

Course Syllabus – Fall 2024

Course Information

(course number, course title, term, any specific section title)

Course Prefix, Number, Section: **CS3377.001 & SE3377.001**
CS3377.002 & SE3377.002

Course Title: **Systems Programming in Unix and Other Environments**

Term: **Fall 2024**

Class Time & Meeting Place: CS3377.001 TR 10-11:15am JO 3.601
CS3377.002 TR 2:30-3:45pm ECSS 2.306

Professor Contact Information

(Professor's name, phone number, email, office location, office hours, other information) (state time/day and how office hours will be held, e.g., physical office, BlackBoard Collaborate or MS Teams (add appropriate links) and/or phone call – optional; please ensure student's identity in adherence to FERPA)

Professor Richard Min, Ph.D. MBA, MS/CE, STM, M.Div
Office Phone 972-883-4522
Email Address rkm010300@utdallas.edu
Office Location ECSS 4.609
Office Hours TTh 1:30-2:30pm & TTh 4-5:30pm
(or via email/MsTeams or by appointment)

Course Pre-requisites, Co-requisites, and/or Other Restrictions

(including required prior knowledge or skills)

CE 2336 or CS 2336 or TE 2336 with a grade of C or better or equivalent.**

That is, you should have completed CS1336 & CS1337 (or equivalent courses) covering C/C++ programming (and/or have a proficient programming experience with C/C++). Otherwise, please contact immediately the instructor for your case under consideration and to grant the instructor's approval.
No student without C/C++ programming experience is allowed to enroll cs3377.

Note. CS 2337 uses C++. CS2337 is taken by students who finish AP CS (Java) in High school (or transfer student) and skip CS 1336 & CS 1337... (instead of CS 2336 which uses Java).

I hope the following is bit clear:

CS 1336 (C++) --> CS 1337 (C++) --> CS 2336 (Java) ---->
AP CS (Java) -----> CS 2337 (C++) ---->

Both paths ensure that the students have C/C++ proficiency before they come to CS 3377.

Course Description

CS 3377 - **Systems Programming in UNIX and Other Environments** (3 semester credit hours) Basic UNIX concepts, commands and utilities, organization of UNIX file system including links and access control, creating and managing UNIX processes and threads, implementing algorithms using shell scripts, basic networking concepts including socket and client-server programming, inter-process communication using pipes and signals, using a version control system to manage work, and introduction to cloud computing. Design and implementation of a comprehensive programming project is required.

Student Learning Objectives/Outcomes

1. Ability to use Unix/Linux operating system (command line interface, shell scripting, regular expression)
 2. Ability to use Unix/Linux programming environment and development tools
 3. Ability to program with Unix/Linux processes, threads, and interprocess communication facilities
 4. Ability to program with Unix/Linux file system, file input and output, and redirection
 5. Ability to develop programs for network environment (client-server model, socket programming, and cloud computing)
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Required Textbooks and Materials

1. *A Practical Guide to Linux® Commands, Editors, and Shell Programming*, 3ed.
Mark G. Sobell. Prentice Hall. © 2012. ISBN-10: 0-13-308504-X. ISBN-13: 9780133085044
Note. The 4th edition of this book is also available and acceptable.

Sobell source code: <http://www.sobell.com/CR3/>

<https://learning.oreilly.com/library/view/practical-guide-to/9780134774626/>

(Available online & free via UTD Library => eBook => **O'Reilly**) This book is referred as [**Sobell**].

2. *Advanced Programming in the UNIX® Environment*, 3e. W. Richard Stevens and Stephen A. Rago. Addison-Wesley. © 2013. ISBN-10: 0-321-63773-9. ISBN-13: 9780321637734

APUE source code: <http://www.apuebook.com/code3e.html>

<https://learning.oreilly.com/library/view/advanced-programming-in/9780321638014/>

(Available online & free via UTD Library => eBook => **O'Reilly**) This book is referred as [**APUE**].

Suggested Course Materials

TBA in elearning

Assignments & Academic Calendar

(Topics, Reading Assignments, Due Dates, Exam Dates)

***Note:** The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.

For Required Reading.

APUE - *Advanced Programming in the UNIX® Environment*, 3ed. W. Richard Stevens and Stephen A. Rago.

Sobell – *A Practical Guide to Linux® Commands, Editors, and Shell Programming*, 4ed.

