



NYU

TANDON SCHOOL
OF ENGINEERING

Course Syllabus

Computer Science and Engineering

Computer Networking

Course Information

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

This course will provide students with the opportunity to:



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

Course Structure

The Class will be comprised of recorded lectures and online discussions. The lectures will focus on the OSI Model Layers in detail.

This course is conducted entirely online, which means you do not have to be on campus to complete any portion of it. You will participate in the course using NYU Classes located at <https://newclasses.nyu.edu>.

Grading Breakdown

- GRADING:
- Quiz Assignments, (10% of final grade)
- There will be a quiz after completion of each chapter and will be based on that chapter
- Wireshark Assignments, (15% of final grade)
- Programming assignments, (15% of final grade)
- Midterm, (30% of final grade)
- This will be a timed examination which will cover the materials of the first 3 chapters of required reading.
- Final Examination, (30% of final grade)



Weekly Structure

Week	Chapter	Assessment (Due Dates)		
		Homework	Wireshark	Programming Projects
1	1			
2	1	Ch. 1 R4, R12, R18, R19	Getting Started	
3	2	Ch. 1 R20, P6, P25, P27, P28		Web Server
4	2	Ch. 2 R4, R10, R11, P1, P4	HTTP	
5	3	Ch. 2 R12, R18, R21, R25, P6	UDP	
6	3	Ch. 3 R3, R4, R7, R13	TCP	



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7	Midterm Chapters 1,2,3 Assessments	Ch.3 R5, R10, R14, P4		
8	4			SMTP Mail Client
9	4	Ch.4 R3, R4, R7, R13		
10	5	Ch.4 21, R22, R27, R31, P15	IP	
11	5	Ch.5 R4, R6, R13, P3		Traceroute
12	NO CLASS			
13	6	Ch.5 R16, R17, R19, R23	Ethernet	
14	6	Ch.6 R7, R8, R9, R11, R15	NAT	
15	Final			



	Examination			
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Learning Time Rubric

Please modify the below table to represent the breakdown of learning time in each week of your course.

Learning Time Element	Asynchronous* / Synchronous**	Time on Task for Students (weekly)	Notes
Reading Assignments / Recorded Lecture	Asynchronous	2.5 hours	Video format. Expect quizzes throughout the module or weekly chapter readings
Weekly Discussion Board	Asynchronous	1.5 hours	Students are expected to post initial response to weekly topic questions. See Interaction Policy.
Assessment (Labs and Programming assignments)	Asynchronous	2 hours	Students submit their assignment by [the end of the week]
Reading Assignment	Asynchronous	2 hours	Reading assigned textbook



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			chapters and journal articles.
Live webinars	Synchronous	2 hours	Group discussion in class, live, overly weekly chapter

Course Communication

Announcements

Announcements will be posted on NYU Classes on a regular basis. You can locate all class announcements under the *Announcements* tab of our class. Be sure to check the class announcements regularly as they will contain important information about class assignments and other class matters.

Email

You are encouraged to post your questions about the course in the Forums discussions on NYU Classes. This is an open forum in which you and your classmates are encouraged to answer each other's questions. But, if you need to contact me directly, please email me. All homework, labs or programming assignments related questions must be researched first on own time, then posted on forums, then discussed with TAs during weekly reviews, and then can be forwarded to me. Typically, you can expect a response within 48 hours.



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Readings

The required text for the course is: Computer Networking, Kurose and Ross, 7th edition, Pearson (Addison Wesley), 2017, ISBN: 0-13-285620-4, USA Domestic Edition ONLY.

You can access NYU's central library here: <http://library.nyu.edu/>

You can access NYU Tandon's Bern Dibner Library here:
<http://library.poly.edu/>

RECOMMENDED READINGS are online journal articles provided in each lecture You can access NYU's central library here: <http://library.nyu.edu/>

You can access NYU Tandon's Bern Dibner Library here:
<http://library.poly.edu/>

Assignments and Exams

Three assignments are given throughout the semester. Each assignment has 3 parts.

Exams Administered and Proctored Online

Exams in this course are administered through NYU Classes. You are required to arrange an online proctor for your exams via ProctorU. More information on ProctorU and scheduling proctoring sessions can be found on [Tandon Online's website](#).

Exams Administered On Paper and Proctored Remotely

Exams in this course are administered via paper and pencil. If you are not able to attend an exam session on-campus, you are required to secure in-person proctoring arrangements near your location. Tandon Online's website



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Course Schedule

Week 1: Topic

Weekly learning objectives:

- Topic: Introduction

Assignments:

- Read Chapter 1

Week 2: Topic

Weekly learning objectives:

- Topic: Introduction

Assignments:

- Read Chapter 1

Week 3: Topic

Weekly learning objectives:

- Topic: Web Server



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Readings:

- Read: Chapter 2

Week 4: Topic

Weekly learning objectives:

- Topic: HTTP

Readings:

- Read: Chapter 2

Week 5: Topic

Weekly learning objectives:

- Topic: UDP

Readings:

- Read: Chapter 2

Week 6: Topic

Weekly learning objectives:

- Topic: UTP
- Read: Chapter 2



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Week 7: Topic

Weekly learning objectives:

- Midterm Exam

Readings:

- Read: Chapter 3

Week 8: Topic

Weekly learning objectives:

- Topic: SMTP Mail Client

Readings:

- Read: Chapter 4

Week 9: Topic

Weekly learning objectives:

- Readings:Chapter 5



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Week 10: Topic

Weekly learning objectives:

Take: Exam 2

Week 11: Topic

Weekly learning objectives:

- Topic: Traceroute Wireshark

Readings:

- Read: Chapter5

Week 12: Topic

Weekly learning objectives:

Topic: Ethernet

Readings:

Read: Chapter 6



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Week 13: Topic

Weekly learning objective

Topic: NAT

Readings:

- Read: Chapter 6

Week 14: Topic

Final Exam Week

- Final Exam

University Policies

Moses Center Statement of Disability

Academic accommodations are available for students with disabilities. Please contact the Moses Center for Students with Disabilities (212-998-4980 or mosescsd@nyu.edu) for further information. Students who are requesting academic accommodations are advised to reach out to the Moses Center as early as possible in the semester for assistance.



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NYU Tandon School of Engineering Policies and Procedures on Academic Misconduct¹

- 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:
 - a. 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.
 - b. Fabrication: including but not limited to, falsifying experimental data and/or citations.
 - c. 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.
 - d. Unauthorized collaboration: working together on work that was meant to be done individually.
 - e. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express

¹ Excerpted from the [Tandon School of Engineering Student Code of Conduct](#)



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and prior permission has been received from the course instructor(s) or research adviser involved.

- f. **Forgery:** altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.