

PURDUE UNIVERSITY

ECE 469: Operating Systems Engineering Spring 2008

Class:

TTh 4:30 PM, Room EE 117

Course Web Page:

<http://shay.ecn.purdue.edu/~ee469/>

Course Newsgroup:

purdue.class.ee469

Instructor:

Jeff Turkstra, jeff@purdue.edu, EE 256, 49-43454.

Office Hours:

TTh 2:00PM - 3:30PM

Teaching Assistants:

This course has two teaching assistants (TAs). The names, email addresses, and office hours for the TAs are given below. All TA office hours will be held in the **ENAD302F lab**.

Monday

6:00PM - 8:00PM Satyajit Desai, sddesai@purdue.edu

Tuesday

7:00PM - 9:00PM Omar Shaikh, oshaikh@purdue.edu

Wednesday

6:00PM - 8:00PM Satyajit Desai, sddesai@purdue.edu

Thursday

7:00PM - 9:00PM Omar Shaikh, oshaikh@purdue.edu

Friday

6:00PM - 8:00PM Satyajit Desai, sddesai@purdue.edu

Text:

Required

Operating System Concepts; Silberschatz, Galving, and Gagne; Sixth Edition (or greater);
John Wiley & Sons
ISBN: 978-0-471-69466-3

Prerequisites:

Data Structures - ECE 368

Computer Design and Prototyping - ECE 437

Programming proficiency in C is *absolutely* required

Course Outcomes:

A student who successfully fulfills the course requirements will be able to:

1. understand basic concepts of processes, process control, synchronization, and scheduling
2. understand concepts and technologies in memory management, secondary and tertiary storage management, file system, and distributed and networked operating systems
3. model and analyze the performance of operating system components
4. design and modify components of an operating system

You will be given multiple opportunities on regular laboratory assignments as well as the two exams to satisfy each course outcome. You need to pass a given outcome only once. You will satisfy a course outcome when your score for the question or laboratory assignment covering that outcome equals or exceeds 60%.

If, as the end of the semester approaches, you are still failing one or more course outcomes you may elect to complete a remediation homework. You are permitted one (1) attempt at the remediation homework for each course outcome that you are failing.

If, at the end of the semester, you have failed to satisfy one or more of the course outcomes, your final course grade will be an "F."

Rules for ENAD302F Lab

Keep the lab clean and quiet as a courtesy to others. You may work on any available computer even when the TAs are not present. The TAs reserve the right to reduce the number of students in the room. Do not expect the TAs to do your work.

Class Attendance

You are expected to attend all classes. If you choose to attend class, please arrive in the classroom on time. You are expected to be quiet in class. If you must miss a class, you are responsible for procuring any material, information, handouts, announcements, etc., that you missed.

Preparation for Lectures

You should try to read over the relevant pages in the course text before arrival. Here is the tentative lecture schedule and corresponding chapters in the course text:

Wk	Lec	Subject	Book	Lab
1	1	Introduction, History	Ch. 1-2	
	2	Hardware Support	Ch. 3	
2	3	OS Components, Structures	Ch. 4-5	DLXOS Introduction
	4	Processes, Threads	Ch. 7	
3	5	Too Much Milk Problem, Synchronization		Synchronization
	6	Semaphores		
4	7	Semaphore Implementation		
	8	Monitors, Messages, Preemptive Scheduling		
5	9	Messages, Preemptive Scheduling		
	10	CPU Scheduling	Ch. 6	
6	11	Deadlock	Ch. 8	Multiprogramming
	12	Memory Management, Sharing	Ch. 9	
7	13	Segmentation, Paging		
	14	Paging & Swapping, TLB's		
8	15	Virtual Memory	Ch. 10	
	16	Page Replacement Algorithms		
9	17	Paging Issues, Working Sets		Memory Mngmnt
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	18	File Structure, Disk Mechanics	Ch. 11-12	
10	19	Exam Review		
	20	Disk Management		
11	21	Cancelled - Makeup for evening exam		
	22	Exam Results		
12	23	UNIX File System		
	24	Naming, Directory Management	Ch. 13-24	
13	25	File System Interface, Caching		File Systems
	26	Caching, Reliability, Transactions		
14	27	Networking, Communication Protocols	Ch. 15-17	
	28	Distributed File Systems		
15	29	Protection, Security	Ch. 18-19	
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	30	Final Review		

Laboratory Assignments

The goal of the laboratory component of this course is to construct an operating system for a simulated architecture running on Linux machines. There will be four assignments, covering the topics shown in the above tentative schedule (see the "Lab" column). Laboratory assignments, excluding the DLXOS Introduction, are to be completed in groups of two students. You may choose to work independently, but you must first talk to the instructor.

