

**THE UNIVERSITY OF TEXAS AT TYLER**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**COSC 3355 – Operating Systems**  
**Spring 2021**

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**Lecture:** TR 9.30 am to 10:50 am COB 211

**Office Hours:** TR 10.50 am to 12.20 pm (by email and/or Zoom)

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

**Catalog Description:** Fundamentals of operating systems design and implementation. Topics include an overview of the components of an operating system, mutual exclusion and synchronization, implementation of processes, scheduling algorithms, memory management, operating system security, and file systems. Prerequisites: COSC 2315 and COSC 2336.

**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, homework, and programming assignments. All homework and programming assignments should be uploaded to Canvas – no email submissions will be accepted. Late submissions will not be graded. There will be two mid-term exams as per schedule given later. Weights are given below:

First Midterm Exam	20%
Second Midterm Exam	25%
Final Exam	25%
Programming Assignments	15%
Homework	15%

**Covid Impact:** Classes will be based on video lectures that will be uploaded to Canvas each week — in-class meetings are optional and will be used to answer any questions or discuss any clarifications. Any important points/questions raised by students during these in-class meetings will also be posted on Canvas. Students from the top half of the class can come in-person only on Tuesdays if they wish to attend while students in the bottom half of the class can come in-person only on Thursdays, if they wish to attend – I will post on Canvas who is in the top half and bottom half of the class. Discussion board on Canvas will be open for questions and will be monitored by the class TA.

Every student must have their own computer for this class so that they can do the course work and the lab work. All exams will be online using ProctorU — you must download the ProctorU plugin and you can check the readiness of your computer for ProctorU at <https://test-it-out.proctoru.com/>. If you need any

assistance contact the office of digital learning at UT Tyler. Additional ProctorU resources are given on the next page.

All exams must be taken on the day and time scheduled; there will be no makeups for missed exams – all missed exams get a grade of zero. Homework and programming assignment submissions need to be uploaded to Canvas and they will be due before the deadline - late submissions for both homework and programming assignments will get a grade of zero.

**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

**Census Date:** January 25th, 2021

**Attendance and Make-up Policy**

Attendance of in-class sessions is optional – no new material will be covered during these in-class sessions; only questions, if any, will be answered. However, you will be responsible for completing homework before their due dates/times; late submissions will get a grade of zero. You must take exams at the date and time scheduled; there will be no make-ups for missed exams - missed exams will get a grade of zero.

**Additional Learning Resources**

There will be a full-time Teaching Assistant associated with this course, Keith Wolcott, who may be contacted at [kwolcott@patriots.uttyler.edu](mailto:kwolcott@patriots.uttyler.edu); Keith will be available through Zoom as well. Moreover, you may contact the instructor any time by email with any questions.

**ProctorU Resources**

<https://www.uttyler.edu/digital-learning/proctoru-resources/>

The assessments in this course will be proctored using ProctorU. Beyond the cost of initial equipment needed (e.g. a camera for your computer), there will not be any additional cost for proctoring. You will need to create a ProctorU account and install the ProctorU extension before attempting any assessment. To create a ProctorU account, follow the ProctorU tool within Canvas. Please make sure you are using the current version of Chrome or Firefox and download the ProctorU extension available at

<http://bit.ly/proctoruchrome> or <https://www.proctoru.com/firefox>.

In order to use ProctorU, you will need the following:

- High-speed Internet connection
- Webcam (internal or external)
- Windows, Mac, or Chrome Operating System
- Up-to-date Chrome or Firefox browser and ProctorU extension installed
- Valid photo ID
- Quiet environment to take your assessment

You can visit the Test Taker Resource Page for additional information at <https://bit.ly/ProctorMe>

**Note:** You can take a practice ProctorU exam from Canvas101 course which you should be able to see on Canvas; this will help you test your computer and make sure you are ready for your exams. Also, if you are taking ProctorU exam from Campus, use SecureAir and not PatriotAir; another alternative on campus is to take exams on one of the computers in LIB422 that come fitted with webcams (you may need to make a reservation in advance – check with the Library). We will be using ProctorU in the Auto mode so no need for you to schedule my exams with ProctorU.

**University Policies**

University policies can be seen at <https://www.utt Tyler.edu/academic-affairs/files/syllabuspolicy.pdf>. They are given below as well.

**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	6	Concurrency: Deadlock and Starvation
6	FIRST MIDTERM EXAM, Thursday, February 18th, 2021 (9.30 – 10.50am)	
7	7	Memory Management
8	8	Virtual Memory
9	9 & 10	Scheduling
10	11	I/O Management and Disk Scheduling
11	12	File Management
11	SECOND MIDTERM EXAM, Thursday, April 8th 2021 (9.30 – 10.50am)	
12	12	File Management
13	14	Virtual Machines
14	16	Cloud and IoT Operating Systems
15	FINAL EXAM, Week of April 26th, 2021 (as per University schedule)	

## UNIVERSITY POLICIES AND ADDITIONAL INFORMATION THAT MUST APPEAR IN EACH COURSE SYLLABUS

### UT Tyler Honor Code

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

### Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link:

<http://www.uttyler.edu/wellness/rightsresponsibilities.php>

### Campus Carry

We respect the right and privacy of students 21 and over 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.uttyler.edu/about/campus-carry/index.php>

### UT Tyler a Tobacco-Free University

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.

There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support.

For more information on cessation programs please visit [www.uttyler.edu/tobacco-free](http://www.uttyler.edu/tobacco-free).

### Grade Replacement/Forgiveness and Census Date Policies

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

### State-Mandated Course Drop Policy

Texas law prohibits a student 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 another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

### Disability/Accessibility Services

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit

<https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, # 3150 or call 903.566.7079.

### Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

### Student Absence for University-Sponsored Events and Activities

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

### **Social Security and FERPA Statement**

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

### **Emergency Exits and Evacuation**

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

### **Student Standards of Academic Conduct**

Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

- i. "Cheating" includes, but is not limited to:
  - copying from another student's test paper;
  - using, during a test, materials not authorized by the person giving the test;
  - failure to comply with instructions given by the person administering the test;
  - possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
  - using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
  - collaborating with or seeking aid from another student during a test or other assignment without authority;
  - discussing the contents of an examination with another student who will take the examination;
  - divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
  - substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
  - paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
  - falsifying research data, laboratory reports, and/or other academic work offered for credit;
  - taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
  - misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.
- ii. "Plagiarism" includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the submission of it as one's own academic work offered for credit.
- iii. "Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.
- iv. All written work that is submitted will be subject to review by plagiarism software.

### **UT Tyler Resources for Students**

- [UT Tyler Writing Center](mailto:writingcenter@uttyler.edu) (903.565.5995), [writingcenter@uttyler.edu](mailto:writingcenter@uttyler.edu)
- [UT Tyler Tutoring Center](mailto:tutoring@uttyler.edu) (903.565.5964), [tutoring@uttyler.edu](mailto:tutoring@uttyler.edu)
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- [UT Tyler Counseling Center](mailto:uttyler@uttyler.edu) (903.566.7254)