Department of Computer Science
CMPT 467 Networks
Course Syllabus Fall 2015

Instructor

Dr. Ankur Agrawal

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Office Hours: MR 3:00 pm – 4:00 pm or by appointment in RLC 203

Class Hours: MR 1:30 pm – 2:45 pm in RLC 102

Overview

The course will introduce the concepts of computer networks and the underlying principles. Topics to be covered will include several network protocols and applications. The students will learn how TCP/IP works, how the different routing algorithms work and the importance of network security.

Prerequisites

Permission of the instructor

Textbook

Computer Networking: A Top-Down Approach, 6/E, Kurose & Ross, ISBN-10: 0132856204, ISBN-13: 9780132856201

Course Objectives

- Understand the history of computer networks
- Become familiar with layered communication architectures
- Understand the five layers of internet protocol model
- Understand the client/server model
- Understand the application layer protocols such as http, ftp and smtp
- Understand the concepts of reliable data transfer and how TCP implements these concepts
- Understand the connectionless and connection oriented transport services
- Understand the principles of routing and various routing algorithms
- Understand the basics of error detection and correction techniques

Tentative List of Topics

1. Introduction to computer networks

- The network edge and core - access networks, packet switching, circuit switching
- Protocol layers and their service models - TCP/IP model, OSI model
- Delay, loss and throughput

- Networks under attack - packet sniffing, IP spoofing, denial of service
- History of computer networking and the internet

2. Application layer
- Application layer protocols - http, ftp, smtp
- Peer to peer applications
- Domain Name Systems
- Socket Programming

3. Transport layer
- Multiplexing and demultiplexing
- UDP connection
- TCP Connection
- Reliable Data Transfer
- Congestion control

4. Network layer
- Forwarding and routing
- Virtual circuit and datagram networks
- The Internet Protocol
- Routing algorithms - link state, distance vector, hierarchical

5. Link Layer
- Error detection and correction techniques
- Multiple access links and protocols - channel partitioning, random access, taking turns

6. Additional topics, time permitting

Tools to be used

Wireshark packet sniffer will be used to demonstrate and understand some of the networking concepts.

Some programming is also expected using any of the high level languages such as JAVA, Python, etc.

Grades (Method of Evaluation)

- Two midterms worth 40%
- One final exam worth 20%
- Assignments and quizzes worth 30%
- Project and presentation worth 10%

You have to pass the final exams in order to pass the class. Dates for exams will be announced in the class. Final grades will be based on the following scale: A (95-100), A- (90-94), B+ (85-89), B (80-84), B- (75-79), C+ (70-74), C (65-69), C- (60-64), D (50-59), F (<50). The instructor reserves the right to adjust the grading percentages and scale if necessary.

Success in Class

- Read the assigned pages in the book as per the class discussion.
- Do as many exercises as possible even if they are not assigned.
- Ask questions about parts of reading or lecture which you do not understand.

Get help before you are completely lost. I am available to help you via e-mail, in the classroom, or in my office.

Attendance Policy

Attendance in every lecture is mandatory. Being in the class on time is equally important too. Any absence for valid reason will be required to be supported with proper documentation.

Cheating Policy

Cheating on a programming assignment will result in zero credit for all students involved. Programming assignments may not be solved in collaboration, unless specifically stated in the assignment. Cheating on an exam will result in an "F" in the course. You may discuss problems with each other. Where does discussion end and cheating start? You may not copy lines of code from anybody or anywhere. You may not use code in your assignments that you did not write. As a general rule, if you don't understand the code and can't explain the code, you can't use the code.

Center for Academic Success

Tutoring and support to students is offered in the Learning Center (DLS 206), Leo Learning Center (Leo 117) and the Writing Center (Mig 203). For more information please visit: http://manhattan.edu/academics/center-academic-success

Policy on Students with Disabilities

Students with Disabilities should contact the Specialized Resource Center with their appropriate documentation, to obtain an "Academic Adjustment/Auxiliary Aid" form. When the student presents this completed form to the professor, the professor will then confer with the student on the fulfillment of the adjustments/aids listed on the form.

Academic Integrity Expectation

In accordance with the Manhattan College policy on Academic Integrity, students are expected to do their own work. If they use somebody else's work, then that fact should be documented. Individual work is to be done individually and not copied from others and it is expected that you will perform all exams without consulting others and do your own work on any assignments. Consulting with others on general approaches to take in an assignment is considered acceptable, but copying assignments from others or working the majority of the assignment together is not acceptable. Of course group work is done in a group. See http://manhattan.edu/community-standards-and-student-code-conduct for more information on Manhattan College policy on Academic Integrity.