Online/Blended Course Syllabus

Course Information

Course Prefix, Number, Section	CS 3376.0W2, SE 3376.0W2
Course Title	**CS/SE 3376.0W2 – C/C++ Programming in a UNIX Environment**
Term	Spring 2017

Professor Contact Information

Professor	Richard Min
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Online Office Hours	TTh 1-4pm, MW7-9pm
Other Information	

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

Prerequisite: ECS 2336 or equivalent. (3-0) S
[Computer Science I and II (CS 1337 and CS 2336 or equivalent courses) and Basic Object Oriented Programming Skills with C++]

Course Description

CS 3376 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. *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)

2. *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)

Required Materials

1. 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).

2. Unix® and Linux® System Administration Handbook, Fourth Edition, Video Enhanced Edition. by Evi Nemeth; Garth Snyder; Trent R. Hein; Ben Whaley. © 2010 Prentice Hall. ISBN-10: 0-13-148005-7. ISBN-13: 978-0-13-148005-6
   (Available online & free via UTD Library => eBook => Safari)

3. 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)

4. C for Programmers with an Introduction to C11. by 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)

5. 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)

6. Intermediate C Programming. Yung-Hsiang Lu. © 2015 CRC Press. ISBN 978-1-4987-1163-0.
   (Available online & free via UTD Library => eBook => Safari)

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. 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)

9. Unix and Linux: Visual Quickstart Guide, Fifth Edition. by Eric J. Ray; Deborah S. Ray © 2014 Peachpit Press. ISBN-10: 0-321-99754-9. ISBN-13: 978-0-321-99754-8
   (Available online & free via UTD Library => eBook => Safari)

Online Resource and Web Sites

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/
Unix/Linux commands: https://kb.iu.edu/d/afsk
Linux Shell and Commands: http://vic.gedris.org/Manual-ShellIntro/1.2/ShellIntro.pdf

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

UNIT/ DATES	TOPIC/LECTURE	READING*	ASSESSMENT / ACTIVITY	DUE DATE
0	Orientation & Prerequisite Form		Week00 Activity (to sign and upload the completed prerequisite form PDF to elearning)	1/22
1 1/09-1/14	Scroll down to see the syllabus! UNIX, Linux and C overview Lecture (see it in 720p setting - low quality video - first 2 minutes - not sure why) intro-to-linux.pdf inode_structure.pdf Linux directory structure	Read Sobell 1-3 (Unix/Linux Intro & Commands)	Week01 Activity (to download, install and try putty, etc.) See Week01 Activity folder for detail	1/22
2 1/16-1/21	Working with Shell - Lecture - Part1 Part2 redirections.ppt Working with Shell ... ln_cp(1).ppt Lecture Part1 Part2 Command line operators Web resources: google VI commands emacs commands	Read Sobell 4-6 (Commands & vi)	Week02 Activity	1/22
3 1/23-1/28	Linux Commands & pipes (continued): Lecture: Part1 Part2 intro-to-linux_final.pdf Log processing using pipes: Video Linux commands: grep, chmod and xargs Back-quote operator `...`: back_quote.swf C/C++ fundamentals: Lecture: Part1 Part2	Read Sobell 8,10 (Shell, Bash, Bash)	Week03 Activity	1/28
4 1/30-2/04	C/C++ fundamentals ... basicsCC++(1).pdf C programs: Part1 Part2 Namespaces: pages 120-122 of C++ tutorial Strings: lecture, Chapter10.pdf Working with Files, Linux Environment iostreams.pdf Lecture: Part1 Part2 Perl programming	Read Sobell 11 (Perl)	Week04 Activity	2/04
5 2/06-2/11	C/C++ Classes and Objects, Arrays Lecture (ComplexType class): Part1 Part2 Lecture (friends, Product, Course): Part1 Part2 classes_arrays(2).pdf	Read APUE 01-02	Week05 Activity	2/11

