

King Fahd University of Petroleum & Minerals
College of Computer Sciences and Engineering

ICS 431-03: Operating Systems (3-3-4)

Spring Semester 2007-2008 (072)

Syllabus

Instructor: Dr. EL-SAYED EL-ALFY

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Schedule:

Class Time & Venue: SMW @ 1:10pm-2:00pm - Room: 24-135

Office Hours: SMW @ 2:00pm-2:50pm or by appointment

Description:

This course introduces the fundamentals of operating systems design and implementation. Topics include history and evolution of operating systems; Types of operating systems; Operating system structures; Process management: processes, threads, CPU scheduling, process synchronization; Memory management and virtual memory; File systems; I/O systems; Security and protection; Distributed systems; Case studies.

Pre-requisites: ICS 232 (Computer Organization and Assembly Programming). More specifically, students are expected to be familiar with basic data structure, algorithms and problem-solving, computer organization, memory system organization and architecture.

Objectives

1. Introduce numerous fundamental concepts and principles of operating systems.
2. Expose students to the popular operating system of Linux including hands-on experience.

Learning Outcomes

Upon completion of the course, you should be able to:

1. Recognize operating system types and structure
2. Describe OS support for processes and threads
3. Recognize CPU scheduling, synchronization, and deadlock.
4. Resolve OS issues related to synchronization and failure for distributed systems
5. Explain OS support for virtual memory, disk scheduling, I/O, and file systems.
6. Identify security and protection issues in computer systems
7. Use C and Unix commands, examine behavior and performance of Linux, and develop various system programs under Linux to make use of OS concepts related to process synchronization, shared memory, mailboxes, file systems, etc.

Required Material

- *Operating System Concepts*, 7th Ed. A. Siblingschatz, P. Galvin, & G. Gagne. Addison Wesley, 2005.
- Some handouts or links regarding various topics will be provided on the course website

Additional Recommended References

- *Modern Operating Systems*, 2nd Ed. A. Tanenbaum. Prentice Hall, 2003.
- *Operating Systems*, 3rd Ed. W. Stallings. Prentice-Hall, 1998.

Grading Policy

Lab: Programming Assignments, Tests, and Projects	25 %
Homework Assignments	0 %
Class Participation	5 %
Major Exam I (March 19, @7:00pm-9:00pm, Room: 24-174)	15 %
Major Exam II (April 23, @7:00pm-9:00pm, Room: 24-174)	25 %
Final Exam (20% material of Exam I and II, 80% material after Exam II)	30 %

Tentative Major Topics

Week	Chapter	Topics
1	1	Introduction
2	2	Operating System Structures
3	3	Processes
4	4	Threads
5	5	CPU Scheduling
6	6	Process Synchronization
7	7	Deadlocks
8	16, 17, 18	Distributed Systems (selected topics)
9	8	Memory Management
10	9	Virtual Memory
11	10, 11	File System Interface and Implementation
12-13	12, 13	I/O Systems and Mass Storage Structure (selected topics)
14-15	14, 15	Security and Protection (selected topics)

Additional Notes

- **Course Website.** Students are required to periodically check the course website (through WebCT) and download course materials as needed. Lecture notes will be made available ahead of time for students to read, print out, and bring to class. It is much easier to take additional notes this way, and gain the most out of class. Keys to quizzes and exams are generally discussed during class as time permits. Sample copies will be posted online under Assignments section. The Resources section will contain additional handouts and links. Other Announcements will be posted on WebCT. Also it is expected that you get benefit of the discussion board by raising questions or answering questions put by others.
- **Attendance:** It is very important to attend all the classes. Attendance will be checked at the beginning of each class. More than 9 lectures will result in a DN grade without prior warning. To avoid being considered as absent, an official excuse must be shown no later than one week of return to class. There is no penalty for the first two absences, after that you lose one full percentage per absence.
- **Class participation:** Students are expected to be active and collaborative in the discussion of the topics. Homework assignments are given for you for practice but it is expected that you hand in a typed solution before or on the due date. You will not do well in the quizzes and exams if you do not do the homework assignments. Three quizzes will be given. Also an optional term report about some topic of interest is expected.
- **No make up quizzes or exams will be given.**
- **Re-grading policy.** Only if you have a legitimate concern on grading, come to see me. An example of legitimate concern is an addition mistake.

- **Academic honesty:** Students are expected to abide by all the university regulations on academic honesty. Cheating will be reported to the Department Chairman and will be severely penalized. Although collaboration and sharing knowledge is highly encouraged, copying others' work without proper citation, either in part or full, is considered plagiarism. Whenever in doubt, review the university guidelines or consult the instructor.
- **Courtesy.** I will expect students to be courteous toward the instructor and their classmates throughout the duration of this course. Talking while someone else is speaking will not be tolerated. Furthermore, all cell phones must be turned off during class. In addition, students are expected to be in class on time. Late arrivals will disrupt the class session. If you are 15 minutes late, you will be marked as absent and will not be permitted to enter the class. More importantly, you are not allowed to leave the class unless it is of an urgent matter. To contact me, please use email through WebCT whenever possible and avoid using phone calls and hand written notes. *When necessary to send an email through the university email system, please indicate ICS431 in the "Subject" field of your email, e.g. ICS431: Question about HW1.*

☺☺☺ **Best of luck!!** ☺☺☺

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syllabus
Directory: C:\Documents and
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Template: C:\Documents and
Settings\Administrator\Application
Data\Microsoft\Templates\Normal.dot
Title: ICS 432 Computer
Networks (041)
Subject:
Author: .
Keywords:
Comments:
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