/or Technology:

Required Text Book

OPERATING SYSTEM CONCEPTS (10th Edition) by A. Silberschatz, P. Galvin and G. Gagne. John Wiley & Sons.

Recommended Books

Operating Systems: Three Easy Pieces, R. Arpaci-Dusseau and A. Arpaci-Dusseau, http://www.OSTEP.org. It's online and free!

C Programming Online Tutorial, https://www.tutorialspoint.com/cprogramming, For students with deficient background in C programming.

xv6: a simple, Unix-like teaching operating system, Cox, Kaashoek, Morris, https://pdos.csail.mit.edu/6.828/2020/xv6.html. (For course projects).

Assignment and Grading Distribution:

Projects:	30 %
Homework assignments	15 %
Midterm exam:	25 %
Final exam:	30 %
Total:	100%

Grading Scale:

[97%- 100%]	A+	[83%- 87%)	B	[70%-73%)	C-
[93%- 97%)	A	[80%- 83%)	B-	[67%-70%)	D+
[90%- 93%)	A-	[77%-80%)	C+	[63%-67%)	D
[87%- 90%)	B+	[73%-77%)	C	[60%-63%)	D-

Main Topics

- process and thread
- synchronization mechanisms
- scheduling strategies
- deadlock detection/avoidance
- memory management
- file systems
- disk and other storage managements
- virtual machines
- protection and security
- distributed systems

Video and Audio Recording Policies

Course lectures may be audio/video recorded and made available to other students in this course. As part of your participation in this course, you may be recorded. If you do not wish to be recorded, please contact the instructor in the first week of class to discuss alternative arrangements.

Students may not record or distribute any class activity without written permission from the instructor, except as necessary as part of approved accommodations for students with disabilities. Any approved recordings may only be used for the student's own private use.

Course Policies

Due Dates: All assignments are due at 11:59 pm on the date specified. Projects may be turned in up to one week later, at a penalty of 3% per day. **No late homework will be accepted.** Exceptions to these rules will be made only under exceptional circumstances, and then only with an appropriate written excuse.

Grade disputes and corrections: If you are dissatisfied with a grade you receive, you need to contact me **within one week** of the date that I first attempted to return the exam or assignment results to you.

Plagiarism: Although students are encouraged to help their classmates, students sharing code are guilty of plagiarism. If programs are considered too similar, the students will be asked to explain. In all cases of cheating, students who supply code or take it will both be penalized. The assignments in this class are for student use only. You are not allowed to post any assignments on the Internet or share them with other students. Students who turn in questionable assignments or exams are subject to defend them orally to the professor without warning. **The minimum penalty for all students involved in cheating is failure on the assignment**.

Cheating includes, but is not limited to:

- Receiving assistance of any kind, on any individual, graded assignment or exam
- Providing assistance of any kind, on an individual, graded assignment or exam
- Using materials that are prohibited on any graded assignment or exam
- Test/Exam Parties - i.e., completing an individual exam as a group project
- Collusion/Deception of any kind, including but not limited to:
    - coordinating with others to obtain or distribute prohibited or unpublished materials
    - giving false information to receive time extensions or re-takes
    - obtaining and using previous exams not provided by the instructor
- Using a mobile device (including smart watches) to communicate with others during an exam
- Paying another person to complete coursework, including exams
- Receiving payment to complete another student's work, including exams
- Requesting and using help from Chegg, Course Hero or any other such service
- Submitting examination information to Chegg, Course Hero or any other such service
- Plagiarism - using another person's work without properly citing
- Storing equations or solutions in a calculator to use on a quiz or exam when not permitted
- Screenshots of Canvas quizzes or exams
- Any "hacks" used to access Canvas content or other materials before released
- Any other dishonest action that violates course rules and/or the Academic Code of Conduct

Exams: There will be one midterm and a final. Unless prior arrangements are made, a grade of zero will be recorded for missed exams.

University-wide Policies or Statements Relevant to Courses:

Please see the 'Course Policies' Menu on Canvas for information on the following:

- University Attendance Policy
- Academic Integrity Policy
- Counseling
- Disabilities Services
- Safety Statement
- Harassment, Sexual Violence, Bias, and Discrimination