

THE UNIVERSITY OF TEXAS AT TYLER
DEPARTMENT OF COMPUTER SCIENCE
COSC 5330 – Operating Systems
Fall 2021

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(The best way to contact me is email.)

Lecture: R 6.00 pm to 8:45 pm COB 255

Office Hours: TR 8.00 am to 9.30 am; and by appointment using phone or Zoom

Text: *Operating Systems: Internals and Design Principles* by William Stallings, 9th Edition, Pearson Publishing, ISBN 9780134670959

Catalog Description: Analysis of operating systems software for computing systems, and resource management procedures and techniques used in all types of computing environments. Topics include processes, synchronization, scheduling algorithms, memory management, security, device management, deadlocks, and file systems.

Course Description: Computing devices have become almost omnipresent in our lives and we interact with a variety of different devices on almost a daily basis. Smartphones, digital home assistants, tablets, laptop, desktops, servers, drones, IoTs, and so on – the list is long. But the software that is common to these devices is the operating system (OS). OS is the software that controls accesses to hardware and other software resources. So if an application wants to read user input from the keyboard, it is the OS that sends the keystrokes to the application. Likewise, if an application wants to make a system call then, again, it is to the OS that the application makes this request. Therefore, OS is the most important software on a computing device. There are several different OSes including Windows, Mac OS X, Linux, iOS, and Android, besides others and we will study some of these OSes in detail in this course. All relevant course material will be posted on Canvas.

Grading: Grading will be based on exams and homework. All homework submissions should be made electronically to Canvas – no physical paper submissions will be accepted. Late submissions will not be graded. There will be two mid-term exams as per schedule given later. Attendance will be taken twice in each class – once around 6.30pm and again around 8.30pm; you need to be present during both roll calls for attendance to be marked for the week. There will be a break of 10 minutes at 7.20pm each class. Midterm exams will be held from 6pm to 7.20pm during the scheduled days and regular classes will continue from 7.30pm on these days. Weights are given below:

First Midterm Exam	25%
Second Midterm Exam	25%
Final Exam	25%
Attendance	10%
Homework	15%

Grading Policy:

Points	Grade
≥85	A
≥75, < 85	B
≥65, < 75	C

Course Objectives:

1. Understand the components of a modern operating system
2. Understand concurrency and file management
3. Analyze differences between operating systems

Tentative Schedule:

<u>Week</u>	<u>Chapter</u>	<u>Topic</u>
1	1	Computer System Overview
2	2	Operating System Overview
3	3	Process Description and Control
4	4	Threads
5	5	Concurrency: Mutual Exclusion and Synchronization
6	FIRST MIDTERM EXAM, Thursday, September 30th, 2021	
6	6	Concurrency: Deadlock and Starvation
7	7	Memory Management
8	8	Virtual Memory
9	9 & 10	Scheduling
10	11	I/O Management and Disk Scheduling
11	SECOND MIDTERM EXAM, Thursday, November 4th, 2021	
11	12	File Management
13	14	Virtual Machines
14	16	Cloud and IoT Operating Systems
15	FINAL EXAM, Thursday, December 9 th , 2021, from 6pm to 8pm	

Census Date: September 3rd, 2021

Attendance and Make-up Policy

It is in your interest to attend all classes. There will be no make-ups for missed exams; missed exams will get a grade of zero.

Student Resources

Resources to assist you in this course

- [UT Tyler Student Accessibility and Resource \(SAR\) Office \(Links to an external site.\)](#) (provides needed accommodations to students with document needs related to access and learning)
- [UT Tyler Writing Center \(Links to an external site.\)](#)

- [The Mathematics Learning Center \(Links to an external site.\)](#)
- [UT Tyler PASS Tutoring Center \(Links to an external site.\)](#)
- [UT Tyler Supplemental Instruction \(Links to an external site.\)](#)
- [Upswing \(24/7 online tutoring\) - covers nearly all undergraduate course areas \(Links to an external site.\)](#)
- [Robert Muntz Library \(Links to an external site.\)](#) and [Library Liaison \(Links to an external site.\)](#)
- [Canvas 101 \(Links to an external site.\)](#) (learn to use Canvas, proctoring, Unicheck, and other software)
- Digital Support Toolkit (for supported courses only. Students are automatically enrolled in the toolkit for supported courses)
- LIB 422 -- Computer Lab where students can take a proctored exam
- [The Career Success Center \(Links to an external site.\)](#)
- [UT Tyler Testing Center \(Links to an external site.\)](#)
- [Office of Research & Scholarship Design and Data Analysis Lab \(Links to an external site.\)](#)

Resources available to UT Tyler Students

- [UT Tyler Counseling Center \(Links to an external site.\)](#)(available to all students)
- [TAO Online Support Center \(Links to an external site.\)](#)(online self-help modules related to mental & emotional health)
- [Military and Veterans Success Center \(Links to an external site.\)](#)(supports for all of our military affiliated students)
- [UT Tyler Patriot Food Pantry \(Links to an external site.\)](#)
- [UT Tyler Financial Aid and Scholarships \(Links to an external site.\)](#)
- [UT Tyler Registrar's Office \(Links to an external site.\)](#)
- [Office of International Programs \(Links to an external site.\)](#)
- [Title IX Reporting \(Links to an external site.\)](#)
- [Patriots Engage \(Links to an external site.\)](#) (available to all students. Get engaged at UT Tyler.)