For each test, you should make your seat reservation at UTD Test Center in the beginning of the semester (for the date and time) and get the confirmation for each test. During the week of each test, we do have class/lecture as scheduled.

Dates T&Th	UNIT in Week#	TOPIC/LECTURE	READING*	ASSESSMENT Weekly Activity items (usually with 2 Labs, Reading & 1 Essay for each week - See elearning for detail), Test	DUE DATE Weekly Activity items due by Friday 11:59pm of the week
08/19 M 08/20 T 08/21 W 08/22 Th 08/23 F	1	Course Orientation: Syllabus & Course Introduction. 1. Prerequisite Form by 8/28 F 5pm 2. Test Dates (or to arrange your Makeup test by 8/29 F) 3. Unix/Linux Introduction 4. First log in to cslinux1.utdallas.edu	Sobell Ch1-Ch2	No Week01 Activity To complete (1) Prerequisite form, (2) Makeup Test and/or OSA Arrangement.	8/23 F (or by 8/30 F for those adding later). After 8/30, there will be a penalty per day.
08/26 M 08/27 T 08/28 W 08/29 Th 08/30 F	2	Unix/Linux Introduction & Command • Connect to cs1 from your laptop (with MobaXterm or SSH) • Learn basic Unix/Linux Commands • Simple File editing with vi editor. • Simple C programming with hello.c	Sobell Ch3-Ch4 APUE Ch01	Week02 Activity (to download, install and try mobaXterm or ssh or putty to connect cs1, etc.). See elearning for detail	8/30 F
09/02 M 09/03 T 09/04 W 09/05 Th 09/06 F	3	9/06 Monday is Holiday Unix, Linux Commands (Advanced) File Systems (Sobell Ch4) Shell (Sobell Ch5) Editors (Sobell Ch6) Makefile	Sobell Ch5-Ch6 APUE Ch02	Week03 Activity	9/06 F
09/09 M 09/10 T 09/11 W 09/12 Th 09/13 F	4	Bourne Again Shell – bash (Sobell Ch8, Ch10) Shell Script Programming with bash	Sobell Ch8 & Ch10	Week04 Activity	9/13 F
09/16 M 09/17 T 09/18 W 09/19 Th 09/20 F	5	MySQL (Sobell Ch13) sqlite3 prog with C	Sobell Ch13 APUE Ch03	Week05 Activity	9/20 F
09/23 M 09/24 T 09/25 W 09/26 Th 09/27 F	6	Python prog (Sobell Ch12) Python Tools Unix/Linux System Prog & API APUE Ch01	Sobell Ch12 APUE Ch04	Week06 Activity Test1 Test Center	9/27 F Test1 to be taken from 09/23M 9am to 09/24 T 4pm

09/30 M 10/01 T 10/02 W 10/03 Th 10/04 F	7	Unix File Systems and IO, and API (APUE Ch03-Ch04)	APUE Ch07-Ch08	Week07 Activity	10/04 F
10/07 M 10/08 T 10/09 W 10/10 Th 10/11 F	8	Unix/Linux Process (APUE Ch07-Ch08)	APUE Ch09-Ch10	Week08 Activity	10/11 F Midterm grade by 10/12
10/14 M 10/15 T 10/16 W 10/17 Th 10/18 F	9	Shell and Signal (APUE Ch09-Ch10)	APUE Ch11	Week09 Activity	10/18 F
10/21 M 10/22 T 10/23 W 10/24 Th 10/25 F	10	Thread Programming (APUE Ch11)	APUE Ch14	Week10 Activity	10/25 F
10/28 M 10/29 T 10/30 W 10/31 Th 11/01 F	11	Interprocess Communication (APUE Ch11.6 & Ch15)	APUE Ch15	Week11 Activity Test2 Test Center	11/01 F Test2 to be taken from 10/28 M 9am to 10/29 T 4pm
11/04 M 11/05 T 11/06 W 11/07 Th 11/08 F	12	Socket Programming (APUE Ch16)	APUE Ch16	Week12 Activity	11/08 F
11/11 M 11/12 T 11/13 W 11/14 Th 11/15 F	13	Socket Programming Client-Server Concurrent Server	APUE Ch16	Week13 Activity	11/15 F
11/18 M 11/19 T 11/20 W 11/21 Th 11/22 F	14	Advanced Topics VCS (Git, Github, etc) Cloud Computing Oracle VirtualBox	Reading materials in Week14 Activity folder in elearning	Week15 Activity	11/22 F
11/25 M 11/26 T 11/27 W 11/28 Th 11/29 F	15	Fall Break & Thanksgiving Holidays		No Activity	
12/02 M 12/03 T 12/04 W 12/05 Th 12/06 F	16	Advanced Topics Review for Test2 (Last Day of Class - 12/05 Th)		Week16 Activity All My Essays Test3 Test Center	12/06 F Test3 to be taken from 12/02 M 9am to 12/03 T 4pm
12/09 to 12/13		Final Exam Week Final Grade due by 12/18 W			

