CMSC 360 (Fall 2013)
Computer Network Theory (3 credits)

http://marmorstein.org/~robert/Fall2013/cs360.html

Lecture: 4:00pm-5:15pm MW, Ruffner 352

Instructor: Robert Marmorstein **Office:** Ruffner 329
Office Phone: 434-395-2185 **E-mail:** marmorsteinrm@longwood.edu
Office Hours: 1:00pm-2:30pm MTWF or by appointment
(I will not have office hours on Thursday this semester)

Course Description:
A course covering the theory and design of modern computer networks. Topics include local and wide area networks, the OSI network model, basic network performance analysis, and real time networks.

Prerequisite: CMSC 242.

Course Objectives:
The student will learn:

* To identify the different layers of a network and explain their function
* To write simple servers and clients in C++ using the sockets API
* How to set up, configure, and troubleshoot a network
* Fundamentals of data-link, network, and transport protocols
* Principles of network addressing and routing

Textbook:
The textbook for this class is "Computer Networks" by Andrew Tanenbaum, Fifth Edition, Pearson Education/Prentice Hall, 2003, ISBN 978-0132126953

Grading Policy:

Late work will not be accepted unless you have a serious medical or family emergency which prevents you from completing the assignment on time. In such cases, you do not need a doctor's note, but you must send me ***e-mail*** within twelve hours of the assignment due date to explain your circumstances and to make arrangements for the work to be completed.

Slip Days:

You will be allocated a fixed number of slip days at the start of the semester. You may use your slip days to extend the due date of one or more *programming projects*. You can use all of your slip days on one assignment or you may use them over multiple assignments.

Slip days are calculated from the minute the assignment is due until you turn it in and are rounded *up* to the nearest integer value. That means that if you turn an assignment in 24 hours and 1 minute late, you will use up *two* slip days. The slip day clock runs over weekends and holidays, so if a lab is due on Friday and you turn it in on Monday, you will have used three slip days, not just one. Slip days cannot be shared, traded, bought, or sold, but can occasionally be earned by participating in select department or campus activities.

Grading Scale:

		100-91: A	90:	A-
89:	B+	88-81: B	80:	B
79:	C+	78-71: C	70:	C-
69:	D+	68-64: D		
63 or lower: F		(There is no grade of D- in this course.)		

Course Requirements: One quarter (25%) of your grade will come from successful completion of programming projects. An additional quarter will come from your grades on the homework and quizzes. The midterm and final will each be worth 25% of your grade.

Attendance:

I expect you to attend class unless you are sick or engaged in a school-sponsored sport or extracurricular activity. Please do NOT come to class if you are sick. Instead, contact me within 12 hours of the absence to check whether you've missed any work and then make arrangements to get notes from another student in the class. You should also check the course web site for announcements, new assignments, and other important updates.

I will rely primarily on your honor for enforcement of the attendance policy. However, I will keep a record of your attendance as required by Longwood policy. In accordance with campus policy, missing more than 10% of scheduled class time (5 class sessions) to unexcused absences may, at my discretion, result in loss of one letter grade and missing 25% of class or more (14 sessions), whether excused or not may result in an automatic failing grade.

Food and Drink:

You may bring non-alcoholic beverages, including soft drinks, to class. However, please do not eat in class (it distracts me and the other students). Violations of this policy will be considered an unexcused absence.

I occasionally grant exceptions to this rule for students who must otherwise forgo lunch or have medical needs that require them to eat in class. If you feel that you need such an exception, you must make arrangements with me in advance (i.e. before bringing food to class).

Cell Phones and Laptops:

Cell phones, music players, and laptops are to be turned off and put away during class, except as needed for the lab sessions. Violations of this policy will be considered an unexcused absence.

