Department of Computer Science and Engineering
Principles of Systems Programming
CSCE 3600.501 - Spring 2025

Class Timings: Tuesday and Thursday, 6:30 PM – 7:50 PM, Frisco Landing, FRLD 470

Instructor: Faridul Islam, Email: faridul.islam@unt.edu
Office Hours: Wednesday 8:00 AM to 10:00 AM and Friday 6:00 PM – 8:00 PM [by appointments].
Office hours will be online with Zoom, https://unt.zoom.us/j/82454588018

TA/IA:
- Joseph Caldwell, Email: JosephCaldwell@my.unt.edu, Help Hours: Wednesday 1:00 PM – 3:00 PM. Zoom, https://unt.zoom.us/j/85159779229

Course Webpage: All the course related material will be posted on the course webpage which is available through Canvas (https://learn.unt.edu).

Textbook: *System Programming with C and Unix, First Edition, by Adam Hoover, Addison-Wesley, 2010. ISBN 978-0-13-606712-2.*

Catalog Description: Introduction to the design and operation of systems software. Analysis is made of current system software technology, including operating systems, language translation systems and file systems.

Prerequisite(s): CSCE 2100.

Course Outcomes:
- Write robust, efficient, readable, and correct system software using the C programming language.
- Demonstrate an understanding of processes and threads by developing applications using multiple processes and multi-threaded activities in a Linux environment.
- Demonstrate an understanding of deadlocks and synchronization through the development of application(s) that utilize a variety of mutual exclusion mechanisms.
- Develop shell scripts and utilities that demonstrate an understanding of memory, file and process management and interaction, including concepts such as virtual memory and disk scheduling.
- Create a Linux-based application that utilizes inter-process communication mechanisms such as pipes and sockets to communicate information between independently running processes on one or multiple platforms.
- Demonstrate an understanding of the use and interaction among compilers, macro processors, assemblers, linkers, and loaders through their use in creating the applications described in previous outcomes.

Grading:

Class Activity	5%
Recitation assignments	15%
Minor Programming assignments	20%
Major Programming assignments	20%
Midterm Exams	20%
Final Exam	20%

Class Activity: There will be several class activities during the class session that will reinforce the concepts that we learned in the class. These class activities will be scheduled during the class timing.

Programming Assignments: The programming assignments are an integral part of the course and are intended to provide experience in the application of the design techniques discussed in lecture. Programming assignments will be assigned on **Tuesdays** as per the schedule and with a due date of **one week** after it is assigned. There will be ten recitation assignments, four minor programming assignments, two major programming assignment assigned. Programming assignments must be done on the CSE servers (cell01 – cell06). Any evidence of group participation (except major programming assignments) or copying from unauthorized sources will be interpreted as academic dishonesty.

> **Recitation Assignments**: Recitation assignments are meant to serve as preparatory assignments for upcoming minor and major assignments that can be completed in a relatively short amount of time. Students may complete these assignments on their own or by attending their scheduled recitation where they may receive guidance from a TA on completing. **No late recitation assignments will be accepted**. Please note that any programming portion of an exam will be given during each recitation section during the week of the scheduled exam, in which case attendance will be required.
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> **Minor Programming Assignments**: Minor programming assignments will be assigned based on the material from the lectures and textbook. These are meant to be individual programming assignments, so you should **work on these alone** unless explicitly directed otherwise by your instructor.
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> **Major Programming Assignments**: Major programming assignments will be **worked on in a group** and are meant to be more comprehensive problem-solving exercises based on the material from the lectures and textbook.

Exams: There will be one or two midterm exams and a final exam. The exams are closed books and closed internet. Mobiles phones are not allowed and browsing the internet is not allowed. Exams will include material from the modules, the readings, homework, and labs and should be taken individually and not as a team.

Note: *Final exam time is based on the university registrar schedule for Spring 2025 Finals. So, no excuse will be accepted for any conflict. If students have any conflict, they need to contact the faculty to resolve their conflicts.*

Missing Classes, Assignments, or Exams: Attendance at all exams, and class activities is mandatory. Throughout the semester, a student may miss classes, assignments, or exams due to many reasons. Most of the reasons will not be accepted as an "excused" absence. Assignments, or exams can be made-up only under extraordinary circumstances and only when notification is given to me before the assessment, quiz,

or exam is administered. A no-show for an assessment or exam without prior notification and a verifiable excuse (proper official documentation) will result in a grade of zero (0) for that assessment, quiz, or exam.

Grade Dispute: It is the student's responsibility to check any given grade and make complaints within at most 7 calendar days after the grades are announced. Grades will be posted on Canvas throughout the semester to provide an ongoing assessment of student progress, but typically about 7-12 calendar days after the assignment was due. **Grading dispute should first go to the original grader (i.e., the TA or IA) who graded your assignment in 7 calendar days after grades posted, but if a resolution cannot be reached between the student and the original grader, the original grader will forward the case to the instructor who will have the final say on the grade.**

Supporting Your Success and Creating an Inclusive Learning Environment

Every student in this class should have the right to learn and engage within an environment of respect and courtesy from others. We will discuss our classroom's habits of engagement and I also encourage you to review UNT's student code of conduct so that we can all start with the same baseline civility understanding (Code of Student Conduct) (https://policy.unt.edu/policy/07-012).

