

Online/Blended Course Syllabus

Course Information

<i>Course Number/Section</i>	CS 3377.0W1, SE 3377.0W1
<i>Course Title</i>	C/C++ Programming in a UNIX Environment
<i>Term</i>	Summer 2018

Professor Contact Information

<i>Professor</i>	Richard Min, Ph.D. MBA, MS in CE, STM, M.Div.
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<i>Other Phone</i>	
<i>Email Address</i>	rkm010300@utdallas.edu
<i>Office Location</i>	ECSS 4.609
<i>Online Office Hours</i>	Tentatively MW 3-5pm (or via email, or by appointment)
<i>Other Information</i>	

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

Prerequisite: (CE 2336 or CS 2336 or TE 2336) with a grade of C or better or equivalent. (Same as SE 3377) (3-0) S

Note. You should have completed cs1336 and cs1337 for C/C++ or equivalent courses.

Course Description

CS 3377 C/C++ Programming in a UNIX Environment (3 semester hours) Advanced programming techniques utilizing procedural and object oriented programming in a UNIX environment. Topics include file input and output, implementation of strings, stacks, queues, lists, and trees, and dynamic memory allocation/management. Design and implementation of a comprehensive programming project is required.

Student Learning Objectives/Outcomes

1. Ability to use the UNIX operating system interactively as a user (commands)
2. Ability to express algorithmic solutions using shell scripting (utilities)
3. Ability to understand and use regular expressions
4. Ability to use the UNIX programming environment (editor, compiler and linker)
5. Ability to understand UNIX processes (creation and control)
6. Ability to perform input/output of binary files
7. Ability to use interprocess communication (pipes, sockets and signals)
8. Ability to understand the UNIX file system
9. Ability to understand and use version control system

Required Textbooks and Materials

Required Texts

1. *A Practical Guide to Linux® Commands, Editors, and Shell Programming*, Third Edition. Mark G. Sobell. Prentice Hall. © 2012. ISBN-10: 0-13-308504-X. ISBN-13: 9780133085044
Sobell example & source code: <http://www.sobell.com/CR3/>
(Available online & free via UTD Library => eBook => Safari) 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>
(Available online & free via UTD Library => eBook => Safari) This book is referred as [**APUE**].

3. *Unix® and Linux® System Administration Handbook*, 5ed. by Evi Nemeth; Garth Snyder; Trent R. Hein; Ben Whaley. © 2017 Prentice Hall. ISBN: 9780134278308.
(Available online & free via UTD Library => eBook => Safari). This book is referred as [**Handbook**].
4. *Computer Systems: A Programmer's Perspective, Third Edition*. Randal E. Bryant and David R. O'Hallaron. © 2016 Pearson. This book is referred as [**CSAPP**]