Collaboration:

Exams and quizzes are to be completed entirely on your own. You may discuss the homework and lab projects subject to these restrictions:

1. You must turn in a copy of your own work which YOU have typed or hand-written.

The work you submit should, in general, be your own original work or material which I have provided and you have suitably modified by yourself. You MAY assist other students or get assistance with simple problems like syntax errors, but you may NOT copy large blocks of code from each other. A good guideline of what "large" means is that copying one or two lines of code is usually okay, but copying more than three complete statements is usually too much.

2. You may NOT copy code electronically from other students or the Internet.

This doesn't mean you can't look online for help with a project. It just means that you must re-type any code you find (again subject to the three line limit) and not download it or copy/paste it. You may not share code using flash drives, cell phones, e-mail, web sites, floppies, CDs, or any other electronic storage or communication device. You may not print out copies of your code to share with other students (personal copies are fine).

3. You must give proper attribution.

Whenever you receive help or use an online resource, you should comment your code to give proper credit. A simple comment like "/ based on http://codewarrior.com */" is fine. This comment should go directly above or directly after the place that you used the resource or received help to make it clear which parts of your program are not entirely original.*

4. You are responsible for securing your code.

Helping other students to cheat is also cheating. Furthermore, it is your responsibility to make sure that other students do not use your work to cheat. Be careful with who you let access your computer and report any missing files, flash drives, or other devices to me promptly.

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

Tentative Course Schedule:

Week 1: Aug. 26-28	Introduction, OSI and TCP/IP stacks, Basic Socket Programming in UNIX **For Wed. read Chapter 1 (p. 1-85)**
September 2	**Labor Day (NO CLASS)**
September 3	**Last day of Add/Drop (by 5pm)**
Week 2: September 4	The Physical Layer, Cabling and Radio, Hubs and Switches **For Wed. read Chapter 2 (p. 89-179)**
Week 3: September 9-11	The Data Link Layer, Error Detection/Correction, Flow Control, I/O Multiplexing in UNIX **For Wed. read Chapter 3 (p. 193-251)**
Week 4: September 16-18	Channel Multiplexing, Ethernet and Wireless Networks **For Wed. read Chapter 4 (p. 257-350)**
Week 5: September 23-25	The Network Layer, Internet Protocol, DHCP and Addressing, Name Resolution in UNIX **For Wed. read Chapter 5 (p. 355-465)**
Week 6: September 30-Oct. 2	**Catchup, Review, and Midterm Exam**
October 4	**Pass/Fail Deadline**
Week 7: October 7-9	ARP, ICMP and IGMP Network Diagnostic Tools (ping, tracepath, netstat) Writing a multi-threaded server **For Wed. read Chapter 5 (p. 465-470, 484-485)**
October 14	**Fall Break : NO CLASS**
October 16	**Deadline to Withdraw (by 5pm)**
Week 8: October 16	Internal and External Routing: RIP, OSPF, BGP, and EGP Multicasting and Broadcasting **For Wed. read Chapter 5 (p. 465-484)**
Week 9: October 21-23	The Transport Protocol, UDP, TCP, Congestion Control The TCP Handshake, TCP_WAIT, and TCP state model Implementing an HTTP Proxy **For Wed. read Chapter 6 (p. 495-606)**
Week 10: October 28-30	The Application Layer: DNS and Host Resolution **For Wed. read Chapter 7 (p. 611-623)**
November 4-15	**Advising and Registration**
Week 11: November 4-6	Catchup and Review **Read Sections 6.11 to 6.13**
Week 12: November 11-13	The Application Layer: E-mail, SMTP, POP, and IMAP **For Wed. read Chapter 7 (p. 623-646)**
Week 13: November 18-20	The Application Layer: The Web, HTTP and HTTPS **For Wed. read Chapter 7 (p. 646-697, 736-757)**

Week 14: November 25	Catchup and Review
November 27-29	**THANKSGIVING : NO CLASS**
Week 15: December 4-6	Firewalls, Final Review
December 11	**Final Exam: Wednesday (3:00pm – 5:30pm)**