Syllabus
COMP 235
Introduction to Systems Programming
Remote Learning Edition

Fall 2020

1 Remote Learning Expectations

Due to the ongoing COVID-19 pandemic, this course will be delivered remotely. The plan is to retain most of the regular meetings and opporotunities for help and direct instrution but to carry out these activities via online tools. Here's what that means, what you can expect, and what will be expected of you for this mode of delivery.

- Remote contant information for the instructor and Zoom meeting links will be posted to the course Moodle.

- Assignments will be posted and submitted via Moodle or a similar online platform.

- Class and Lab sessions will meet at the usual time but will be carried out via Zoom. *Attendance expectations for these sessions are the same as if the class were meeting in person.*

- Prior to class meetings, students will be given reading assignments and possibly pre-recorded videos to watch. A short reading quiz and homework problems will often accompany the assignment as well. These assignments are expected to be done prior to class and will be the way you can expect to encounter and explore new ideas in the course. Class meetings and lab sessions will be used to clarify these ideas and test our shared understanding of these ideas through additional problems. Class is being organized this way in part to make it easier for individuals or the class as a whole to transition to a more asynchronous setting should the need arrise.

- Expect most class sessions to be recorded for the benefit of students that are unable to attend class due to an excused absense or illness. If you do not wish to be recorded, please contant the instructor ASAP to work something out.

- You are not required to use video and audio during the class meetings, but it is, however, encouraged. The chat channel will be monitored and used during class in order to facilitate those without audio. If you choose to use audio, please try to keep microphones muted unless you are speaking. If you choose to use video, please ensure your space and background do not contain inapropriate nor offensive material. (Just assume one of my kids is going to see it.)

- Office hours will be carried out via Zoom. Whenever possible, give the instructor a heads up if you need or want to meet. If you log into the Zoom meeting and the session isn't running or nobody is there, then email or txt and the instructor will hop right on.

If you have any concerns about getting access to the technology you need to keep up with remote meetings or generally have questions about class exceptions for this semseter, then please do not hesitate to ask. The goal here is flexiblity and we try to make things work for whatever you situation happens to be.

2 Logistics

- **Where:** Center for Science and Business (CSB), Room 309[1]

- **When:** MWF 1–1:50pm

- **Instructor:** Logan Mayfield

    - *Office:* Center for Science and Business (CSB), Room 344
    - *Phone:* 309-457-2200
    - *Website:* http://jlmayfield.github.io/
    - *Email:* lmayfield *at* monmouthcollege *dot* edu
    - *Office Hours:* By appointment.

- **Credits:** 1 course credit

Note: This Syllabus is subject to change based on specific class needs. Significant deviations from the syllabus will be discussed in class.

3 Description, Content, and Learning Goals

An introduction to low-level programming and computer hardware organization from a software perspective, emphasizing how application programmers can use knowledge of the entire system to write better programs. Introduces C and assembly language. Core topics include data representation, machine language, the memory hierarchy, and virtual memory. Further potential topics include processor architecture, code optimization, and concurrency.

The goal of this course is to produce programmers who understand how the correctness and performance of their applications are impacted by the compilation system, operating system, and hardware. After dedicating some time to learning C, the course aims to cover the majority of chapters 1-9 of the text.

• Basics of C	• Memory Hierarchy
• Tour of Systems	• Linking
• Data Representations	• Exceptional Control Flow (as time allows)
• Machine Language	• Virtual Memory
• Code Optimization	• Processor Architecture (as time allows)
• x86 Assembly Language	• Dynamic Memory

3.1 Textbook

Bryant, Randal E. and O'Hallaron, Davir R. *Computer Systems: A Programmer's Perspective.* 3rd Edition. Pearson. 2016. ISBN-13: 978-0134092669.

3.2 Programming Environment

This course involves programming in both C and assembly language. All necessary tools will be available on the department server. All software for this course is available free of charge and can be found on the web if students wish to install it on their personal machines. The instructor cannot guarantee support for installing and using other development environments.

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[1]This room will not be used for meetings but will be reserved for this class and contains computers should you need or want them.