University Policies

- **Withdrawing from Class** - Students you are allowed to [withdraw \(Links to an external site.\)](#) (drop) from this course through the University's [Withdrawal Portal \(Links to an external site.\)](#). Texas law prohibits students who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at other 2-year or 4-year Texas public colleges and universities. Make sure to consider the impact withdrawing from this class has on your academic progress as well as the financial implications. We encourage you to consult your advisor(s) and financial aid for additional guidance. CAUTION #1: Withdrawing before census day does not mean you get a full refund. Please see the [Tuition and Fee Refund Schedule \(Links to an external site.\)](#). CAUTION #2: All international students must check with the [Office of International Programs \(Links to an external site.\)](#) before withdrawing. All international students are required to enroll full-time for fall and spring terms.
- **Final Exam Policy** : Final examinations are administered as scheduled. If unusual circumstances require that special arrangements be made for an individual student or class, the dean of the appropriate college, after consultation with the faculty member involved, may authorize an exception to the schedule. Faculty members are required to maintain student final examination papers for a minimum of three months following the examination date.
- **Incomplete Grade Policy** : If a student, because of extenuating circumstances, is unable to complete all of the requirements for a course by the end of the semester, then the instructor may recommend an Incomplete (I) for the course. The "I" may be assigned in lieu of a grade only when all of the following conditions are met: (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all course work or final exam due to unusual circumstances that are beyond personal control and are acceptable to the instructor; and (c) the student presents these reasons prior to the time that the final grade roster is due. The semester credit hours for an Incomplete will not be used to calculate the grade point average for a student.

The student and the instructor must submit an Incomplete Form detailing the work required and the time by which the work must be completed to their respective department chair or college dean for approval. The time limit established must not exceed one year. Should the student fail to complete all of the work for the course within the time limit, then the instructor may assign zeros to the unfinished work, compute the course average for the student, and assign the appropriate grade. If a grade has not been assigned within one year, then the Incomplete will be changed to an F, or to NC if the course was originally taken under the CR/NC grading basis.

- **Grade Appeal Policy:** - UT Tyler's Grade Appeal policy requires the completion of a Grade Appeal form for this action to take place. The grade appeal begins with the instructor of your course. If you do not agree with the decision of the instructor, you may then move your appeal to the department chair/school director for that course. If you are still dissatisfied with the decision of the chair/director, you may move the appeal to the Dean of the College offering that course who has the final decision. Grade appeals must be initiated within sixty (60) days from the date of receiving the final course grade. The Grade Appeal form is found on the [Registrar's Form Library](#). ([Links to an external site.](#))
- **Disability/Accessibility Services:** The University of Texas at Tyler has a continuing commitment to providing reasonable accommodations for students with documented disabilities. Students with disabilities who may need accommodation(s) in order to fully participate in this class are urged to contact the Student Accessibility and Resources Office (SAR) as soon as possible to explore what arrangements need to be made to ensure access. If you have a disability, you are encouraged to visit the [SAR Portal](#) ([Links to an external site.](#)) (<https://hood.accessiblelearning.com/UTTyler/> ([Links to an external site.](#))) and complete the New Student Application. For more information, please visit the [SAR webpage](#) ([Links to an external site.](#)) or call 903.566.7079.
- **Military Affiliated Students:** UT Tyler honors the service and sacrifices of our military affiliated students. If you are a student who is a veteran, on active duty, in the reserves or National Guard, or a military spouse or dependent, please stay in contact with me if any aspect of your present or prior service or family situation makes it difficult for you to fulfill the requirements of a course or creates disruption in your academic progress. It is important to make me aware of any complications as far in advance as possible. I am willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. Campus resources for military affiliated students are in the [Military and Veterans Success Center \(MVSC\)](#) ([Links to an external site.](#)). The MVSC can be reached at MVSC@uttyler.edu, or via phone at 903.565.5972.
- **Academic Honesty and Academic Misconduct:** The UT Tyler community comes together to pledge that "Honor and integrity will not allow me to lie, cheat, or steal, nor to accept the actions of those who do." Therefore, we enforce the [Student Conduct and Discipline policy](#) ([Links to an external site.](#)) in the Student Manual Of Operating Procedures (Section 8).
- **FERPA** - UT Tyler follows the Family Educational Rights and Privacy Act (FERPA) as noted in [University Policy 5.2.3](#) ([Links to an external site.](#)). The course instructor will follow all requirements in protecting your confidential information.
- **COVID Guidance**
 - *Information for Classrooms and Laboratories:* Students are expected to wear face masks covering their nose and mouth in public settings (including classrooms and laboratories). The UT Tyler community of Patriots views adoption of these practices consistent with its [Honor Code](#) ([Links to an external site.](#)) and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.
 - Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher than normal temperature should stay at home and notify their faculty. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, or call (903) 566-7079 or email saroffice@uttyler.edu.
 - *Recording of Class Sessions:* Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals

not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

- **Absence for Official University Events or Activities** : This course follows the practices related to approved absences as noted by the Student Manual of Operating Procedures ([Sec. 1 -501 \(Links to an external site.\)](#)).
- **Absence for Religious Holidays:** Students who anticipate being absent from class due to a religious holiday are requested to inform the instructor by the second class meeting of the semester.
- **Campus Carry:** We respect the right and privacy of students who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.utt Tyler.edu/about/campus-carry/index.php>.