

CMSC 340: Systems Administration (3 credits) Spring 2013

Course Web Site: <http://marmorstein.org/~robert/Spring2013/cs340.html>

Instructor: Robert Marmorstein, 395-2185, marmorsteinrm@longwood.edu

Lecture: 11:00am-11:50am MWF, Ruffner 356

Office Hours: 1:00pm-2:00pm MWF and 3:00pm-4:00pm TR, Ruffner 329

I am also available by appointment.

Course Description:

A hands-on approach to use of the Linux-based operating systems. This is a project oriented class. Topics include shell programming, managing system resources and understanding user/administrator interactions.

Prerequisite:

CMSC 301 or permission of instructor

Course Objectives:

The student will:

- * Learn how to installing, configure, and maintain a Linux system
- * Discover advanced features of the Vim text editor
- * Develop proficiency in the use of system tools and utilities for software development and system maintenance
- * Write small scripts and utilities using BASH

Textbook:

The textbook for this course is "Unix Shell Programming" by Lowell Jay Arthur and Ted Burns, Fourth Edition, ISBN: 978-0471168942. However, we will also be using several free on-line resources and the UNIX Programmer's Manual (accessed via the "man" command). Be sure to check the course web site for links to other materials.

Course Requirements:

Your grade in this course will be determined by completion of laboratory projects, homework assignments, quizzes, and the final exam. The projects will count for 50% of your grade. The homework assignments and quizzes will count for an additional 40% of your grade. The remaining 10% of your grade will be determined by your score on the final exam.

Grading Policy:

Late work will not be accepted unless you have a medical condition or family emergency which prevents you from completing the assignment on time. However, I allot three slip days at the beginning of the semester which you may use to extend the due date of one or more homework or lab assignments.

In the event of a medical or family emergency, you do not need a doctor's note, but you must contact me by e-mail as soon as possible to arrange an extension. In such cases, I may, at my option, extend the due date on the project or grant you additional slip days.

Grading Scale:

Letter grades will be assigned using the following scale. Note that there is no grade of D- in this class.

A: 91-99	A-: 90	
B+: 89	B: 81-88	B-: 80
C+: 79	C: 71-78	C-: 70
D+: 69	D: 64-68	F: Below 64

Attendance:

I expect you to attend class unless you are sick or engaged in a school sponsored sports event or extra-curricular activity. I will rely on your honor to enforce the attendance policy. In accordance with Longwood policy, missing more than 10% of scheduled class time to unexcused absences may result in loss of one letter grade. Missing more than 25% of class (whether excused or unexcused absences) may, at my discretion, result in a failing grade.

Food and Drink:

I prefer that you do not eat in class (it distracts me and the other students). You may bring water or other non-alcoholic beverages to class. I occasionally make exceptions to this rule for students who would otherwise miss a meal or who have medical needs. If you feel that you need such an exception, you **MUST** make arrangements with me before you bring food to class. Violations of this policy will be considered an unexcused absence.

Cell Phones and Laptops:

Cell phones and laptops must be turned off and put away during lecture, unless I have specifically requested, usually by e-mail, that you bring them to class (e.g. for a lab day). Violations of this policy will be considered an unexcused absence.

Honor Code:

I take the honor code seriously in my classes. Students suspected of an honor code violation will be taken before the honor board. A student convicted of an honor offense will receive an F in the course in addition to any penalties imposed by the honor council.

All work in this class should be considered pledged, whether or not you have written the pledge on it. Tests and quizzes must be completed entirely on your own and will be taken closed-book and closed-notes. You *may* discuss homework problems and laboratory projects with other students subject to the following restrictions:

1. You must acknowledge any help you receive, including any discussion of the homework problems, by leaving a short note at the top of the assignment, or in the case of a project, placing appropriate comments in the code.
2. Your submitted work must consist entirely of *your own answers in your own words* which you have typed or written yourself. You may discuss assignments verbally with other students, but do not share code or answers electronically.
3. Do not simply copy answers from other students. You can discuss the general approach to an assignment and you can help other students find syntax errors in their code, but any block of code longer than three lines should be entirely your own work.

4. Use the Internet only as a general reference. There are web sites which contain solutions to the problems in our book. DO NOT USE THEM. However, if you find a web page which outlines the general algorithm or proof you need, you may use it as long as you cite it appropriately (make sure to give at least the complete URL) and don't simply copy and paste code off the web site. The three-line rule is a good guideline here, too.

Tentative Course Schedule:

Week 1: January 14-18

Introduction, Git and Source Control
Read Ch. 1

January 21
January 22

Martin Luther King Day (NO CLASS)
Last day of Add/Drop (by 5pm)

Week 2: January 23-25

Vim: Modes, Movement and Selection, Searching
Buffers and Swapfiles, Copy/Paste
Read "A byte of vim" (see course web site)

Week 3: January 28-February 1

Advanced Vim: Undo/Redo, Folds, Windows and Tabs,
Scripting
Finish "A byte of vim"

Week 4: February 4-8

Makefiles, Linux Installation, Partitioning, Filesystems

Week 5: February 11-13

User Management, Passwords,
Compiling the Linux Kernel

February 18

Pass/Fail Deadline

Week 6: February 18-20

Software Installation, Unix Basics, Command Syntax,
Filenames
Read Ch. 2

Week 7: February 25-27

Regular Expressions, Filters, Redirection, and Pipes
grep, sed, and awk
Read Ch. 3

March 4-8
March 13

SPRING BREAK : NO CLASS
Deadline to Withdraw (by 5pm)

Week 8: March 11-13

Files and Directories, Permissions, Selection, Text
Transformation, Printing, Shell Built-in Commands
Read Ch. 4

Week 9: March 18-20

Shell Variables, Quoting, Comparisons, Expressions,
Loops, and Control Structures
Read Ch. 5

Week 10: March 25-27

Command History, Job Control, Shell Programs,
Shell Input, Data Selection, Reporting, Arithmetic

Read Ch.6 and 7

Week 11: April 1-3

Shell functions and CGI scripts
Cron jobs and System Update

Read Ch. 8 and 9

Week 12: April 8-10

Networking and File Sharing,
Coding Tools: indent, lint, gdb

Week 13: April 15-17

Debugging with Valgrind

Week 14: April 22-24

Catchup and Review

April 30

Final Exam (8:00am - 10:30am) Tuesday