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Contents

Course Purpose ..... 2

Course Description (from the 2022-2023 catalog)..... 2

Course Goals ..... 2

Prerequisites ..... 2

Major Topics ..... 2

Learning Outcomes ..... 3

Major Assignments ..... 3

Graded Assignments (estimated) ..... 4

Lab Write Ups ..... 4

Quizzes ..... 4

Late Work ..... 4

Required – First Assignment ..... 4

Grading Scale..... 5

Attendance Policy..... 5

Mask Policy ..... 7

Academic Integrity Policy ..... 7

Required Text ..... 7

Course Topics (Tentative) ..... 7

Fall 2022 Schedule ..... 8

## Course Purpose

To teach the usage of UNIX and UNIX-like command environments, including basic UNIX command-line commands and utilities; and a UNIX-based scripting language.

## Course Description (from the 2022-2023 catalog)

Introduces UNIX and UNIX-like command environments, including basic UNIX command-line commands and utilities; a representative UNIX interface; and a UNIX-based scripting language.

## Course Goals

At the end of the semester the student will be able to:

- Define the UNIX command environment, including how UNIX compares to Windows and DOS command environments.
- Apply the basic UNIX command set, including telnet; login; passwd; man; pwd; cd; ls; cat; more; cp; mv; rm; mkdir; rmdir; and logout.
- Apply the fundamentals of UNIX file system operation: e.g., UNIX's single-rooted directory tree; the UNIX system of owner/group/world file permissions; hard and symbolic links; mount points; and standard file management commands.
- Apply the principles of UNIX pathname resolution, including unqualified command and file name resolution, and the resolution of file names with special prefixes (., .., ~).
- Apply how to use commonly used UNIX text editors: e.g., nano, vi.
- Demonstrate, through the use of simple examples, the concept of progressive output transformation through the use of pipes and filters: e.g., cut, paste, grep, sort, uniq, wc, tr, and awk.
- Describe UNIX multiprocessing commands: e.g., &, ps, jobs, ^Z, fg, bg, kill
- Apply the bash shell, including built-in and user-defined environment variables; variable expansion; selection (if); looping (for, while); and status checking.
- Understand the use of regular expressions as a tool for pattern-matching, including their use in the UNIX environment;
- Understand the use of a recursive directory traversal utility for scanning the Unix file system (e.g., find);
- Apply the use of a scripting language, and its application to UNIX system administration (e.g. bash)

## Prerequisites

CSCI 1260

## Major Topics

- Basic UNIX command environment and command set

- Users view of UNIX file system
- UNIX name resolution
- Creating and Editing files under UNIX
- Pipes and filters
- Multiprocessing
- Unix shell(s) and scripting
- Regular expressions
- Recursive directory traversal
- Introduction to UNIX system administration

## Learning Outcomes

Demonstrate a working knowledge of the following UNIX competencies, as demonstrated through labs, homework, and exams (Student Outcomes 5c, 5b, IT-2)

- Commands
- Mechanisms for pathname resolution (commands and filenames)
- File system operation
- Common filters
- Multiprocessing commands
- Shell scripting
- Regular expressions
- Strategies for managing Unix security
- System administration tools, including tools for recursive directory traversal
- Demonstrate the ability to write moderately complex shell scripts, as demonstrated through labs, homework, and exams (Student Outcomes 4b, 5c).

## Major Assignments

This class's objectives will be met through the following types of assignments:

- assigned readings from the text and supporting online resources
- written homework assignments
- labs
- quizzes or discussion questions
- exams to assess understanding of the material

In the instructor's experience, the most effective way to master the Unix/Linux environment is practice. Thus, there will be numerous in-and-out-of-class opportunities provided to get that experience. Activities such as 'walk-throughs,' where a series of commands is provided to illustrate a given desired outcome and 'problem-solving,' where a problem will be presented, and the student required to generate his or her own solution using known tools will be provided.

## Graded Assignments (estimated)

Quizzes	~10	10 pts each	~100
Exams	2	100 pts each	200
Labs/Homework	10	Variable/assignment	~250
In-class	~5	20 points each	~100
Projects	2	50 points each	100
Total Points			> 750

## Lab Write Ups

Most of the lab assignments will involve two parts. First, walk-throughs of the current commands/tools for a given week to illustrate how each works. Second, a series of “Research Questions” or “Exercises” for the student to apply those tools to a variety of common Unix/Linux-related tasks. Each lab will include a required write up to be turned in to D2L for a grade. Lab write ups are generally due by the end of class (I’ll provide specific dates via D2L).

## Quizzes

Quizzes will be administered via D2L and will be completed outside of class. They will consist of questions from the assigned readings, labs, and lectures. Quizzes cannot be made up.

## Late Work

You will be provided ample time to complete assignments. I will be working through many of them with you.

Late submissions for labs and homework assignments will not be accepted. Quizzes will be presented via D2L and must be completed within the allotted timeframe.

Face it, folks: In the workplace, failure to meet deadlines is rarely, if ever, acceptable. My class is no different.

In general, missed tests may not be made up. However, in the event of a documented emergency, notify me when possible and arrangements will be made to accommodate your situation.

## Required – First Assignment

You will be required to have a laptop capable of running VMware Player (or Fusion on a MAC) or have an external hard drive with 100 gigabytes of free space that can be used on the lab machines. This software must be installed, or you must have an external hard drive before the first lab. VMware Player can be acquired at

<https://www.vmware.com/go/getplayer-win>

**Before the start of the first lab class**, you must have downloaded the [Ubuntu ISO](#) (image) file from <https://ubuntu.com/download/desktop>. (This is Ubuntu 22.04). If using your laptop, you must have [VMware Workstation Player](#) installed on it. If you have a Mac, instead, you may opt to install [Virtual Box](#) (VMware Workstation won't work on a Mac. I'm told the VMware Fusion will, but I have no experience with that application)

If you're using the lab machines, you must have an external hard drive with the Ubuntu .iso (disk image) file saved to it. (You can use a USB flash drive (with a minimum of 32GB), but it will operate a lot slower if you do).

