

CSci 430 Operating Systems

Course Syllabus

Summer 2016

Instructor

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Class Meetings

This is an online, web based course. All lectures, course materials, assignments and tests will be distributed through our University's eCollege online course system. Student's are responsible for ensuring they have access to eCollege during the course and that they have adequate resources and network access to obtain and use the materials online through eCollege.

This online summer class is what is known as a W10 based course. It will meet for 10 weeks over both the summer I and II sessions, from June 6, 2016 through August 11, 2016.

01W 40147 Meets 6/6/2016 through 8/11/2016 Web Based Class

Course Description

Operating Systems (OS). A study of operating systems with emphasis on a multiprogramming environment; concentrates on principles involved in resource management; topics such as job scheduling and memory management are also studied. **Credit hours: 3.**

Prerequisites

CSCI241: Machine Language and Computer Organization; and CSCI270 Data Structures and Algorithms. A minimum grade of C or better is required in the prerequisite courses before attempting this course.

Student Learning Outcomes:

- (SLO430.1) Students will be able to identify the basic components, and functions of OS.
- (SLO430.2) Students will be able to identify modern memory management techniques.
- (SLO430.3) Students will be able to identify components of multiprogramming and multiuser OS.
- (SLO430.4) Students will be able to identify processes, threads, and their management by the OS.
- (SLO430.5) Students will be able to identify concurrent programming techniques and job scheduling.
- (SLO430.6) Students will learn about implementation details of these concepts on some commercially available modern OS.

Textbook

Required:

Operating Systems Internals and Design Principles (2011). 7th Edition. by William Stallings, Prentice-Hall Inc., 2011, ISBN-10:013230998X.

Recommended:

Operating System Concepts (2006). 7th Edition. by A. Silberschatz and P. Galvin, John Wiley & Sons, Inc., ISBN 0-471-69466-5.

Course Outline / Content

Part One: Background, Processes and Threads (Chapters 1, 2, 3, 4)

- Chapter 1. Computer system overview (Week 1)
- Parts of Chapter 2. Operating system overview (Week 1)
- Parts of Chapter 3. Process description and control (Week 2)
- Parts of Chapter 4. Threads (Week 3)
- Week 3: Test 1
- Part Two: Concurrency (Chapters 5, 6)
 - Parts of Chapter 5. Concurrency I: Mutual exclusion (Week 4 & 5)
 - Parts of Chapter 6. Concurrency II: Deadlock/Starve (Week 5 & 6)
 - Week 6: Test 2
- Part Three: Memory (Chapters 7, 8)
 - Parts of Chapter 7. Memory management (Week 7)
 - Parts of Chapter 8. Virtual memory (Week 8)
 - Week 8: Test 3
- Part Four: Scheduling (Chapters 9, 10)
 - Parts of Chapter 9. Uniprocessor scheduling (Week 9)
 - Parts of Chapter 10. Multiprocessor scheduling (Week 10)
 - Week 10: Test 4

Evaluation (Tentative)

Your grade for the course will be based on the following (approximate) percentages:

Four Exams	60% (15% each)
Labs / Programming Assignments (appx. 6 - 8)	40%

Final Average	Letter Grade
90 - 100	A
80 - 89	B
70 - 79	C
60 - 69	D
Below 60	F

Course Requirements

For a normal 16 week course, we usually recommend you plan for at least 12 hours of study time per week for a 3 credit hour course (which will vary depending on your background and ability). We cover the same material in summer as in a regular semester, but in less than 2/3 of the total time. Thus a rough guidelines of 18 to 20 hours a week allocated

for reading, studying and performing assignments should be expected for students with a required background for the course materials.

Assignments: There will be regularly assigned homework problems. Assignments will be given and returned via the online eCollege system as a convenience to the students and the instructor. In general, we will probably have 1 written assignment and/or 1 programming assignment for each of the major parts of the course. It is very important that students follow the instructions carefully on the assignments. It is the student's responsibility to have all assignments ready on time by the given due date. Late assignment may not be accepted or may be penalized and assignment may not be accepted beyond a certain time. Important material from the text and outside sources will be covered in class. Students should plan to take careful notes as not all material can be found in the texts or readings. Discussion is encouraged as student-procured outside material relevant to topics being covered. End of chapter activities and online activities may be assigned to reinforce material in the text.

Exams: Four exams will be given. The exams will not be comprehensive, and will focus on the particular materials/readings just covered in the previous 2 to 3 weeks of the course. The instructor may add other exams as they see necessary.

Quizzes: Unannounced pop-quizzes may be given in class and/or online through eCollege to help ensure students stay up with assigned material.

Course Deadlines

Credit will be given for ONLY those exam(s), program(s), and/or project(s) turned in no later than the deadline(s) as announced by the instructor of this class unless prior arrangement has been made with the instructor.

Attendance Policy

Students are expected to follow all instructions and visit eCollege regularly many times weekly to complete the materials for this online course. If a student is unable to submit assignments by the due date for the assignment, they are expected to make alternative arrangements to assure that the assignment is turned in ON TIME, before the assignment is actually due. Any student wishing to withdraw from the course must

do so officially as outlined in the class schedule. THE INSTRUCTOR CANNOT DROP OR WITHDRAW ANY STUDENT.

Academic Ethics

"All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment." (See Student's Guide Handbook, Policies and Procedures, Conduct). Ethics also includes the issue of plagiarism, and copying code for programming/lab assignments is just as serious as any other type of plagiarism. If you are caught sharing or using other people's work in this class, you will receive a 0 grade and a warning on the first instance. A subsequent instance will result in receiving an F grade for the course, and possible disciplinary proceedings.

Student's with Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact: Office of Student Disability Resources and Services, Texas A&M University-Commerce, Gee Library, Room 132, Phone (903) 886-5150, StudentDisabilityServices@tamuc.edu

Course Schedule (Preliminary)

W	Dte	Topic / Activity	Assg	Test
Part One: Background, Processes and Threads				
1	6/6	Computer and OS Overview (Ch. 1, 2)	PS 1	
2	6/13	Process description and control (Ch. 3)	Prog 1	
3	6/20	Threads (Ch. 4)		1 Th 6/23
Part Two: Concurrency				
4	6/27	Concurrency I: Mutual exclusion (Ch. 5)	PS 2	
5	7/4	Concurrency I, II (Ch. 5,6):	Prog 2	
6	7/11	Concurrency II: Deadlock/Starvation (Ch. 6)		2 Th 7/14
Part Three: Memory Management				
7	7/18	Introduction to Memory Management (Ch. 7)	PS 3	
8	7/25	Virtual Memory (Ch. 8)	Prog 3	3 Th 7/28
Part Four: Scheduling				
9	8/1	Introduction to Process Scheduling (Ch. 9)	PS 4	
10	8/8	Multiprocessor Scheduling (Ch. 10)		4 Th 8/11