Required Materials and/or Recommended Books

1. *The Linux Programming Interface*. Michael Kerrisk. © 2010 No Starch Press. ISBN 978-1-59327-220-3
(Available online & free via UTD Library => eBook => Safari). This book is referred as [**LPI**].
2. *Introducing Python*. Bill Lubanovic. © 2014 O'Reilly Media, Inc. ISBN-13: 978-1-4493-5936-2
(Available online & free via UTD Library => eBook => Safari). This book is referred as [**Python**].
3. *The Sockets Networking API: UNIX® Network Programming*. Vol 1, 3ed. W. Richard Stevens, Bill Fenner, Andrew M. Rudoff. © 2003 Addison-Wesley Professional. ISBN-10: 0-13-141155-1. ISBN-13: 978-0-13-141155-5. Source code: <http://www.unpbook.com/>
(Available online & free via UTD Library => eBook => Safari) This book is referred as [**Network**].
4. *Unix Systems Programming: Communication, Concurrency, and Threads*. Kay A. Robbins; Steven Robbins. © 2003 Prentice Hall. ISBN-10: 0-13-042411-0. ISBN-13: 978-0-13-042411-2
(Available online & free via UTD Library => eBook => Safari) This book is referred as [**USP**].
5. Gaddis, *Starting Out with C++ From Control Structures through Objects (with Access)* 8th edition.
ISBN-10: 0133796337 • ISBN-13: 9780133796339. (7th edition is OK, 0132576252)
(This is the textbook for your cs1336 and cs1337 courses. We will review ch12-19 mostly with ppts).
6. *C++ How to Program*, 10/e. by Paul Deitel and Harvey Deitel. © 2016 Pearson. ISBN-13: 978-0-13-444823-7. ISBN-10: 0-13-444823-5
(Available online & free via UTD Library => eBook => Safari). This book is referred as [**Deitel**].
7. *C++ Programming Language*. 4/e. Stroustrup ©2014 Addison-Wesley ISBN-10: 0321958322.
ISBN-13: 9780321992789
(Available online & free via UTD Library => eBook => Safari)
8. *A Tour of C++*. Bjarne Stroustrup. © 2013 Addison-Wesley Professional. ISBN-13: 978032195831.
(Available online & free via UTD Library => eBook => Safari)
9. *C for Programmers with an Introduction to C11*. Harvey Deitel and Paul Deitel. © 2013 Prentice Hall
ISBN-10: 0-13-346206-4. ISBN-13: 978-0-13-346206-7
(Available online & free via UTD Library => eBook => Safari)
10. *21st Century C, 2ed*. Ben Klemens. © 2014 O'Reilly Media, Inc. ISBN-13: 978-1-4919-0389-6
(Available online & free via UTD Library => eBook => Safari)
11. *Intermediate C Programming*. Yung-Hsiang Lu. © 2015 CRC Press. ISBN 978-1-4987-1163-0.
(Available online & free via UTD Library => eBook => Safari)
12. *Using SQLite*. Jay A. Kreibich. © 2010 O'Reilly Media, Inc. ISBN-13: 978-0-596-52118-9
(Available online & free via UTD Library => eBook => Safari)

Online Resource and Web Sites

Sobell source code: <http://www.sobell.com/CR3/>
APUE source code: <http://www.apuebook.com/code3e.html>
Computer Systems: <http://www.cs.cmu.edu/afs/cs/academic/class/15213-f15/www/schedule.html>
Unix Network Programming - source code: <http://www.unpbook.com/>
Unix Systems Programming - <http://usp.cs.utsa.edu/usp/>

C++ language tutorial <http://www.cplusplus.com/files/tutorial.pdf>
C++ tutorial <http://www.learncpp.com/>
C++ reference: <http://cppreference.com>

MobaXterm: <http://mobaxterm.mobatek.net/>
Putty <http://www.putty.org/>
Filezilla <https://filezilla-project.org/>

Unix/Linux commands: <https://kb.iu.edu/d/afsk>
Linux Shell and Commands: <http://vic.gedris.org/Manual-ShellIntro/1.2/ShellIntro.pdf>
POSIX Thread Programming Tutorial. <https://computing.llnl.gov/tutorials/pthreads/>
Thread Programming <http://www.yolinux.com/TUTORIALS/LinuxTutorialPosixThreads.html>
Python.org <https://www.python.org/>
Sqlite3 <https://www.sqlite.org/>

Suggested Course Materials

Suggested Readings/Texts

Suggested Materials

Textbooks and some other bookstore materials can be ordered online through Off-Campus Books <http://www.offcampusbooks.com> or the UT Dallas Bookstore <http://www.bkstr.com/texasatdallasstore/home>. They are also available in stock at both bookstores.

Technical Requirements

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements <http://www.utdallas.edu/elearning/students/getting-started.html#techreqs> on the Getting Started with eLearning webpage <http://www.utdallas.edu/elearning/students/getting-started.html>.

Course Access and Navigation

The course can be accessed using the UT Dallas NetID account at: <https://elearning.utdallas.edu>. Please see the course access and navigation <http://www.utdallas.edu/elearning/students/getting-started.html#courseaccessandnav> section of the site for more information.

