

Computer Science 361

University of Tennessee, Knoxville

Spring 2020
University of Tennessee, Knoxville

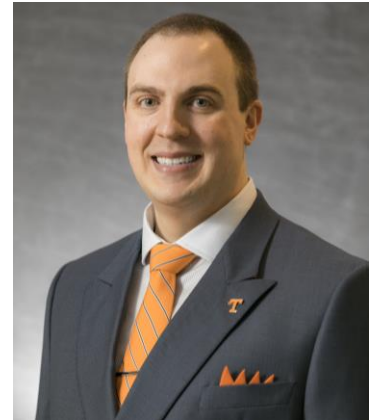
https://tiny.utk.edu/canvas_cosc361

Course Section: 1

Course Credit Hours: 3

Faculty Contact Information

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Welcome to COSC361

Hello students! This course is designed to be a practical learning experience with operating systems. Many operating systems courses are mired in theory and abstract concepts, but in this course, your labs will be a hands-on experience working with an operating system kernel.

This course is challenging because you will need to take rather complex topics and apply them to your labs. I will have lectures, lecture slides, videos, and tutorials to help you better understand the material. But, if those don't cut it, please don't hesitate to attend office hours.

Procrastination will be detrimental to your learning in this course. There are a lot of moving parts, and as some students have described it, a "treasure hunt". You will need to bring information from many sources to complete a task.

Instructor Availability

All office hours and times have been posted to Canvas. Please make sure you check these times before attending office hours as they may change from time to time.

I do ask that you please read all labs and lecture materials fully. Be forewarned, I may copy and paste a screenshot of the syllabus if you ask a question that is answered by the syllabus or other materials. I do this to make it a learning experience. I came from the US Air Force where we had thousands of pages of technical documentation and regulations. We were taught that we won't retain all the information in memory but knowing where to look for information is the important part.

With that being said, please do not hesitate to ask questions. The newness of everything may be overwhelming at first. I'm hoping that as the course progresses, you'll be confident to make decisions about your code and know where to go for guidance.

COURSE DESCRIPTION

Threads, operating system structure, process management, scheduling, synchronization, deadlock, memory management, virtual memory and demand paging, file system management and implementation, mass storage structure, protection, security, and distributed systems.

Student Learning Outcomes/Objectives

Students who successfully complete this course can expect to learn the following:

- Understand how computers boot.
- Understand how control is transferred to a bootloader.
- Understand how an operating system controls hardware.
- Understand the different input/output systems: PIO and MMIO.
- Understand how hardware changes can be detected through interrupts and/or polling.
- Understand the differences between user space and kernel space.
- Understand how user space enters kernel space.
- Understand how an operating system kernel can allocate memory.
- Understand how the operating system programs the memory management unit (MMU).
- Understand how virtual addresses translate into physical addresses.
- Understand the goals of different file systems.
- Understand how a set of file systems link together through a virtual file system (VFS).
- Understand how operating systems efficiently write/read from I/O.
- Understand the choices made with operating system design.
- Understand the pros/cons of monolithic, micro, and hybrid kernels.
- Understand how the components of an operating system perform a task together.
- Understand how tasks are accomplished using various scheduling techniques.

Value Proposition

Operating systems are the bedrock of many computer systems. User programs can be optimized, but a poorly designed operating system can be detrimental to the performance of even the most optimized program.

Students will learn how the operating system connects the software to the hardware. Even though this is a computer science course, we will be delving deeper into computer architecture.

LEARNING ENVIRONMENT

We will be using Canvas modules which compartmentalize the assigned readings and assignments for a given week of instruction.

HOW TO BE SUCCESSFUL IN THIS COURSE

Online courses may be a challenge for some students at first. You will be expected to keep up with all due dates and assignments without prompting. Remember, this information can be found on Canvas--your one-stop shop.

UT's Online Programs department has put together a helpful checklist on Programs [How to be Successful in an Online Course](https://volsonline.utk.edu/students/) (<https://volsonline.utk.edu/students/>).

Learner Expectations

- Actively check Canvas for due dates and upcoming assignments.
- Read lecture slides BEFORE lecture.
- Actively contribute to the learning activities in class.
- Abide by the UT Honor Code.
- Abide by the COSC361 Policy Manual.
- Exercise due diligence when asking questions.
 - Remember, we won't be there when you're doing this for real!

COURSE REQUIREMENTS

Texts/Resources/Materials

Students have been opted-in to an "inclusive access" program using Zybooks. This system is where students' exercises, labs, and homework will be submitted. Additional online resources will be available through a link to external websites.

Computer Requirements

Students must have a laptop or other computer capable of connecting to Canvas. Furthermore, students must load IDLE or another Python package to complete their labs and exercises. Students who encounter issues may contact general [campus computing information](https://newvols.utk.edu/prep/computer-requirements/), (<https://newvols.utk.edu/prep/computer-requirements/>), or [computing support](https://oit.utk.edu/desktops/) (<https://oit.utk.edu/desktops/>).

