

New York University Tandon School of Engineering
Department of Computer Science and Engineering
Course Outline CS-UY 4793 Computer Networking
Fall 2020
Professor Daniel Katz-Braunschweig
M/W 9:30AM 370 Jay 202

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Course Pre-requisites:
(CS-UY 2134 or CS-UY 1134) and (CS-UY 2124 or CS-UY 1124) (C- or better)

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 of 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

At the conclusion of this course, students should be able to describe how to design, and diagnose problems in, common network protocols including HTTP, DNS, TCP, IP and VLANs. Students should be able to write programs which utilize network sockets and should be able to use sniffers like Wireshark to diagnose common issues.

Course Structure

Students will be expected to read chapters from the required textbook prior to class and complete approximately 5 large homework assignments.

Readings

The required text for the course is: "Computer Networking: A Top-Down Approach (7th Edition)" Kurose and Ross, (ISBN: 978-0133594140)
Textbooks are available from the NYU bookstore, Dibner, Dibner reserves and online ordering sources.

Course requirements

See chart below for required reading to be completed prior to class

Midterm 30%

The Midterm exam will include all material covered from the first 5 weeks of the course

Final Exam (date TBD by Tandon) 35%

The Final will cover all material in the course

Homework 35%

Homework will be issued, roughly every other week and will include programming as well as practical problems to be solved.

Week	Approx. Date	Concepts	Layer	Chapters
1	2-Sep	Overview of Networking and Review of Binary arithmetic		CH. 1
	9-Sep	OSI-RM and Telnet		CH. 1
2	14-Sep	HTTP and DNS	Application	CH. 2
	16-Sep	FTP		CH. 2
3	21-Sep	SMTP and P2P		CH. 2
	23-Sep	Application Programming		
4	28-Sep	Application Programming		
	30-Sep	UDP	Transport	CH. 3
5	5-Oct	TCP		CH. 3
	7-Oct	TCP		CH. 3
6	12-Oct	RTP and SIP/VOIP		Ch. 7
	14-Oct	ICMP		
7	19-Oct	IP	Network	CH. 4
	21-Oct	Midterm Exam		
8	26-Oct	IP Subnetting		
	28-Oct	IP Subnetting		
9	2-Nov	Network Address Translation		
	4-Nov	Network Address Translation		
10	9-Nov	Routing		
	11-Nov	Dynamic Routing Protocols		
11	16-Nov	Link Layer introduction	Link-Layer	CH. 5
	18-Nov	ARP		
12	23-Nov	Switching and VLANS	Physical	
	25-Nov	Switching and VLANS		
13	30-Nov	Wireless		
	2-Dec	Wireless		
14	7-Dec	IPSEC/VPN	Security	CH. 8
	9-Dec	Review		

Moses Center Statement of Disability

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities (CSD) at [212-998-4980](tel:212-998-4980) or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 3rd floor.

NYU School of Engineering Policies and Procedures on Academic Misconduct – complete Student Code of Conduct [here](#)

- A. Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.

- B. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:
 - 1. Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.
 - 2. Fabrication: including but not limited to, falsifying experimental data and/or citations.
 - 3. Plagiarism: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure

to attribute direct quotations, paraphrases, or borrowed facts or information.

4. Unauthorized collaboration: working together on work meant to be done individually.
5. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.
6. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.

NYU School of Engineering Policies and Procedures on Excused Absences – complete policy [here](#)

A. Introduction: An absence can be excused if you have missed no more than **10 days of school**. If an illness or special circumstance has caused you to miss more than two weeks of school, please refer to the section labeled Medical Leave of Absence.

B. Students may request special accommodations for an absence to be excused in the following cases:

1. Medical reasons
2. Death in immediate family
3. Personal qualified emergencies (documentation must be provided)
4. Religious Expression or Practice

Deanna Rayment, deanna.rayment@nyu.edu, is the Coordinator of Student Advocacy, Compliance and Student Affairs and handles excused absences. She is located in 5 MTC, LC240C and can assist you should it become necessary.

NYU School of Engineering Academic Calendar – complete list [here](#).

The last day of the final exam period is 21 December 2020. Final exam dates for undergraduate courses will not be determined until later in the semester. If you have two final exams at the same time, report the conflict to your professors as soon as possible. Do not make any travel plans until the exam schedule is finalized.

Also, please pay attention to notable dates such as Add/Drop, Withdrawal, etc. For confirmation of dates or further information, please contact Susana: sgarcia@nyu.edu