To become familiar with the eLearning tool, please see the Student eLearning Tutorials <http://www.utdallas.edu/elearning/students/eLearningTutorialsStudents.html>.

UT Dallas provides eLearning technical support 24 hours a day/7 days a week. The eLearning Support Center <http://www.utdallas.edu/elearninghelp> services include a toll free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat

service.

Communication

This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the eLearning Tutorials webpage <http://www.utdallas.edu/elearning/students/eLearningTutorialsStudents.html> for video demonstrations on eLearning tools.

Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Distance Learning Student Resources

Online students have access to resources including the McDermott Library, Academic Advising, The Office of Student AccessAbility, and many others. Please see the eLearning Current Students page <http://www.utdallas.edu/elearning/students/cstudents.htm> for details.

Server Unavailability or Other Technical Difficulties

The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online eLearning Help Desk <http://www.utdallas.edu/elearninghelp>. The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

Assignments & Academic Calendar*

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

Dates	TOPIC/LECTURE	READING*	ASSESSMENT Weekly Activity items (Activity, Quiz, Essay, and 2 Posts - See elearning for detail), Assignment, Test	DUE DATE
0	Orientation & Prerequisite Form		Week00 Activity (to sign and upload the completed prerequisite form PDF to elearning)	Activity Due
Week01 5/21-5/25	Syllabus & Course Introduction Unix/Linux Introduction & Commands <ul style="list-style-type: none"> • Connect to cs1 from your laptop (with MobaXterm or SSH) • Unix, Linux Commands (Basic) • Simple C programming (Hello World) • Simple file-editing with vi 	Read Sobell Ch1-3 Read APUE01	Week01 Activity (to download, install and try mobaXterm or ssh or putty to connect cs1, etc.) See Week01 Activity folder in elearning for detail	Activity Due 5/26 Sat
Week02 5/28-6/01	5/28 M Holiday Unix, Linux Commands (Advanced) File Systems (Sobell Ch4) Shell (Sobell Ch5) Editors (Sobell Ch6) Makefile	Read Sobell Ch4-6 Read APUE02	Week02 Activity	Activity Due 6/02 Sat
Week03 6/04-6/08	Bourne & Bourne Again Shell – bash (Sobell 8, 10) Shell Script Programming with bash	Read Sobell Ch8, 10 Read APUE03	Week03 Activity	Activity Due 6/09
Week04 6/11-6/15	MySQL (Sobell Ch13) sqlite3 prog Python (OpenCV) Unix/Linux System Prog & API	Read Sobell Ch13 Read Sobell Ch12 Read APUE04	Week04 Activity Assignment1 due 6/11 M Noon	Activity Due 6/16 Sat A1 6/11
Week05 6/18-6/22	Unix File Systems and IO, and API 6/23 Midterm Grade	Read APUE 05-06	Week05 Activity Test1 6/20 Wednesday 4-8pm	Activity Due 6/23 Sat T1 6/20
Week06 6/25-6/29	Process & Signal (Basic)	Read APUE 07-08	Week06 Activity	Activity Due 6/30 Sat
Week07 7/02-7/06	Process & Signal (Advanced) 7/04 W Holiday	Read APUE09-10	Week07 Activity	Activity Due 7/07 Sat

Week08 7/09-7/13	Thread Prog Interprocess Communication (IPC)	Read APUE 11-12 Review APUE 11.6	Week08 Activity Assignment2 7/09 M Noon	Activity Due 7/14 Sat A2 7/09
Week09 7/16-7/20	Interprocess Communication (IPC Adv) Socket Programming	Read APUE 15 Read APUE 16	Week09 Activity	Activity Due 7/21 Sat
Week10 7/23-7/27	Advanced Topics 4/26 Thursday Last Day of Class		Week10 Activity Test2 7/25 Wednesday	Activity Due 7/28 Sat T2 7/25 W
Week11 7/30-8/01	Advanced Topics Last Day of Class: 8/01 W Final Exam Week (8/02 Th - 8/03 F)		Week11 Activity Assignment3 7/30 M Noon (No late submission accepted) Demo on 7/30 M class-time	Activity Due 8/01 Wed A3 7/30
	Grade Due 8/08		Student course evaluation	

Required Reading.