Disability Services/Special Needs:
UNT follows all federal and state laws and regulations regarding discrimination including the Americans with Disability Act of 1990 (ADA). If you have a disability and need a reasonable accommodation for equal access to education or services, please contact the Office of Disability Accommodation. Please initiate this process and inform me during the first two weeks of class.

ADA accommodation statement:
The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website (https://studentaffairs.unt.edu/office-disability-access). You may also contact ODA by phone at (940) 565-4323.

Academic Dishonesty/Plagiarism:
Plagiarism of any kind will automatically result in a grade of F for the course. Academic Integrity Standards in this course are consistent with UNT policy: STUDENT STANDARDS OF ACADEMIC INTEGRITY (18.1.16), or other related/existing polices. The work that you turn in

to be graded, including any underlying ideas, must be your own individual work. Usage of unauthorized material and sources, or depending on any unauthorized assistance, to answer homework problems, tests questions, writing reports, or carrying any type of assignment, etc., without the permission of the instructor, or without complete and accurate and complete attribution/citations of the source, when applicable, is viewed as an academic misconduct. If you have any doubts or if you have specific questions, feel free to ask the instructor.

Other Policies:
Students should refer to any other polices from University, College and/or Department.

Attendance and Participation

Research has shown that students who attend class are more likely to be successful. You should attend every class unless you have a university excused absence such as active military service, a religious holy day, or an official university function as stated in the [Student Attendance and Authorized Absences Policy (PDF) (https://policy.unt.edu/policy/06-039](https://policy.unt.edu/policy/06-039)). If you cannot attend a class due to an emergency, please let me know. Your safety and well-being are important to me.

Communication Expectations:
The best way to reach me outside of class/office hours is via email. During the week I will respond to your email within 24 hours. During the weekend, response time may be longer. This includes personal concerns or questions about the class or an assignment. The TA/IA and I strive to get your grades back between 1-1.5 weeks from the due date, though that is not always possible when the class is large. Communication is expected to be professional and respectful. Online Communication Tips: (https://clear.unt.edu/online-communication-tips) are available When contacting either the instructor or TA/IAs please include "**CSCE 3600.501**" in the subject line.

Announcements:
Stay tuned and make sure to check Canvas frequently. Important announcements will be posted there.

Class Policies: Please note that mobile phones, pagers, and late arrivals are disruptive to the instructor and to your peers. The use of cell phones, beepers, or communication devices is disruptive and is therefore absolutely prohibited during class and exams. Turn off your cell phone while in class and while taking exams. If I catch you using these devices in the class or during the exams, the penalty can range from a formal warning to an 'F' for the course and you will be asked to leave the class. Except in emergencies, students using such devices must leave the classroom for the remainder of the class period. I know that some of you may wish to take notes directly on your computer and I have no problem with that. If, however, you choose to access your email, search the web, play games, or instant messenger your friends during class, you will have 5% deducted from your final grade for each transgression. If I am late arriving to class, it will be because of circumstances beyond my control. You are expected to remain for 15 minutes past the scheduled class start time while I attempt to communicate my situation and relay instructions.

Student Perceptions of Teaching (SPOT): Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The short SPOT survey will be made available **at the end of the semester** to provide you with an opportunity to evaluate how this course is taught.

ABET Survey: Towards the end of the course, the students will be asked to participate ABET exit survey which will help instructors to quantitively measure whether the students met the course outcomes stated in the course syllabus.

Assessing Your Work

Course Policies: You are expected to spend at least 10 hours per week for this course. Keep all your graded assignments, and tests for study and review. You should track your own progress on Canvas and be aware of current grades throughout the term. If you would like to look at the graded assignments, meet me during my office hours or setup an appointment. Final grading will be done as follows. **A**: >= 90%, **B**: >= 80% and < 90%, **C**: >= 70% and < 80%, **D**: >= 60% and < 70% and **F**: < 60%. Grades will be curved if necessary. Grades cannot be changed after they have been electronically entered into the university's system except for instructor error. Any extenuating circumstances that may adversely affect your grade must be brought to my attention before the final course grades are recorded. To be considered, such circumstances must be unusual, unavoidable, and verifiable.

Course Requirements/Schedule

Syllabus Revisions: This syllabus may be changed as the course progresses. Notice of such changes will be by email or announcement in class.

Tentative Course Schedule:

Week	Lecture	Assignments Due
01/13 – 01/17	Introduction	
01/20 – 01/24	Systems Programming Overview	Recitation 1
01/27 – 01/31	Linux Overview	Recitation 2
02/03 – 02/07	Regular Expressions, sed/gawk	Recitation 3
02/10 – 02/14	Bash	Recitation 4, Minor 1
02/17 – 02/21	Processes	Recitation 5, Major 1
02/24 – 02/28	Processes	Recitation 6, Minor 2
03/03 – 03/07	Threads	Midterm Exam 1
03/10 – 03/14	Spring Break – No Classes	
03/17 – 03/21	Threads	Recitation 7, Minor 3
03/24 – 03/28	IPC	Recitation 8, Major 2
03/31 – 04/04	IPC	Recitation 9, Minor 4
04/07 – 04/11	IPC	Midterm Exam 2
04/14 – 04/18	Compliers and Compilation	Recitation 10
04/21 – 04/25	Python	
04/28 – 05/02	Python, Review	
05/05 – 05/09	No Lecture	Final Exam