For Required Reading.

APUE - *Advanced Programming in the UNIX® Environment*, 3ed. W. Richard Stevens and Stephen A. Rago.
Sobell – *A Practical Guide to Linux® Commands, Editors, and Shell Programming*, 4ed.

Grading Policy

(including percentages for assignments, grade scale, etc.)

97-100	A+	94-96	A	90-93	A-
87-89	B+	84-86	B	80-83	B-
77-79	C+	74-76	C	70-73	C-
67-69	D+	64-66	D	60-63	D-
Below 60	F				

Note 1. Each range shown above is inclusive and without any rounding-off. For example, 94-97 for grade A is for the score falling in the range between 94.000 and 96.999. The grade of 93.999 is for A-.

Note 2. In elearning, "Running" total in your gradebook shows the current weighted grade based on your graded work only based on what you have submitted and graded. For example, if you have done only Test1, Assignment1, Weekly postings so far (but you have missed Test2 and missed Assignment2 totally), current total grade will be based on only those entries that you have submitted and done.

80% for 3 Tests. 20% for Test1, 30% for Test2, 30% for Test3. Each test will be taken via elearning. Each test will be closed-book online test via elearning (to be taken at UTD Test Center) for 1-hour or 2-hour examination. Time and detail of Test will be announced later in elearning. Each student should make a seat reservation prior to each test (as soon as possible, or three days before the scheduled test date). All exams are closed book and closed notes. Exams will focus more on concepts and less on details. Additional study-material or documentation will be provided to avoid the need for memorization as much as possible. We will likely take all the tests in the testing center as scheduled. You can expect to see a few coding/analysis questions, a few short answer questions and a few multiple-choice questions in each test. Instructor is responsible for grading all the tests. During the week of each test, we will have class/lecture as scheduled.

Any make-up tests will be arranged and scheduled during the same week (usually Tuesdays prior to the actual test date) at the discretion of the instructor. There should be a valid reason for scheduling make-up tests & they need to be coordinated with the instructor, at least one to two weeks prior to the test date except for serious medical condition (with Doctor's or Hospital's certificate will be required as a valid proof. Without it, there will be 15% penalty for any makeup test after the scheduled test date). It is unlikely that curving will be used to boost the final grades. If the instructor decides to do it, only the test scores will be boosted, but the tests' contribution will be clipped at 60%. In other words, curving will NOT make up for the points lost in all other assignments. So, it is extremely important to complete them in timely manner.

20% for Weekly Activity items (Assignment or Project). Each weekly activity may include weekly reading, short coding-lab, quiz (to help your test), essay (summary of reading), and/or any bonus activity of the week. Each weekly activity item is available by Monday 8am and is due by Friday 5pm of the week. No late submission is accepted.

You are expected to start working on them as soon as they are posted or by the scheduled due date/time. Do not expect us to rescue you on the day of submission. You can upload each item many times but the last submission will be graded. No Late submission is accepted. My advice is to submit whatever you have done (your best effort) before the due and/or by the due date, and to seek for any further discretion and/or consideration if you may need. All these weekly activity items should be done in Unix, Linux or Mac, and you will hand-in your projects directly in Linux.

Submit each activity item through elearning (each item in the week's activity folder). More details on Weekly Activity, Requirement, and Submission steps will be given with eLearning. For some activity item (e.g., lab), TA may schedule a demo session and you are required to schedule your demo with TA (for 5-10 minutes) and do your demo to TA in a week after the due date. If you have any conflict for the demo schedule, you may do the demo to the instructor (and/or you record your demo in a video format using your webcam using MS Teams, elearning Collaborate, WebEx, or video recording of your demo (to be uploaded to learning and to notify TA).

