CMSC 201: Computer Organization (3 credits)
Fall 2014

Instructor: Robert Marmorstein, 395-2185, marmorsteinrm@longwood.edu
Lecture: 2:00pm-2:50pm(MWF), Ruffner 352
Course Web Site: *http://narnia.homeunix.com/~robert/Fall2014/cs201.html*

Office Hours:
    Monday: 1:00-2:00pm
    Wednesday/Friday: 3:00-4:00pm   or by appointment
    Tuesday/Thursday: 12:00-2:00pm

Course Description: The organization and structure of the major hardware components of computers; assembly language programming; internal storage structure; machine-level representation of instructions and data; fundamentals of logic design.

Prerequisite: *CMSC 160; CMSC 162 recommended.*

Textbook: Computer Systems: A programmer's perspective, Randal E. Bryant and David R. O'Hallaron, Second Edition, Addison-Wesley, 2003, ISBN: 978-0136108047

Course Objectives: The student will discover the underlying principles of hardware design and learn how those principles affect programming practices and performance. The student will learn:
    -- a small subset of the x86 assembly language ISA
    -- to convert numbers and text from and to various binary formats
    -- to build complex computational systems from simple circuits
    -- ways in which system design affects software design and security

Grading Policy: Late work will not be accepted unless you have a medical condition which prevents you from completing the assignment on time (or a family/personal emergency which prevents you from doing the work). This includes the final and midterm exams, which must be completed on time to receive credit. Final letter grades will be based on the following scale:

	91-99% A	*90% A-*
89% B+	*81-88% B*	*80% B-*
79% C+	*71-78% C*	*70% C-*
69% D+	*64-68% D*	*63% or below is an F*

Course Work: Your grade will be determined by your performance on the final exam (25% of your grade), midterm exam (25%), programming projects (25%) and homework problems (25%).

Attendance: Missing more than 10% of scheduled class time will result in loss of one letter grade. Absences *for school events or illness* may be excused if you make arrangements with me within 12 hours of the missed class. Students who miss more than 25% of classes, for any reason, may at my discretion receive an F for the course.

Honor Code: Tests and quizzes must be completed entirely on your own.

You may freely discuss the programming projects with other students as long as:

A. You do not share code electronically.
        All the code you turn in should be code YOU have typed. You MAY write a few lines of code down on the marker board or a sheet of paper to make discussion easier **as long as you erase/dispose of the information before you leave the room.** You may NOT share printouts of your code, transmit code by e-mail, send pictures of code by phone or e-mail, or post code on the web.

B. You do not copy large blocks of code.
        Sharing a block of three or four lines is acceptable. It is also okay to point out a syntax or semantic error in someone else's file. However, sharing an entire program or a non-trivial function is an honor code violation.

C. You may use Internet resources as long as you follow the above guidelines.

That is, you must type out the code for yourself (you can't just download or copy/paste it) and you should only use small blocks of code (four lines or fewer) that you've found online.

You may also discuss homework problems as long as your answers are your own.

Infractions of this policy will be dealt with under the Longwood Honor Code. A student convicted of an Honor Code offense involving this class **will receive a grade of F** for the course in addition to any penalties imposed by the Honor board. All work completed in this class is considered to be pledged, whether or not the pledge appears on the assignment itself.

Reminder: It is also an honor code violation not to report an honor code violation which you have witnessed.

Cell Phones and Laptops: All cell phones and laptops are to be turned off and put away during class. Violations of this policy may (at my option) be considered an unexcused absence.

Food and Drink: Please do not eat in class. It distracts me and the other students. You may bring non-alcoholic beverages to class. If you are not able to eat lunch at another time, I may be willing to negotiate an exception to this rule, but you must make arrangements with me in advance or I will count you absent. Violations of this policy may (at my option) be considered an unexcused absence.

Tentative Course Schedule:

Aug. 25-29	Principles of Computer Organization, Bits, Bytes, Integers **Read Chapter 1 through Section 2.3**
Sept. 1	Holiday: Labor Day
Sept. 3-5	Floating Point **Read Section 2.4**
Sept. 2	LAST DAY OF ADD/DROP (by 5pm)
Sept. 8-12	Circuits, Truth Tables
Sept. 15-19	Memory Circuits, Multiplexers and Decoders
Sept. 22-26	Introduction to Assembly Language **Read Sections 3.1-3.5**
Sept. 29 - Oct. 3	Control Statements and Procedures **Read Sections 3.6 and 3.7**
Oct. 6-10	Data Representation: Structs, and Arrays, Buffer Overflow **Read Sections 3.8 through 3.14**
Oct. 13-14	Holiday: Fall break
Oct. 15-17	Review and Midterm Exam
Oct. 15	Deadline to withdraw with a "W"
Oct. 20-24	CPU and ALU, Pipelining, the FDE cycle

Read Chapter 4

Oct. 27-31   Catchup and Review

Nov. 3-7   The Memory Hierarchy, Caching
                   Read Chapter 6

Nov. 10-14   Linking
                   Read Chapter 7

Nov. 17-21   Exceptions and Exceptional Flow Control
                   Read Chapter 8

Nov. 24   Code Optimization
                   Read Chapter 5

Nov. 26-28   Holiday: Thanksgiving

Dec. 1-5   Catchup and Review

Dec. 12 (Friday)   Final Exam: 8:00am