	Introduction to Unix/Linux (APUE) C/C++ Programming in Unix/Linux (with Sqlite3)			
6 2/13-2/18	C/C++ Classes and Objects, Arrays ... course_class.pdf Pointers.pdf Lectures: Part1 Part2 Part3 Unix File IO and File System	Read APUE 03-04	Week06 Activity	2/18
7 2/20-2/25	More Classes & OOP: more_classes.pdf Lecture Inheritance & Virtual methods Lecture inheritance.pdf Standard IO Library & System Files	Read APUE 05-06	Week07 Activity	2/25
8 2/27-3/04	Exceptions & Templates Lecture Exceptions_Templates.pdf Lecture #2 Video: gdb intro: intro_gdb.swf Unix Process	Read APUE 07-08 (Process)	Week08 Activity	3/04
9 3/06-3/11	Advanced File and I/O operations & Recursion serialization.pdf Lecture Inheritance 2nd half:Lecture inheritance_final.pdf Process Control	Read APUE 09-10 (Process & Signal)	Week09 Activity	3/11
10 3/13-3/18	Spring Break			
11 3/20-3/25	POSIX Threads, Semaphores processes-threads4.pdf Lecture processes-threads(1).pdf Lecture Processes and Signals lecture processes-threads.pdf	Read APUE 11-12 (Thread)	Week10 Activity	3/25
12 3/27-4/01	pipes.pdf lecture pipe_code.txt pipe example: lecture pipes_diagrams.pdf Interprocess Communication	Read APUE15 (IPC)	Week11 Activity	4/01
13 4/03-4/08	Development Tools - Makefiles, Debugging make-debug.pdf lecture Network & Socket Programming	Read APUE 16 (Socket & Network)	Week12 Activity	4/08

14 4/10- 4/15	Review: Pointer, Structure, IO (Gaddis ch09, ch11, ch12) Advanced Topic	Read APUE 13-14 (Daemon & Adv IO)	Week13 Activity	4/15
15 4/17- 4/22	Pointers & dynamic memory allocation Lecture: Part1 Part2 PDF Programs: Part1 Part2 pointer_diagrams.pdf Dynamic List: lecture Advanced Topic & Review	Sobell12 & Adv Topics (Python)	Week15 Activity	4/22
16 4/24- 4/29	Linked lists, Stacks & Queues, Binary Trees Linked Lists Stacks Queues.pdf Lecture Store variations: Lecture **Advanced Topic & Review**	Adv Topics	Week16 Activity	4/29

For 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)

Gaddis – Gaddis, Starting Out with C++ From Control Structures through Objects (with Access) 8ed. ISBN-10: 0133796337 • ISBN-13: 9780133796339. (7th edition is OK, 0132576252)
(This is the textbook for your cs1336 and cs1337. This book is for review as we go through quickly as needed, and especially for those who did lack C/C++ programming. We will review Chapters 09-16 mostly with ppts and weekly quizzes as needed.)

Proctored Final Exam Procedures

If your course has a proctored exam requirement, please see the Student Success Center Proctored Exam website http://www.utdallas.edu/studentsuccess/testingcenter/proctored_exams/index.html to make arrangements.

[Note: There are three scheduled tests at Student Success Center. See the detail below.]

Grading Policy

Letter grades will be assigned as follows:

97-100	A+	93-96	A	90-92	A-
87-89	B+	83-86	B	80-82	B-
77-79	C+	73-76	C	70-72	C-
67-69	D+	63-66	D	60-62	D-
Below 60	F				

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.

60% for 3 Tests. 20% for each test (for 2-hours allowed). Tentatively scheduled: Friday 3pm–9pm on (1) 2/17, (2) 3/24, (3) 4/21. Each test will be taken at Testing Center (Student Assessment Center, McDermott Library 1st floor) for 2-hour examination. Time of Test will be announced later in elearning. 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 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.) 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 4 Assignments (projects) contributing 5% each, Due Monday 12pm Noon: (1) 2/06, (2) 3/06, (3) 4/03, (4) 4/24. 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 1% penalty for every 1 hours. For example, if you submit the projects exactly 1 day later, 24% penalty will be assessed. Late projects will be accepted up to 3 days and thereafter 0. You won't be able to submit it after 3 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 the assignments and get over 60% for each assignment. To get B- or above, student should complete and submit at least 75% of the assignments, and get over 40% or more for each assignment.

20% for Weekly Activity & Quiz (including online quiz) is available and posted by Monday & will be due by Saturday midnight (11:59pm) each week. It will be a small programming exercise or tryout (e.g., to write and run a simple "Hello world" program, to try Linux commands or sample programs provided, to install a tool to try it) in most weeks. It 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. 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, you should provide a reference or a link of the source, and provide a good overview or summary in your wording. 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 elearning weekly activity & participation via elearning for online course), 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.

Makeup Policy

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.)

Extra Credit

Late Work

1% per hour penalty for Assignment. All other works should be done by the due and no late work is accepted.
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.