Course Syllabus

CSCI530-01W

OPERATING SYSTEMS

Spring, 2023

Department of Computer Science
Texas A&M University-Commerce

Class Meetings: Web Based Class, 01/17/2023-05/05/2023

Instructor:

Name:	Kwang Lee, Ph.D. Adjunct Professor, Texas A&M University Commerce Department of Computer Science & Information Systems
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Course Objectives:

The course objectives are two-fold:

- To learn general theory, concept, and techniques related to the design ofoperating systems,
- To practice the design of an operating system by performing UNIX programming exercises.

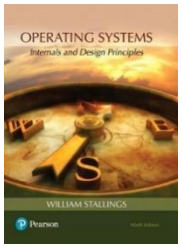
Course Description:

The course objectives are two-fold: (1) to learn general theory, concept, and techniques related to the design of operating systems; (2) to practice the design of an operating system by performing a design project.

General theory and concept behind operating system design are discussed in this course. Topics include operating system structures, memory management, process scheduling, process synchronization and communication, deadlocks, and case studies of other commercially available operating systems. Moderate-size programming project will be used to demonstrate the understanding of design concept of operating systems.

Textbooks:

Stallings, W. Operating systems: internals and design principles. 9th Edition. Pearson, ISBN: 978-013-4670959.



Operating System Concepts, now in its 9th edition, continues to provide a solid theoretical foundation for understanding operating systems. The eighth edition includes more coverage of the most current topics in the rapidly changing fields of operating systems and networking, including open-source operating systems.

The text also includes improved conceptual coverage and additional content to bridge the gap between concepts and actual implementations. New end-of-chapter exercises and advanced exercises help to further reinforce important concepts, while Person continues to motivate students and offer comprehensive support for the material in an interactive format.

Recommended Reading:

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

Topics and chapters to be covered:

Part One: Overview (Chapter 1)
Part Two: Memory Management (Chapters 2 and 3) Part Three: Process Management (Chapters 4, 5, and 6)
Part Four: Device and File Management (Chapters 7 and 8)

Course Requirements:

There will be regularly assigned homework problems. There will be programming projects, which will require the students to spend time in the computer laboratory. To plan a minimum of three hours of outside preparation for each hour of class is a safe time allocation for successfully completing the course. Due dates for all assigned materials will be announced in class in advance. It is the student's responsibility to have all assignments ready on time. Any student who has to be absent on an assignment due date must arrange to have the assignment submitted early. Late assignment may not be accepted. Additional requirements of the course include a number of quizzes, tests, a term paper, and/or a project report.

Student Learning Outcomes (SLO):

Students will be able to:

1) Explain the objectives and functions of modern operating systems
2) Describe how computing resources are used by application software and managed by system software.
3) Describe the need for concurrency within the framework of an operating system
4) Demonstrate the potential run-time problems arising from the concurrent operation of many separate tasks
5) Analyze processes, threads, and concurrency issues and process synchronization
6) Explain simple memory management, virtual memory
7) Describe the reason for and use of cache memory
8) Explain file management, mass storage, and I/O systems
9) Analyze basic OS security issues

Relationship between the assessments and course-level student learning outcomes:

Student Learning Outcomes	SLO1	SLO2	SLO3	SLO4	SLO5
Assessment Methods Used	Assignment, Quizzes	Assignment Quizzes	Assignment, Exam,	Midterm Exam	Midterm Exam

Student Learning Outcomes	SLO6	SLO7	SLO8	SLO9	SLO5
Assessment Methods Used	Assignment, Quizzes	Assignment, Quizzes	Final Exam	Final Exam	Course Project

MAKE-UP POLICIES

Assignments/Projects/Reports: Assignments are to be completed and turned in by the due date without exception. No late work will be accepted unless there is compelling evidence for failure for on-time submission.

Exams: No make-up exams will be given. In case of emergencies, proven and certified copy of the emergencies should be provided to the instructor to discuss an alternative solution.

Quizzes: No make-ups for quizzes unless there is compelling evidence for failure to take as scheduled. All missed grades will be recorded as zeros.

Discussions: No make-ups for discussions unless there is compelling evidence for failure to take asscheduled. All missed grades will be recorded as zeros.

TECHNOLOGY REQUIREMENTS:

Students must know using the learning management system. Students must have advanced programming knowledge in a high-level programming language. Additionally, students should have knowledge of Microsoft Word and PowerPoint, presentation and graphics programs, etc.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Policies:

Attendance/Lateness: Students are expected to be present at all class lectures. The maximum number of excused absences allowed per semester will be 3. 3 or more absences will automatically result in F as course grade.

Late Work: Under no circumstances will the late work be accepted. If a student is absent from class on the due date of any assignment, they are expected to make alternative arrangements to assure that the assignment is turned in ON TIME. Credit will be given for ONLY those assignments, programs, and/or projects turned in no later than the deadline as announced by the instructor of this class.

