New York University Tandon School of Engineering
Computer Science and Engineering Department

Course Outline
CS-GY 6843 and CS-Uy 4793 Computer Networking
Fall 2017
Professor Ratan Dey
Saturday 10:30 AM to 12:50 PM; In Person

To Contact Professor:
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2 MetroTech Center, 10.029X
Phone: 347-659-1561
Office Hours: Monday 3:15 pm to 4:45 pm and others available on request. To make an
appointment, please send an email mentioning CS 6843 or CS 4793 in subject line. Don't forget to
include your name and NYU ID in the body of the email.

Course Pre-requisites: CS 2134 (Data Structures and Algorithms) or equivalent.

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 Wireshark 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:
The Class will be comprised of lectures, quizzes, exams, homeworks, programming assignments and
discussions. The lectures will focus on the OSI Model Layers in detail. Most of the material will be
presented in lectures. Lecture notes, homework assignments (Wireshark and Programming), and
announcements will be posted on NYU Classes. Please check frequently for updates.
Readings:
The recommended text for the course is:
Computer Networking: A Top-Down Approach
Kurose and Ross
Seventh Edition

Pearson (Addison Wesley)
ISBN 978-0133594140
Copies are on reserve in the library.

Course requirements:

Tests: There will be several quizzes, a midterm exam, and a final exam.

Wireshark Assignments: There will be 7/8 Wireshark assignments.

Programming assignments: There will be 4 programming assignments. Wireshark and Programming assignments will reinforce the material covered in the lectures and in the text book. You will typically have something due every week.

Grading: Your grade will be based primarily on your scores on the homeworks, programming assignments, exams, quizzes, class participation and attendances. Grades will be computed roughly as follows:

Final score = 0.25*(Midterm exam grade) + 0.30*(Final exam grade) + 0.10*(quiz average, dropping lowest quiz) + 0.15*Wireshark assignments + 0.15*(programming assignments)+0.05*(Class Participations and attendances).

I may tweak the formula a little, for example, by slightly changing the weights.

Policy on Academic Dishonesty:
Please review the NYU School of Engineering Policy on Academic Dishonesty http://engineering.nyu.edu/academics/code-of-conduct/academic-dishonesty. In this class, you may work on homework assignments with others when it is specifically mentioned in the homework. If you do so, the names of all members of the group should be included.

Collaboration:
Students are allowed (encouraged) to discuss the homework and programming assignments with each other. However, except for team projects (when it will be specifically mentioned in the homework/assignment description), your written solutions must be your own work. Furthermore, if you worked with other people you must write down with whom you worked.

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 at 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](http://www.nyu.edu/csd). The Moses Center is located at 726 Broadway on the 2nd floor. Please do this at the start of the semester.

**Topics**

We’ll be covering Chapters 1 through 7 and 8 of the textbook:

- Overview of computer networking (Chapter 1)
- Application layer (Chapter 2)
- Transport layer (Chapter 3)
- Network layer - Data Plane(Chapter 4) and Control Plane (Chapter 5)
- Link layer - Wired (Chapter 6) and Wireless (Chapter 7)
- Network Security (Chapter 8)

**Tentative Schedules:**

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<tr>
<th>Date</th>
<th>Topics</th>
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<th>Python Programming Assignments</th>
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<td>Chapter 1</td>
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<td>09/16/2017</td>
<td>Chapter 1 and Chapter 2</td>
<td>Due Wireshark#1</td>
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<td>09/23/2017</td>
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<td>10/07/2017</td>
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<td>Chapter 4 and Review Midterm Materials</td>
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<td>11/04/2017</td>
<td>Chapter 5 and Midterm Exam Review</td>
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<td>Chapter 5 and Chapter 6</td>
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<td>Thanksgiving Recess - No Classes</td>
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<td>12/02/2017</td>
<td>Chapter 7</td>
<td>Due Wireshark#5</td>
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<td>12/09/2017</td>
<td>Chapter 8 and Review Final Exam Materials</td>
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<td>Due Wireshark#6</td>
<td>Quiz6 on Chapter 7</td>
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