Note. If you need a quick response for an urgent issue or concern, you may send an email to instructor or TA directly via email (instead of posting here) to get a quicker response and/or immediate attention.

An instructor who believes a student has committed an act of **plagiarism** should take appropriate action, which includes the issuing of a “penalty grade” (that is, F for the course) for academic dishonesty. For any "minor" plagiarism charge, the maximum letter grade for the course would be B+ or lower.

Course & Instructor Policies

(make-up exams, extra credit, late work, special assignments, class attendance, classroom citizenship, etc.)

Instructor is responsible for grading all the tests. TA will be responsible for grading all weekly activity items (any assignment or project). So, contact the TA directly for any grading related discrepancies (and cc to the instructor). It is not possible to give a detailed feedback for each weekly activity item or test question due to large number of students enrolled in our classes. If you need more details/clarification, you are encouraged to meet the TA/instructor via online during office hours & get personal attention. Do not rely on email alone to get the full response. If you are stuck with your assignment, it is better to turn in what you have and send us email. We will revise your submission and give some guidance. Your next submission will override the previous submission - TA will always grade the latest submission for each project. You can use email to get help for weekly assignments. Include the detailed problem description & applicable error messages, zip all your source files and include it with your email too. Do not just say "my program does not

work" and expect us to figure out everything - you need to help us to help you efficiently. We expect to complete grading assignments (projects), weekly activities or quizzes, and tests in a week or so. However, when the schedule gets too busy, it can be as long as 2 weeks before the grades are assigned. It is the students' responsibility to review the grade details when they become available and follow up for clarifications if needed.

Make-up exams

Any make-up tests will be scheduled during the same week (usually one or two days prior to the actual test date) at the discretion of the instructor. There should be a valid reason for scheduling make-up tests and they need to be coordinated with the instructor, 1-2 weeks prior to the test date except for serious medical condition (with Doctor's or Hospital's certificate will be required as a valid proof). Without any valid reason, there will be 15% penalty for any makeup test scheduled after the scheduled test date.

Extra Credit

Please check for any extra or bonus credit work posted in elearning.

Late Work

No late submission of any work is accepted unless stated otherwise.

Special Assignments

Not Applicable or check with Instructor.

Classroom Citizenship

Please review the UTD policy and guideline on Student behavior and conduct, academic honesty and integrity in <https://www.utdallas.edu/conduct/integrity/> and UTD BAIT team in <https://www.utd.edu/conduct/bait/>

Also note that all the course materials are only for your individual and personal use and for this course. Do not share or redistribute any of the course materials in any form or means with other. Do not make any of the course materials available via Internet or web site (e.g., git or github, tutorial or quizlet site).

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Classroom Conduct Requirements Related to Public Health Measures

UT Dallas will follow the public health and safety guidelines put forth by the Centers for Disease Control and Prevention (CDC), the Texas Department of State Health Services (DSHS), and local public health agencies that are in effect at that time during the Fall 2021 semester to the extent allowed by state governance. Texas Governor Greg Abbott's Executive Order [GA-38](#) prohibits us from mandating vaccines and face coverings for UT Dallas employees, students, and members of the public on campus. However, we strongly encourage all Comets to get vaccinated and wear face coverings as recommended by the CDC. Check the [Comets United: Latest Updates webpage](#) for the latest guidance on the University's public health measures. Comets are expected to carry out [Student Safety](#) protocols in adherence to the Comet Commitment. Unvaccinated Comets will be expected to complete the [Required Daily Health Screening](#). Those students who do not comply will be referred to the Office of Community Standards and Conduct for disciplinary action under the [Student Code of Conduct – UTSP5003](#).

Class Attendance

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. In some courses, instructors may have special attendance requirements; these should be made known to students during the first week of classes. Faculty have the discretion to set an attendance policy for their in-person meetings, but the absences due to COVID-19 cannot be counted against a quarantined student.

Class Participation

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course.

Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

NOTE: if the instructor records any part of the course, then the instructor will need to add the following syllabus statement:

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Off-campus Instruction and Course Activities

(Below is a description of any travel and/or risk-related activity associated with this course.)

Not Applicable

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

Academic Support Resources

The information contained in the following link lists the University’s academic support resources for all students.

Please see <http://go.utdallas.edu/academic-support-resources>.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus. Please review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

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