Course Resources

Students unfamiliar with the online environment may find additional information from the resources below:

1. [Getting Started with Zoom](#)
2. [Online@UT Canvas](#)
3. [UT Library](#)
4. [Information for Distance Education](#)

Technical Support

For technical issues, contact the OIT HelpDesk by phone at (865) 974-9900 or at the [Walk-in HelpDesk](#). For IT and Computing issues, use the online [Contact Form](#).

COURSE COMMUNICATIONS POLICY

Students are required to frequently check Canvas. Students must also make sure that they are receiving announcement notifications so that any pertinent information is received in a timely fashion.

Questions

Students **MUST** use Piazza to submit all online questions. Any question with assignment information must make sure they submit a private question.

Students must come to office hours with questions already in mind. The room will fill up fast, so students must ask their question and leave. If the student has other questions, they may come back, but we must serve a large student body, so please help us keep the questions flowing so that all students can have their questions answered.

Email

For most purposes, do **NOT** email the TAs or professor directly. These emails are likely to be ignored. Instead, students must use the Piazza link provided on Canvas for all communications and questions.

Virtual Office Hours

A link to Zoom will be provided on Canvas for students to attend virtual office hours. Students must frequently check the office hours page before they attend virtual office hours in case anything has changed.

COURSE ATTENDANCE AND PARTICIPATION POLICY

Students must participate fully in all course discussions and clicker question to receive full credit for their daily participation grade. Students are expected to have read all lecture material **BEFORE** coming to class. The lecture improves your understanding of material you have been introduced to and should not introduce new subject material to you.

ASSIGNMENTS, ASSESSMENTS, AND EVALUATIONS

Students will have their assignments graded on Canvas. Students may appeal any grade they receive provided they submit, in writing, their request for a regrade within 7 days of receiving the grade. Students who submit a request outside of 7 days may not appeal their grade, and the grade they receive will stand.

Student Feedback to Inform Course Improvements

Students must complete a weekly survey where they can submit comments and ratings for that week's course content and delivery. Since we are working to improve this course, students are encouraged to be honest and write constructive criticism to help. Please be specific to what we could do better.

Procedures for Turning in Assignments

Students will submit all assignments through Canvas. Students are responsible for ensuring that what they submit is what they wish to be graded. Students are encouraged to download their submission to ensure it is what they expected to submit. Only the latest submission made will count for those assignments that offer multiple submissions or attempts.

Plagiarism

Students are not permitted to work with anyone else for this course. All graded assignments are individual works. Students suspected of plagiarism will be submitted to the Office of Student Conduct for further investigation. Students who are reasonably found to have plagiarized will receive a 0 for the assignment and a 10-point drop in their grade. Multiple occurrences and cheating on an exam will result in an F for the course.

GRADING CRITERIA

Grading Scale

Students will be graded based on the UT standard graduate-level grading system.

Grades

All grades and feedback will be provided on Canvas. Students must check Canvas to see their standing in the class.

Students will have several of their lowest grades dropped. Students must refer to Canvas to see which scores of theirs will be dropped.

Disability Services

Any student who feels s/he may need an accommodation based on the impact of a disability should contact Student Disability Services in Dunford Hall, at 865-974-6087, or by video relay at, 865-622-6566, to coordinate reasonable academic accommodations.

Your Role in Improving Teaching and Learning Through Course Assessment

At UT, it is our collective responsibility to improve the state of teaching and learning. During the semester, you may be requested to assess aspects of this course either during class or at the completion of the class. You are encouraged to respond to these various forms of assessment as a means of continuing to improve the quality of the UT learning experience.

You will be asked to participate in surveys after each exam in this course. This course is still being developed to be fully accessible to all students, so please give your honest and constructive feedback on these surveys.

Key Campus Resources for Students

- [Center for Career Development](#) (Career counseling and resources; HIRE-A-VOL job search system)
- [Course Catalogs](#) (Listing of academic programs, courses, and policies)
- [Hilltopics](#) (Campus and academic policies, procedures and standards of conduct)
- [OIT HelpDesk](#) (865) 974-9900
- [Schedule of Classes/Timetable](#)
- [Student Health Center](#) (visit the site for a list of services)
- [Student Success Center](#) (Academic support resources)
- [Undergraduate Academic Advising](#) (Advising resources, course requirements, and major guides)
- [University Libraries](#) (Access to library resources, databases, course reserves, and services)

COURSE SCHEDULE/OUTLINE/ASSIGNMENTS/UNITS OF INSTRUCTION

Students must check Canvas frequently for a list of topics, policies, procedures, and weekly assignments.

*Please note: The instructor reserves the right to revise, alter or amend this syllabus as necessary. Students will be notified in writing/email of any such changes.