APUE - *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
(Available online & free via UTD Library => eBook => Safari)

Sobell – *A Practical Guide to Linux® Commands, Editors, and Shell Programming*, Third Edition.
Mark G. Sobell. Prentice Hall. © 2012. ISBN-10: 0-13-308504-X. ISBN-13: 9780133085044
(Available online & free via UTD Library => eBook => Safari)

Proctored Final Exam Procedures

If your course has a proctored exam requirement, please see the UTD Student Success Center – Testing Center website <http://www.utdallas.edu/studentsuccess/testing-center/> to make arrangements.

Note: All tests are scheduled and held at Test Center (Student Success Center). See the detail below to make your seat reservation and/or to arrange any makeup test, etc.

Grading Policy

Letter grades will be assigned as follows:

97-100	A+	93-96.999	A	90-92.999	A-
87-89.999	B+	83-86.999	B	80-82.999	B-
77-79.999	C+	73-76.999	C	70-72.999	C-
67-69.999	D+	63-66.999	D	60-62.999	D-
Below 60	F				

Note: Each range shown above is inclusive and without any rounding-off. For example, 93-97 for grade A is for the score falling in the range between 93.000 and 97.999. The grade of 92.999 is for A-.

Note: 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.

50% for 2 Tests for Summer. 25% for each test. Each test will be taken **at Test Center** (Student Assessment Center, SPN2) for 2-hour or 3-hour examination. Time of Test will be announced later in elearning (tentatively Wednesday as scheduled). Each student should make a seat reservation prior to each test (as soon as possible). All exams are closed book and closed notes. Exams will focus more on concepts and less on details. Necessary 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.

Any make-up tests will be arranged and scheduled during the same week (usually a few days prior to the scheduled 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, 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 it, there will be 20% penalty for any make-up 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.

30% for 3 Assignments (for summer) contributing 10% each, Submission to elearning - **due Monday Noon 12pm. Demo is to be completed to TA in the same week of the due date.** (If TA office hours for demo is not an option for you, you should arrange an alternative time of demo with TA or the instructor, before the assignment due. In some exceptional situation or case, with a discretion, TA may provide you an alternative for the demo.) You can ask for clarifications and help in the weekly forum. If you need help with your code, it is ok to post 1 or 2 lines of code, but do not post your full program - email it to TA or professor instead. You are expected to start working on them as soon as they are posted. Do not expect us to rescue you on the day of submission. I encourage everyone to submit the projects 1 or 2 days early. You can upload it again but the last submission will be graded. [Do not wait until the last minute to submit it. I do understand things happen and occasionally as you may not be able to submit projects on time.]

The Late Penalty policy is to assess 2% penalty for every 1 hours. For example, if you submit the projects exactly 2 day later, 48% penalty will be assessed. Late projects will be accepted up to 2 days and thereafter 0. You won't be able to submit it after 2 days and your project grade will be set to 0. **My advice is to submit whatever you have done (your best effort) before/by the due, to seek for any further discretion and/or consideration.** All these assignments/projects should be done in Unix, Linux or Mac, and you will hand-in your projects directly in Linux. We will NOT use elearning to submit the projects, but your grades and TA's comments will be recorded there - you can click on My Grades to access them. More details on Assignment & Submission steps will be given with eLearning. For each assignment, TA may schedule a demo and you are required to schedule your demo with TA (for 5-10 minutes) and do your demo to TA. 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 or cam-code, and upload it to box.utdallas.edu, and its link to be sent to TA).

Warning. To get A- or above (in letter grade), student should complete and submit all of the assignments and get over 50% for each assignment. To get B- or above, student should complete and submit at least 60% of the assignments (3 out of 5 Assignments), and get over 30% or more for each assignment.

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.

