

CMSC 242: Introduction to Network and Systems Programming

15th of January, 2020

Lecture: MWF 2:00-2:50pm, Ruffner 356
Website: <http://cs.longwood.edu/courses/cmssc242/s20/>

Professor: Julian Dymacek
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Office hours:
MTF: 11:00–12:00pm
W: 1:00–2:00pm
by appointment or if the door is open

Course Description

A programming-intensive class covering the fundamentals of operating systems and networking. Emphasizes the use of programming using an Application Programming Interface (API). Topics covered include threading and parallelism, low-level file system access and memory management, communication using signals, socket programming, and the TCP/IP network stack. 3 credits.

Prerequisites

CMSC 162.

Course Objectives

The student will:

1. use the Linux command line and system tools to effectively develop software;
2. create programs which use system calls and library functions to enhance functionality;
3. implement algorithms using parallel and multi-threaded programming;
4. write client and server applications that communicate using TCP/IP sockets

Textbook and Resources

1. Computer Systems: A programmer's perspective, Randal E. Bryant and David R. O'Hallaron, Third Edition, Pearson, 2014, ISBN: 978-0134092669.

Course Structure and Student Expectations

You should expect to spend on average about 9 hours of your time every week on this course, including class and lab time as well as reading, practice, homework, and projects.

Course Requirements

Tentative Course Schedule

Week	Date	
1	Jan. 14-17	Introduction, C Programming
2	Jan. 21-24	C Programming, Man Pages, Libraries
3	Jan. 27-31	Makefiles, Linking
4	Feb. 3-7	Processes and Jobs, Interrupts and Exceptions, System Calls
5	Feb. 10-14	Fork and Exec, Wait and Exit, Signals and Non-local jumps
6	Feb. 17-21	Direct File I/O, Directories
7	Feb. 24-28	Catch up & Exam
8	Mar. 2-6	<i>Spring Break</i>
9	Mar. 9-13	Threads
10	Mar. 16-20	Shared Variables, Semaphores and Concurrency
11	Mar. 23-27	High-level Networking
12	Mar. 30- Apr. 3	Networks and Sockets
13	Apr. 6-10	Parallel and Distributed computing
14	Apr. 13-17	Additional topics
15	Apr. 20-24	Additional topics
15	Apr. 27-28	Review
	May 7	Final Exam: Thursday 8:00-10:30am

Important university dates

Jan. 22	Last day of Add/Drop (5pm)
Feb. 21	Last day for Pass/Fail (5pm)
Mar. 31	Deadline to withdraw with "W"
Apr. 29	Last day of classes

Grading Scale

		A	100-91	A-	90
B+	89	B	88-81	B-	80
C+	79	C	78-71	C-	70
D+	69	D	68-61	D-	60
			59 and lower is an F		

Graded work

This course is programming intensive, you should budget your time to include reading, assignments, class, and homework. If you are stuck on something talk to me sooner rather than later. The entire course is cumulative so you cannot afford to get behind.

Homework & Quizzes: You are expected to be an active participant in the class. You should be present and engaged. Pop quizzes will be given in class and cannot be made up.

Homework will cover problems related to the in class material, no late work will be accepted.

Projects: There will be five projects assigned in the class. Projects will be larger assignments and require outside research. Some projects may be completed in groups. Project grades will be based on both individual and group performance.

Exams: There will be both a midterm exam and a final exam. The final exam will, by the nature of the course, be cumulative. Exams are to be your work alone and not discussed with anyone.

Breakdown

Projects:	60%
Midterm Exam:	15%
Final Exam:	15%
Homework & Quizzes:	10%

Policies

For a list of campus wide policies please see:

<http://www.longwood.edu/academicaffairs/syllabus-statements/>

Honor Code

We will follow the Longwood Honor Code in this class. When completing work please do not lie, cheat, or steal.

1. Do not lie and claim someone else's ideas as your own: you must give proper attribution
2. Do not cheat and copy work from another student or the Internet
3. Do not steal someone else's work and submit it: your files are to be written by you
4. YOU are responsible for securing YOUR code/work: do not let someone else have access to your work/files

If you are unsure if your action will violate the honor policy: DON'T DO IT. Feel free to talk with me if you have questions.

Infractions of these policies will be dealt with harshly under the Longwood Honor Code with cases turned in to the Honor Board. Any student convicted of an honor offense involving this class will automatically receive a lowered *final course grade*, potentially severe as an **F**. You should consider all work in this class to be pledged work, whether or not the pledge appears on the assignment.

Support

Programming (and mathematical proof) is a different way of thinking about problem solving. A solution is not necessarily easy or obvious. I strongly encourage you to follow along with the class in readings and activities. When you have questions, ask. In addition to my regular office hours, you can always email to schedule a time to meet. If my office door is open feel free to stop by, if my door is closed I'm not available.

Attendance and late work

You are expected to attend and participate in class. Attendance will be recorded in every class. In accordance with campus policy, missing more than 10% of scheduled class time to unexcused absences may, at my discretion, result in the loss of one letter grade. Missing 25% of class or more, whether excused or not, may result in an automatic failing grade.

Late work will not be accepted outside of exceptional circumstances such as serious medical or family emergencies. Most extensions will require a note from a Longwood administrator.

Laptops and other electronic devices are not to be used during class, except with permission. No food in class.

Inclement weather policy

I don't plan to cancel class for weather unless the entire college shuts down. If extenuating circumstances cause me to cancel class, you will be notified by e-mail.