You will be awarded a quiz grade for completing this activity.

## Grading Scale

Percentage	Letter Undergraduate
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
60-69	D
0-59	F

## Attendance Policy

Class attendance is required. If you miss a lecture, it is your responsibility to get a copy of the notes (assignments, announcements, etc.) from your classmates/the class website.

Make-up exams will be given for tests only in case of a documented legitimate excuse (illness, athletic event (for student athletes), etc.) You should contact me as soon as you know you will miss the test. Make-up for the final will be given in exceptional circumstances. Academic honesty standards will be enforced. No collaboration on in-class tests is allowed.

As described in Section 5.4 of the *East Tennessee State University Faculty Handbook*, June 1, 2001, you are expected to attend class regularly.

Unless otherwise specified, each week's lab assignment will be due by the end of the scheduled lab period.

Because of the strong correlation between attendance and success in this course, *the following attendance policy will be applied*: Absences beyond 3 may directly affect your final grade as follows:

<u>ABSENCES</u>	<u>PENALTY</u>
1-3	None
4	-1 letter grade
5+	-1 letter grade per absence applied to final grade average

		ABSENCES										
		4	5	6	7	8	9	10	11	12	13	
FINAL AVERAGE	A	A-	B+	B	B-	C+	C	C-	D+	D	F	
	A-	B+	B	B-	C+	C	C-	D+	D	F		
	B+	B	B-	C+	C	C-	D+	D	F			
	B	B-	C+	C	C-	D+	D	F				
	B-	C+	C	C-	D+	D	F					
	C+	C	C-	D+	D	F						
	C	C-	D+	D	F							
	C-	D+	D	F								
	D	F										
	F	F										
		ADJUSTED GRADE										

This action will be applied at the instructor's discretion. You must attend at least two-thirds of a day's scheduled class time to be considered present. Repeated lateness (be advised: repeated tardiness is one thing that really annoys me) or early departures may be counted as an absence at my discretion and following a warning. I may or may not call roll (I usually do) and will apply the above policy at my discretion.

*If you are going to miss class for any reason other than a bona-fide emergency or university sanctioned event, DO NOT send me an email!*

Having said all that, we must remain cognizant of the reality that is COVID. If you have tested positive for COVID-19 or been exposed to a positive case, please read our guidance for [when to quarantine and when to return to work or class](#). With the enclosed environment of a classroom or a lab, the risk of spreading the virus is very real. It is better to be safe than sorry. If you are feeling under the weather, then you should make the decision, whether to attend or not, that is best for you.

## Mask Policy

In accordance with CDC guidelines, the wearing of masks is not “strongly suggested” at this time.

The Department of Computing has provided masks and sanitizer in all classrooms for our use.

Feel free to mask up if you feel more comfortable.

## Academic Integrity Policy

All activity associated with this course will be in line with the University’s applicable policies. If you are caught plagiarizing, you will be given a zero for the assignment, your final grade will be reduced by 1 letter grade (B+ to a C+, etc.), and an official report will be entered into your permanent record.

## Required Text

- *The Linux Command Line, 2<sup>nd</sup> Edition* by William Shotts
- *How Linux Works, 2<sup>nd</sup> Edition* by Brian Ward
- *Unix in a Nutshell, Fourth Edition* (Paperback) by Arnold Robbins

All three are available free of (additional) charge via Safari Books online, which you can access through the Sherrod Library. Navigate to the [Sherrod Library](#) website. Click ‘Research,’ then ‘Books and eBooks.’ Scroll down to ‘Safari Books Online.’ It’ll take a minute for the login to Safari, but then you can enter the book title(s) in the search bar. Safari will maintain a list of books you’ve been reading, so on future visits, you need only to click the ‘See All’ link on the right (under Your History).

## Course Topics (Tentative)

Lecture 1	– Introduction to Unix
Lecture 2	– Unix/Linux v. Windows
Lecture 3	– Directories
Lecture 4	– Working with files
Lecture 5	– Common commands
Lecture 6	– Searching the file system
Lecture 7	– File editors
Lecture 8	– Awk scripting
Lecture 9	– BASH variables
Lecture 10	– BASH scripting
Lecture 11	– Job Control
Lecture 12	– System Administration
Lecture 13	– TBA

## Fall 2022 Schedule

	M	T	W	R	F
9:30					
9:45					
10:00					
10:15		CSCI 1720-001		CSCI 1720-001	
10:30		MC 120		MC 120	
10:45		9:30-11:30		9:30-11:30	
11:00					
11:15					
11:30					
11:45					
12:00					
12:15		CSCI 2200-001		CSCI 2200-001	
12:30		MC 220		MC 220	
12:45		11:45-1:45		11:45-1:45	
13:00					
13:15	OFFICE		OFFICE		
13:30	NICKS 484		NICKS 484		
13:45	12:00-2:30		12:00-2:30		
14:00					
14:15					
14:30					
14:45		OFFICE			
15:00		NICKS 484			
15:15		2:30-3:30			
15:30					
15:45	CSCI 4417 /		CSCI 4417 /		
16:00	5417 - 001		5417 - 001		
16:15	MC 115 (M)		MC 115 (M)		
16:30	MC 120 (W)		MC 120 (W)		
16:45	3:15-5:15		3:15-5:15		
17:00					
17:15					