20% for various Weekly Activity (Activity, Quiz, Essay, Posts [via Discussion Board]) will be posted in elearning by Monday of each week, and each item is due Saturday midnight (11:59pm) every week. The weekly activity may include: (1) Weekly Quiz (online quiz via elearning, open-book and online, anytime & anywhere during the week), (2) Weekly Activity (for example, to write a simple C program to print "Hello World", etc.), (3) Weekly Essay (reading and writing an essay in reflection with minimum 300 words), (4) Weekly Posting (to post your two posts in discussion board via elearning, to summarize or share your learning experience for the week), (5) your class participation and contribution via various Weekly Activity items (listed here), and (6) [this item is only for in-class course and not applicable to online-course] Surprise Quiz (closed-book, in-class or at Test Center, a surprise quiz to be expected for each class, on the topics studied). These items can also be a quiz (online and open-book) or some other meaningful activity as well. It will vary every week. Each weekly activity and its score may vary case by case.

Late submissions are NOT accepted for weekly activities and quizzes. Note: Weekly quiz will provide a good snapshot, an excellent opportunity to review, and for a preparation for each test. Late submissions are NOT accepted for weekly activity or quiz.

Weekly Postings [Discussion Board]. 2 meaningful and relevant posts are required every week in weekly discussion forums. This is extremely crucial component of a true online course. No non-sense and no trivial comment. One-liners saying "Thanks!" ("Weather is bad" or "I got it" or "I do not know" or "very good" etc.) will not be counted as a valid posting or participation. Keep your posting very relevant and valuable to you and your classmates, and to the course work and activity of the week. Your post can be a good question, meaningful response to another student's question, interesting observation, etc. For a question, you should do your own homework for your question and share your findings. If you use an external source (web page, link, Youtube video, etc.), you should provide a reference or a link of the source with a good overview or summary in your own wording and reflection. Do not post any offending or destructive content. Do not post any overwhelming contents (e.g., to copy and paste big image or images, or very long text content, or using "big" fonts) but you should attach a file as you need. In simple words, each post should value to the course. Instructor (TA or Grader) will grade the weekly forum and determine the value of each post - instructor's decision is final. First post should be submitted latest by Wednesday midnight and 2nd post should be completed latest by Saturday midnight, otherwise respective posts won't receive any grade. It is possible for someone to be a silent observer in on-ground course and still manage to get the final grade of A. It is impossible to do it in online course. Reasonable progress towards the expected answer or learning will get 1 point & perfect or near-perfect submissions will get 2 points. Late submissions are NOT accepted for weekly posts. After the due, the weekly post will not be available.

Course Policies

Instructor is responsible for grading all the tests & weekly participation. TA will be responsible for grading projects and weekly assignments. So, contact the TA directly for any grading related discrepancies for programs. It is not possible to give a detailed feedback for each project/weekly assignment/test question due to large # of students in our classes. If you need more details/clarification, you are encouraged to meet the TA/instructor 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.

Attendance. For in-class course (and especially for online course: it will be tracked and assessed via your weekly activity, quiz, essay, and weekly postings, counted as your weekly class-participation via elearning). Attendance Rule & Policy: Please note that if you miss any lectures beyond the 1st week, then automatic actions kick in: (1) Missing the next lecture in the 2nd week will result in an automatic drop of one grade from your final course grade. (2) Missing the entire 2nd week of lecture(s) is an automatic F in the course. So if you are going to miss more than one week of classes (ideally, you should not miss any lecture, but sometimes people switch courses during the first week), then you should not be in the course and you should drop out. Further you should plan to be here for Final Examination Week, as it will be scheduled for this course.

Course Policies

Make-up exams

Any make-up tests will be 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, 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 20% penalty for any makeup test after the scheduled test date.

Extra Credit

Late Work

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

Special Assignments

Class Participation

For all in-class courses, the attendance is required for each class, tests and demo.
For online-course, each weekly activity will be counted as your attendance.

Classroom Citizenship

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.”

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

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