
Course Syllabus

Course Information

<i>Course Number</i>	CS 3377
<i>Course Title</i>	C/C++ Programming in a UNIX Environment
<i>Term</i>	Spring 2018

Days & Times

Section 002	Tuesday & Thursday:	10:00am-11:15am	ECSS 2.306
Section 501	Tuesday & Thursday:	7:00pm-8:15pm	GR 3.302
Section 502	Tuesday & Thursday:	5:30pm-6:45pm	JSOM 1.217

Contact Information

<i>Instructor</i>	Dr. Stephen Perkins
<i>Office Location</i>	ECSS 4.702
<i>Office Phone</i>	(972) 883-3891
<i>Email Address</i>	stephen.perkins@utdallas.edu

<i>Office Hours</i>	TBD and by appointment
---------------------	---------------------------

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

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

Course Description

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

Student Learning Objectives/Outcomes

After successful completion of this course, the student should have an:

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

Required Textbooks and Materials (All available free through UTD eBooks Collection)

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

A Tour of C++, 1/e. Stroustrup. ©2014 Addison-Wesley Professional. ISBN-10: 0321958314. ISBN-13: 9780321958310

Linux Essentials, Roderick W. Smith, Sybex, ISBN: 978-1-118-10679-2, Web ISBN: 1-118-10679-2

Suggested Course Materials

Unix tutorials from Dr. Jey Jeyakesavan Veerasamy and Youtube

Unix commands tutorials - <https://www.youtube.com/watch?v=BZldUzGQvFE>

File Systems and commands - <https://www.youtube.com/watch?v=M0TaNXRWfdo>

Unix tools by Jeffrey Korn - <http://www.cs.nyu.edu/courses/fall06/G22.2245-001/>

APUE 3e by Stevens & Rago (source code in threads, IPC)

<http://www.apuebook.com/>

POSIX Thread Programming / Tutorial

<https://computing.llnl.gov/tutorials/pthreads/>

<http://www.csc.villanova.edu/~mdamian/threads/posixsem.html>

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

C++ tutorial <http://www.learncpp.com/>

C++ reference: <http://cppreference.com>

Assignments & Academic Calendar

Class	Date	Class Activity	Assignment
1	Tuesday, Jan 09	Review of Syllabus	confirm access to eLearning confirm access to VPN confirm SSH access to Unix Confirm eBook access Linux Essentials: Read Intro, chap 1-2
2	Thursday, Jan 11	Unix history and philosophy The Shell and common commands Man page and command options File systems, and permissions	in AP for Unix e3: Read 1.1 – 1.4 Run Fig 1.3 in a shell
3	Tuesday, Jan 16	File systems, and permissions	
4	Thursday, Jan 18	Review Program 1 Editors Environment variables, scripts, stdin/stdout/stderr, I/O redirection, compiling and running programs, screen -L and logging	Program 1 Start in AP for Unix e3: Read 4.1, 4.3, 4.5
5	Tuesday, Jan 23	C++ File I/O, Parsing command line args, calling the shell Census Day is tomorrow, Jan 24th Last day to drop without a "W"	In AP for Unix e3: Read Chap 7.4
6	Thursday, Jan 25	C++ dynamic data structures (STL) C++ Pointer review	Program 1 Due Program 2 Start
7	Tuesday, Jan 30	Make	
8	Thursday, Feb 1	Exam 1 Review	Program 2 Due
9	Tuesday, Feb 6	Exam 1 Shell, Editors, File systems, file I/O, redirection, compiling, shell interaction with C++.	UTD Testing Center Not in the Classroom
10	Thursday, Feb 8	Text Processing (gawk / sed)	Program 3 Start
11	Tuesday, Feb 13	SCM, Autoconf	
12	Thursday, Feb 15	Autoconf, Lexical Analysis (flex/bison)	