Students are encouraged to talk to the TAs or the instructor with regard to the programming assignments. You may discuss assignments in a general way with other students. At no time should you view another team's source code or written work. No discussion of or sharing of specific code or written answers is allowed, and each team must write their own solutions.

Any sources used outside of the course textbook, handbooks, or lecture must be explicitly acknowledged at the top of the assignment.

In addition, it is unwise and we strongly discourage you from sitting next to or nearby your friend or classmate while you both work on an assignment.

Academic Integrity

As a student at Purdue you are subject to the [*Purdue University Student Code of Conduct*](#), which enjoins you to respect the highest standards of honesty and integrity. All work that you submit in this course must be your own; unauthorized group efforts are considered academic dishonesty. See the online brochure [*Academic Integrity: A Guide for Students*](#) for definitions and sanctions. Academic dishonesty is a serious offense which may result in suspension or expulsion from the University. In addition to any other action taken, such as suspension or expulsion, a **grade of F** will normally be recorded on the transcripts of students found responsible for acts of academic dishonesty. Students are encouraged to report academic dishonesty to the instructor directly, or to the Office of the Dean of Students.

You may discuss assignments in a general way with other students, but you may not consult anyone else's written work. Among other ways to get an F, you are guilty of academic dishonesty if:

- You examine another student's solution to a written or programming assignment
- You allow another student to examine your solution to a written or programming assignment
- You fail to take reasonable care to prevent another student from examining your solution to a written or programming assignment and that student does examine your solution. For example, if you allow another student to check his/her email from your terminal while you step out of the room, you have failed to take reasonable care to prevent him/her from accessing your files.

Automatic tools will be used to compare your programming solutions to those of every other current and past student. Do not con yourself into thinking that you can hide any collaboration. The risk of getting caught is too high, and the standard penalty is way too high.

If we find reason to believe that a student has cheated on any assignment, we may inform the student promptly, or we may decide to silently accumulate evidence against the student on later assignments.

Examinations

Exams will be closed book and closed notes. You must solve the exam problems yourself, without any help (knowing or unknowing) from any other student. You must not seek any knowledge in advance of the test questions (beyond that given in class) and must report any advance knowledge of the test questions by any student that you are aware of. You must not allow any other student access to your solutions during the exam. If the seating situation makes this difficult, please inform the instructor or TAs.

Make-up Examination Policy

Make-up exams will be given only in the **most extreme** circumstances and require certification for such circumstances. Eg, a medical doctor's statement certifying that the student is **unable** to attend the scheduled exam. Any travel (including interview trips), load from work or from other classes, failed alarm clocks, or simply not being able to make it to the exam will **not** be grounds for a make-up. If you have any recurring medical problems that may unexpectedly prevent you from making it to class or exams, please obtain a doctor's statement certifying your circumstance.

Grading

Final grades will be assigned according to the following *approximate* weighting:

Programming Projects - 50%

Midterm Exam - 25%

Final Exam - 25%

Problems regarding grading of assignments and the midterm exam must be resolved within **one week** after the graded work has been returned to you. It is your responsibility to pick up the graded work on time. Grades will not be modified after the one week period. You should talk to your TA first - they are generally responsible for assigning the grade for each assignment and exam question. If a student believes the TA's solution is wrong for a particular problem, he or she may ask the instructor for clarification.

Questions and Answers

Questions of general interest should be posted to the `purdue.class.ee469` newsgroup. Answers will be posted as soon as possible. Lab questions should be directed to the TAs by sending email to `ee469@ecn.purdue.edu`. Answers will be sent to you directly. If you need to contact a specific TA or instructor, send email to that individual or go see him/her during office hours.

**** As an interesting side note, a significant portion of this syllabus is copied from Dr. Hosking's, Dr. Brylow's, and Dr. Hu's policy pages from previous semesters. One of the major differences between plagiarism and proper reuse is giving credit where credit is due. ****