Missed Exams and Quizzes: Missed exams and quizzes will result in 0 in all circumstances. Extra Credit: No extra credit work will be given under any circumstances.

Withdrawal: Any student wishing to withdraw from the course must do so officially as utlined in the class schedule. THE INSTRUCTOR CANNOT DROP OR WITHDRAW ANY

STUDENT.

Syllabus Change Policy:

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

UNIVERSITY SPECIFIC PROCEDURES

Student Conduct:

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook. http://www.tamuc.edu/admissions/registrar/documents/studentGuidebook.pdf Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: Netiquette http://www.albion.com/netiquette/corerules.html

TAMUC Attendance:

For more information about the attendance policy please visit the Attendance webpage and Procedure 13.99.99.R0.01.
http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx
http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf

Academic Integrity:

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

Undergraduate Academic Dishonesty 13.99.99.R0.03
http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf

Graduate Student Academic Dishonesty 13.99.99.R0.10
http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf

ADA STATEMENT

Students 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-CommerceGee
Library- Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: Rebecca.Tuerk@tamuc.edu
Website: Office of Student Disability Resources and Services
http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServ ices/

Nondiscrimination Notice:

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement:

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun.

Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer.

Web url: http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M- Commerce campuses. Report violations to the University Police Department at 903- 886-5868 or 9-1-1.

Smoke, Vapor & Tobacco Free Environment:

University Procedure 34.05.99.R1 now prohibits the use of vapor/electronic cigarettes, smokeless tobacco, snuff and chewing tobacco inside and adjacent to any building owned, leased, or operated by A&M – Commerce.

Course Requirement Deadlines:

Credit will be given for ONLY those exam(s), assignment(s), quiz(es), 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.

Method of Evaluation (Tentative):

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

- **Midterm Test** **100 (10%)**
- **Final Test** **200 (20%)**
- **Four Assignments** **200 (20% each-50)**
- **Six Quizzes** **300 (30% each-50)**
- **10 Discussions** **200 (20% each-20)**
- **Total** **1,000 (100%)**

Letter grades will be assigned according to the following scale:

- **A - at least 900 (90%) of the total points**
- **B - at least 800 (80%) of the total points**
- **C - at least 700 (70%) of the total points**
- **D - at least 600 (60%) of the total points**
- **F - below 600 (60%) of the total points**

COURSE OUTLINE/CALENDAR*:

DATE	TOPIC	READING	ASSIGNMENTS
Week 1 **1/17 – 1/22**	Computer System Overview	Chapter 1	Meet Your Classmates Discussion Introduce Yourself Due: No later than 11:59 pm Sun
Week 2 **1/23 – 1/29**	Operating System Overview	Chapter 2	Quiz 1 | Discussion 1 Due: No later than 11:59 pm Sun
Week 3 **1/30 – 2/05**	Process Description and Control	Chapter 3	Assignment 1 | Discussion 2 Due: No later than 11:59 pm Sun
Week 4 **2/06 – 2/12**	Threads	Chapter 4	Quiz 2 | Discussion 3 Due: No later than 11:59 pm Sun
Week 5 **2/13 – 2/19**	Concurrency: Mutual Exclusion & Synchronization	Chapter 5	Discussion 4 Due: No later than 11:59 pm Sun
Week 6 **2/20 – 2/26**	Concurrency: Deadlock & Starvation	Chapter 6	Assignment 2 | Quiz 3 Due: No later than 11:59 pm Sun
Week 7 **2/27 – 3/05**	Memory Management	Chapter 7	**Midterm Exam (Ch 1 – 6)**
Week 8 **3/06 – 3/12**	Virtual Memory	Chapter 8	Discussion 5 Due: No later than 11:59 pm Sun
Week 9 **3/13 – 3/19**	Uniprocessor Scheduling	Chapter 9	Quiz 4 Due: No later than 11:59 pm Sun
Week 10 **3/20 – 3/26**	Multiprocessor, Multicore, and Real-Time Scheduling	Chapter 10	Assignment 3 | Discussion 6 Due: No later than 11:59 pm Sun
Week 11 **3/27 – 4/02**	I/O Management & Disk Scheduling	Chapter 11	Quiz 5 Due: No later than 11:59 pm Sun
Week 12 **4/03 – 4/09**	File Management	Chapter 12	Discussion 7 Due: No later than 11:59 pm Sun
Week 13 **4/10 – 4/16**	Embedded Operating Systems	Chapter 13	Quiz 6 | Discussion 8 Due: No later than 11:59 pm Sun
Week 14 **4/17 – 4/23**	Virtual Machines	Chapter 14	Assignment 4 | Discussion 9 Due: No later than 11:59 pm Sun
Week 15 **4/24 – 4/30**	Operating System Security	Chapter 15	Discussion 10 Due: No later than 11:59 pm Sun
Week 16 **5/01 – 5/05**	Class Review	Chapters 7-15	Class Evaluation
	Final Exam		**Final Exam (Ch 7 – 15)**

*** The course outline/calendar may be subject to change.**