

# CMSC 201: Computer Organization

*21st of August, 2017*

Lecture: MWF 1:00-1:50pm, Ruffner 352  
Website: <http://cs.longwood.edu/courses/cmssc201/f17/>

Professor: Dr. Julian Dymacek  
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Office hours: T: 1–2pm  
R: 10–11am  
MW: 2pm–3pm  
*or by appointment*

## Course Description

The organization, design, and structure of computer systems, including both hardware and software principles. Topics include memory addressing, machine-level representations of software and data, fundamentals of logic design, and the mechanics of information transfer and control within a computer system.

## Prerequisites

CMSC 160; CMSC 162 recommended.

## Course Objectives

The student will discover the underlying principles of hardware design and how those principles affect programming practices and performance. The student will:

1. analyze programs at the assembly code level
2. convert data from numbers and text to binary formats
3. build complex computational systems from simple circuits
4. explain how system design affects software design and security

## Textbook and Resources

Computer Systems: A programmer's perspective, Randal E. Bryant and David R. O'Hallaron, Third Edition, Pearson, 2014, ISBN: 978-0134092669 You will be given an account on the department's computer systems.

## Course Requirements

### Tentative Course Schedule

Week	Date	
1	Aug. 21-25	Bits, Bytes, Integers and Floating Point
2	Aug. 28- Sep. 1	Bit-wise operations; Truth Tables; Logic
3	Sep. 3	<i>Labor Day</i>
3	Sep. 5-8	Basic Logic Circuits; Breadboarding; Electronics
4	Sep. 11-15	Multiplexers and Decoders; Full and Half Adders
5	Sep. 18-22	Assembly Language – Registers, Arithmetic, Control Statements
6	Sep. 25-29	Structs, Arrays, and Pointers <b>Exam</b>
7	Oct. 2-6	CPU and ALU
8	Oct. 9-13	Fetch–Decode–Execute cycle
9	Oct. 16-17	<i>Fall Break</i>
9	Oct. 18-20	Pipelining
10	Oct. 23-27	Pipelining
11	Oct. 30- Nov. 3	Memory Circuits
12	Nov. 6-10	Caching and Disks
13	Nov. 13-17	Parallelism and Amdahl’s Law;
14	Nov. 20-21	Additional topics
14	Nov. 22-24	<i>Thanksgiving Break</i>
15	Nov. 27- Dec. 1	Additional topics and Review
	Dec. 4	<b>Final Exam</b> Monday 3:00-5:30pm

### Important university dates

Aug. 28	Last day of Add/Drop (5pm)
Sep. 29	Last day for Pass/Fail (5pm)
Oct. 9	Deadline to withdraw with “W” (5pm)
Dec. 1	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 should take about 10–12 hours of time per week. This time includes 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.

**Participation & 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:** Homework will cover problems related to the in class material.

**Projects:** There will be five projects assigned in the class. Projects will be larger assignments and require outside research.

**Exams:** There will be 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:	50%
Final Exam:	25%
Homework & Quizzes:	25%

## Policies

### 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.

### 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.

## **Accommodations**

If you have a documented disability, you should contact Longwood's Office of Disability Resources (Graham Hall, x2391) to discuss some of the support the college can offer you. All such conversations are confidential. Please speak to me early in the term to set up any special accommodations.

## **Mandatory Reporting of Crimes and Sexual Misconduct**

In accord with its history and mission, Longwood University believes that each individual should be treated with respect and dignity and that any form of crime or violence is incompatible with Longwood's commitment to the dignity and worth of the individual. Longwood University is committed to providing a healthy living, learning and working environment which promotes personal integrity, civility and mutual respect. If you have been the victim of a crime or sexual misconduct we encourage you to report this. If you disclose this to a faculty member or employee (with the exception of our Limited Reporting and Confidential Reporting Resources; for example, the Counseling and Psychological Services (CAPS) staff), they are required by law to notify the appropriate University officials. The faculty member or employee cannot maintain complete confidentiality and is required to report the information that has been shared. Please know that all reported information is treated with discretion and respect and kept as private as possible. For more information about your options at Longwood:

<http://www.longwood.edu/titleix>

<http://www.longwood.edu/police/crimereports.htm>

<http://www.longwood.edu/studentconduct/sexual-misconduct/>