Texas Tech University
Department of Computer Science

Course Name: Operating System Design Number: CS 4352 Semester: Fall 2020

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Catalogue Listing: Concepts and design of different components of operating systems. Topics addressed include process management, scheduling and resource management, file systems, I/O, and security issues.

Textbooks: Operating System Concepts, 10th Edition by Abraham Silberschatz, Greg Gagne, Peter B. Galvin

Course objectives:

The objective of this course is to introduce various elements involved in the design and implementation of operating systems.

Key Topics:

Operating systems structure; Operating systems design and implementation; Processes, threads, multithreading, remote process call; File systems; Device management; Paging and virtual memory; Security.

Course Prerequisites: CS3375 Computer Architecture and CS3364 Design and Analysis of Algorithms

Expected Prior Knowledge and Skills In: data structures, computer architectures, algorithms, C programming

Learning Outcomes: Students who have completed this course should have

Understand the role of hardware in supporting operating system functions (1, 2)
Obtain in-depth understanding of process management and threading (1, 2)
Understand and differentiate the different memory management techniques (1, 2)
Understand, compare the different data storage techniques (1, 2)
Construct a program module for an operating system (2, 6)
Become proficient system programmers (2, 6)

Assessment methods of all the above: quizzes, assignments, and projects

Ethical Conduct:
Although students are encouraged to discuss ideas and problems with the TA, instructor, and other students, academic dishonesty will not be tolerated. Unless stated otherwise by the instructor, you are not allowed to share code or answers, use or even look at code or answers obtained from online sources, friends, or classmates. It is your responsibility to educate yourself about actions that constitute academic dishonesty. If you are not sure whether a specific action is allowed, talk to the instructor and the TA before you indulge in it. All submitted code and assignments will be randomly checked for plagiarism. Academic dishonesty of any kind, if discovered, will result in one or more of the following sanctions: a grade of 0 for the corresponding graded item, a grade of "F" in the course, and further action according to the TTU operating procedures: http://www.depts.ttu.edu/opmanual/OP34.12.pdf.

Grading Policy:
Due to the pandemic, we will try to be more flexible -- less exam but more assignments. The assignments will be harder than usual. Final grade for this course will be based on Attendance, homework, project and exams as described below:

- Attendance (quizzes and participation): 10%
- Assignments: 50%

  Homework must be submitted to blackboard by the due date. Late submission may not be allowed and graded. - Late submission will not be accepted due to your computer crash or lost backup.

You must email your homework to TA with CC to instructor immediately if you cannot submit your homework to blackboard because of blackboard's technical problems. - Check if you uploaded your homework to blackboard successfully after your submission. Review your homework with TA/grader in a designated period if you have any questions.

- Midterm: 20%
- Final Project: 20%

  A Team-based project will be given. - Teams will be organized in class. The contribution of each team member to a project will be evaluated by other members in the same team at the end of each project (Cross evaluation). - You will receive your individual project grade based on your contribution to the project.

The usual grading scale will be used: A (90-100), B (80-89), C (70-79), D (60-69), F (0-59). This scale may be subject to class performance. Beyond the conditions described above, instructor will make all decisions.

Student with Disabilities:
Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.

Illness Based Absence Policy:
If at any time during this semester you feel ill, in the interest of your own health and safety as well as the health and safety of your instructors and classmates, you are encouraged not to attend face-to-face class meetings or events. Please review the steps outlined below that you should follow to ensure your absence for illness will be excused. These steps also apply to not participating in synchronous online class meetings if you feel too ill to do so and missing specified assignment due dates in asynchronous online classes because of illness.

1. If you are ill and think the symptoms might be COVID-19-related:
   a. Call Student Health Services at 806.743.2848 or your health care provider.
   b. Self-report as soon as possible using the Office of the Dean of Students website. This website has specific directions about how to upload documentation from a medical provider and what will happen if your illness renders you unable to participate in classes for more than one week.
   c. If your illness is determined to be COVID-19-related, all remaining documentation and communication will be handled through the Office of the Dean of Students, including notification of your instructors of the period of time you may be absent from and may return to classes.
   d. If your illness is determined not to be COVID-19-related, please follow steps 2. a - d below.
2. If you are ill and can attribute your symptoms to something other than COVID-19:
   a. If your illness renders you unable to attend face-to-face classes, participate in synchronous online classes, or miss specified assignment due dates in asynchronous online classes, you are encouraged to visit with either Student Health Services at 806.743.2848 or your health care provider. Note that Student Health Services and your own and other health care providers may arrange virtual visits.
   b. During the health provider visit, request a "return to school" note;
   c. E-mail the instructor a picture of that note;
   d. Return to class by the next class period after the date indicated on your note. Following the steps outlined above helps to keep your instructors informed about your absences and ensures your absence or missing an assignment due date because of illness will be marked excused. You will still be responsible to complete within a week of returning to class any assignments, quizzes, or exams you miss because of illness.

Course Schedule:

The table (below) provides the initial distribution of topics discussed over the weeks in the semester. This schedule is tentative and subject to change. All changes will be announced in class or on the course website (Blackboard). It is your responsible to attend classes and check the course website regularly to get all change announcements.

Week	Activity	Material
1 (Aug. 24)	Lecture	Overview
2 (Aug. 31)	Lecture	Process management
3 (Sep. 07)	Lecture	Process management
4 (Sep. 14)	Lecture	Process management
5 (Sep. 21)	Lecture	Memory management
6 (Sep. 28)	Lecture	Memory management
7 (Oct. 05)	Lecture	Memory management
8 (Oct. 12)	Lecture	I/O Devices management
9 (Oct. 19)	Lecture	Midterm
10 (Oct. 26)	Lecture	File System management
11 (Nov. 02)	Lecture	File System management
12 (Nov. 09)	Lecture	Networking
13 (Nov. 16)	Lecture	Security
14 (Nov. 23)	Lecture, Holidy	Closing
15 (Nov. 30)	Demo	**Demonstrate your project to me/TA**