4 Workload

The course workload is as follows:

Category	Number of Assignments
Exams	7
Programs	5
Homework	8

Exams

All exams are weighted equally. There is no midterm or final exam in the sense that the exams are worth more than other exams or that they will necessarily take longer than other exams. Exams will generally focus on material covered since the previous exam but will be in some sense cumulative due to the nature of programming. *Exams during this semseter will be administered via Moodle and will have fixed time windows during which they can be completed.*

Programs

Several of the chapters will have programming assignments to accompany them. These will be assigned when we begin the chapter and you should start looking at them right away and use them as a motivator for the chapter itself. They will typically be due at the completion of the chapter but before the chapter exam. Programs will be individual efforts.

Homework

Students will be assigned a set of problems from each chapter of the book covered in the course. These problems are meant to guide reading, prepare the student for in class problems, and survey the material covered by the exam. *While we are engaging in remote learning, homework problems will be given submitted via Moodle. Some problems will be administered as Moodle Quizzes where others will require submitting written code.*

4.1 Course Engagement Expectations

The weekly workload for this course will vary by student but on average should be about 13 hours per week. The follow tables provides a rough estimate of the distribution of this time over different course components.

Assignment Type	Time/week
Lectures+Labs	3 hours/week
Homework	3 hours/week
Exam Study Time	1 hours/week
Programs	3 hours/week
Reading	2 hours/week
	12 hours/week

5 Grades

This course uses a standard grading scale where percentage grades translate to letter grades as follows:

Score	Grade
94–100	A
90–93	A-
88–89	B+
82–87	B
80–81	B-
78–79	C+
72–77	C
70–71	C-
68–69	D+
62–67	D
60–61	D-
0–59	F

Students are always welcome to challenge a grade that they feel is unfair or calculated incorrectly. Mistakes made in the student's favor will never be corrected to lower a grade. Mistakes not in the student's favor favor will be corrected. *Basically, after the initial grading, a score can only go up as the result of a challenge.*

5.1   Grade Weights

The final grade is based on a weighted average of particular assignment categories. Students should be able to estimate your current grade based on your scores and these weights, but you may always visit the instructor *outside of class time* to discuss your current standing and check on some or all of the current course grade.

Category	Weight
Exams	35%
Programs	30%
Homework	20%
Participation	15%

Participation & Attendance

Participation grades will be determined based largely on the completion of reading quizzes that come along with the daily reading and video assignments. Class attendance will be monitored via Zoom. Repeated unexcused absenses will have a negative effect on your participation grade. Whenever possible, let the instructor know of the absence before it occurs. When unexcused absences do occur, it is the student's responsibility to make up for the lost class time and to seek the permission of the instructor to hand-in or complete assignments that are late due to an unexcused absence.

Late Work

In general, assignments are due at the specified time and no late assignments will be accepted unless an extension was requested prior to the due date. There are, of course, exceptions to this rule and students needing extra time can always contact the instructor for an extension. Do not just give up and eat a zero for the assignment. Ever. There is no penalty in asking for an extension nor is there a limit on extensions. That being said, there is no guarantee an extension will be given without legitimate need.

5.2   Calendar

This calendar is subject to change based on the circumstances of the course. A detailed, day-by-day calendar of reading requirements and expected exam dates can be found on the course website.

Week	Dates	Assignments Due	Chapter(s)
1	8/18–8/21		Ch. 1. Linux & C
2	8/24–8/28		Linux & C
3	8/31–9/4		Ch 2
4	9/7–9/11	Program 1	Ch 2
5	9/14–9/18	Exam 1	Ch 3
6	9/21–9/25	Program 2	Ch 3
7	9/28–10/2	Exam 2	Ch 5
8	10/5–10/9		Program 3 Ch 5
9	10/12–10/16	Exam 3	Ch 6
10	10/19–10/23	Program 4	Ch 6
11	10/26–10/30	Exam 4	Ch 7
12	11/2–11/6	Exam 5	Ch 9
13	11/9–11/13	Program 5.	Ch 9
14	11/16–11/20	Exam 6.	Ch 8
15	11/23–11/24	THANKSGIVING (W-F)	Ch 8
16	11/30–12/4	Exam 7	