13	Tuesday, Feb 20	Lexical Analysis (flex/bison)	Program 3 Due Program 4 Start
14	Thursday, Feb 22	Lexical Analysis (flex/bison)	
15	Tuesday, Feb 27	Libraries	
16	Thursday, Mar 1	Memory Mapped Files Midterm Grades Viewable by Mar 5th	
17	Tuesday, Mar 6	Exam 2 Review	Program 4 Due
18	Thursday, Mar 8	Exam 2 Cumulative, SCM, Flex/Bison, Autoconf	UTD Testing Center Not in the Classroom
	March 12 -18	Spring break - no classes	
19	Tuesday, Mar 20	Pipes, Process Control, signals, fork, dup	
20	Thursday, Mar 22	Process Control, signals, fork, dup	Program 5 Start
21	Tuesday, Mar 27	IPC with Pipes	
22	Thursday, Mar 29	Singletons	
23	Tuesday, Apr 3	Boost Libraries	
24	Thursday, Apr 5	Thread Programming	Program 5 Due
25	Tuesday, Apr 10	Thread Programming	Program 6 Start
26	Thursday, Apr 12	Synchronization	
27	Tuesday, Apr 17	Synchronization	
28	Thursday, Apr 19	Synchronization	
29	Tuesday, Apr 24	Exam 3 Review Cumulative, libraries, memory mapping, process control, fork, dup, Thread Programming, IPC	Program 6 Due
30	Thursday, Apr 26	Exam 3 Cumulative, libraries, memory mapping, process control, fork, dup, Thread Programming, IPC Last day of the class Final Grades viewable by May 8th	UTD Testing Center Not in the Classroom

Grading Policy

Projects and exams determine grades. The final grade will be composed as follows:

Attendance	5%
Programs	35%
Exams	60%

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.

All tests are closed book and closed notes. Laptop and electronic devices are NOT allowed.

There will be regularly assigned reading and homework problems. The homework problems will require the student to spend time programming a computer. Programming assignments should be turned in by means of eLearning. Assignment files contain:

- A text copy of all source code
- A text copy of any required supporting documentation or files
- Specific details of deliverables are provided in each assignment write-up

All homework assignments will be graded by the TA. The instructor is responsible for grading the exams. **Therefore, if you have any question at all concerning the homework assignments, please speak with the TA about it first.** Even if you were to approach the instructor first, you would both still have to go back to the TA. It will save time to start with the TA first.

If you are dissatisfied with the result of your meetings with a TA, then please see the instructor about that issue. Together, you all can work to get it straightened out. You have every right to pursue any issue that concerns your grade in the course.

Course & Instructor Policies

Class Attendance

There is a strong and direct correlation between class attendance and class performance. Students who regularly attend class tend to make significantly higher final grades than those who do not. The department attendance policy states:

- ***Three consecutive absences lead to a one letter grade drop***
- ***Four consecutive absences lead to an F***

An attendance sheet will be sent around the room each class. You will be considered absent if you have not signed the attendance sheet by ten minutes after the scheduled start time of the class. Instructors are required to report those students who miss too many classes.

Extra Credit

Course credit is only given for work assigned and scheduled in the course syllabus. No extra work will be assigned nor will extra credit be given for any extra work performed by a student.

Late Work

Late assignments will not be accepted. Assignments are due at 11:30 P.M. on the day listed in the syllabus.

Make-up exams

Make-up examinations will be administered **only for well-documented emergencies**. A student must make every attempt possible, via telephone and email, to notify the instructor that he/she will miss a scheduled quiz or exam. This must be done prior to the scheduled date and time if possible. See the **UT Dallas Syllabus Policies and Procedures** section below for the policy regarding religious holy days.

Grade Disputes

All grade disputes must be discussed & resolved by the student with the instructor within one week of posting.

Classroom Citizenship

Students are expected to be respectful to each other and to the course instructor. Disruptive behavior in the class room is not tolerated.

Each student in the class is encouraged to join/form a study group. Members of each study group should support one another in learning and understanding the course material.

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

Last Updated: November 28th, 2017

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. It is included here by reference.

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 Instructor.