New York University Tandon School of Engineering

Computer Science
Course Outline CS-GY-83 Computer Networking
Spring 2017
Professor Rafail Portnoy
Pfizer Auditorium
Wednesday [5:30 pm -8:00 pm],

To contact professor: rp1912@nyu.edu
Computer Science Department Area, 10.098, in front of Prof. Memon Office
Office hours: on Request only

Course Pre-requisites

CS 2134 (CS2134 Data Structures and Algorithms) or equivalent
Knowledge of binary addition and multiplication system.

Course Description

This course takes a top-down approach to computer networking. After an overview of computer networks and the Internet, the course covers the application layer, transport layer, network layer and link layers. Topics at the application layer include client-server architectures, P2P architectures, DNS and HTTP and Web applications. Topics at the transport layer include multiplexing, connectionless transport and UDP, principles for reliable data transfer, connection-oriented transport and TCP and TCP congestion control. Topics at the network layer include forwarding, router architecture, the IP protocol and routing protocols including OSPF and BGP. Topics at the link layer include multiple-access protocols, ALOHA, CSMA/CD, Ethernet, CSMA/CA, wireless 802.11 networks and link-layer switches. The course includes simple quantitative delay and throughput modeling, socket programming and network application development and Ethereal labs

Course Objectives

Understand state-of-the-art in network protocols, architectures, and applications
Process of networking research - Constraints in thought process of networking research

Course Structure

This is an on-campus course. The course's technical material is covered over 11 lectures. Details are given at the end.

Programming, Wireshark and Quizzes assignments will count towards the final grade along with the midterm and the final examination.

Readings

The required text for the course is: Computer Networking, Kurose and Ross, 6th edition, Pearson (Addison Wesley), 2013, ISBN: 0-13-285620-4, USA Domestic Edition ONLY.

Course requirements

You will typically have something due every week

Online Access

All students are required to have access to the http://newclasses.nyu.edu online environment.

Academic Dishonesty

Plagiarism, cheating, sharing of examination answers, submitting work done by others as your own, and all other forms of deception proscribed in University rules are forbidden. For the sake of your own dignity and self-esteem, it is better to get a low grade than to engage in dishonesty.

Collaboration

Students are allowed (encouraged) to discuss the homework and programming assignments with each other. However, except for team projects, your written solutions must be your own work. Furthermore, if you worked with other people you must write down with whom you worked. The first violation of this policy will result in a 0 on that assignment and a reduction in your final grade (for example, from B+ to B). A second violation will result in an F. For additional information see the CIS policy on Collaboration and Programming Assignments.

Syllabus and Schedule of Lectures and Assessments

Topics

We'll be covering Chapters 1 through 5 and 8 of the 6th edition of the textbook:

- Overview of computer networking
- Application layer
- Transport layer
- Network layer
- Link layer
- Security

Extra Credit

All homework questions should be directed to the class forum online. Everyone is encouraged to participate. Top 2 most active students with most correct responses to questions will receive 2 additional points towards their Final course grade.

GRADING:

Quiz Assignments, (10% of final grade)

Wireshark Assignments, (10% of final grade)

Programming assignments, (10% of final grade)

Midterm, (35% of final grade)
This will be a timed examination which will cover the materials of the first 3 chapters of required reading.

Final Examination, (35% of final grade) – Group project

Grade Minimum %

A	95
A-	90
B+	87
B	83
B-	80
C+	77
C	73
C-	70
D+	67
D	63
F	**0**

Lecture and Assignment Schedule

Week	Date	Chapter	Assessment (Due Dates)		
			Homework	Wireshark	Programming Projects
1	1/25	1			
2	2/01	1	Ch. 1 R1-R3, R8, R11, R15,	Getting Started	
3	2/08	2	Ch. 1 R22, R24, R26, P1, P5, P18, P19, P25, P27		Web Server
4	2/15	2	Ch. 2 R2, R4, R11, P3, P6	HTTP	
5	2/22	3	Ch. 2 R13, R18, R20, P9, P15, P33	UDP	
6	3/01	3	Ch. 3 R3, R4, R6, P1, P12	TCP	
7	3/08	Midterm Chapters 1,2,3 Assessments	Ch.3 R9, R10, R17, P19, P40		
8	3/13 -3/19	Spring Break			
9	3/22	4			SMTP Mail Client
10	3/29	4	Ch.4 R2, R3, R7, P2, P6	IP	
11	4/05	5	Ch.4 R12, R13, R25, P10, P37		Traceroute
12	4/12	NO CLASS		Ethernet	
13	4/19	5	Ch.5 R1, R2, R4, P1, P13		
14	4/26	8	Ch.5 R9, R13, P14, P17, P32	NAT	
15	5/10, 5/11, 5/12	Final Presentations	Ch.8 R2, R4, P4, P5, R16, P13, P15		

Note: The assignments (Wireshark and Programming Projects) must be submitted on NYU Classes latest by 11:45 PM as a single PDF or Word document on their respective due dates.