Communication Protocols and Internet Architectures  
Harvard University Extension School  
CSCI E-40, Spring 2015  

Distance Education and Course Lectures  
This course is part of the Extension School's Distance Education Program. Lectures for this term were recorded when this course was given at Harvard during the Fall term of 2014. These previously recorded lectures will be made available, one per week, during the Spring term. However, while these lectures are recorded, all other aspects of the course are “live.” This means that you are responsible for homework, exams and all other work.

Please see the distance education website for information on the program, FAQs, details on how to view lectures and technical support. The link is: http://www.extension.harvard.edu/distance-education

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Web Site: https://canvas.harvard.edu/courses/1820

Sections: Time and location for optional sections will be posted on the website.

Textbooks and Readings:  
   Larry L. Peterson, and Bruce S. Davie  
   Publisher is Morgan Kaufmann  
2. Protocol specifications (RFCs) and other readings will also be assigned.

Assignments and Grading:  
There will be 5 homework assignments (approximately 30% of the grade), a midterm (approximately 30%) and a final exam (approximately 40%).

CLASS SCHEDULE

Lecture #1, Jan. 26, 2015  
Topics: Network Models and Network Architectures, Protocol Design Issues, Network Building Blocks: Transmission, Multiplexing and Switching

Lecture #2, Feb. 2, 2015  
Topics: Protocol Layering and Protocol Framework (SP3), Link Level Protocols, IETF and the Internet Standards Process

Lecture #3, Feb. 9, 2015  
Topics: LAN Protocols, LAN Design and Implementation, Ethernet Switching, Wireless Networks, 802.11  
Homework #1 due

No lecture, Feb. 16, 2015  
President’s Day Holiday, No lecture posted.
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Lecture #4, Feb. 23, 2015  
Topics: Internet Protocol (IP) Design, Internet Addressing

Lecture #5, March 2, 2015  
Homework #2 due  
Topics: Internetworking and Routing, VLANs

Lecture #6, March 9, 2015  
Topics: IPv6 Protocol Design, IPv6 Addressing

No lecture, March 16, 2015  
Harvard Spring Break, No lecture posted.

Lecture #7, March 23, 2015  
Topics: Transport Layer Protocol Design, TCP and UDP

Lecture #8, March 30, 2015  
Homework #3 due on Friday April 3rd  
Topics: TCP Congestion Control, Connection Management, Network Address Translation (NAT)

Lecture #9, April 6, 2015  
Topics: Application Layer Protocols, Domain Name System (DNS)

**Online Midterm Exam, Thursday, April 9, 2015 (Tentative Date)**

The midterm will be an open-book online exam. The exam is two hours long and it will be available via a secure website. As currently planned, the exam will be available to you between 12:05 am and 11:55 pm (Boston time), and once you login and start the exam, you will have two hours to complete it.

Lecture #10, April 13, 2015  
Topics: SMTP and Email  
Network Security (part 1)

Lecture #11, April 20, 2015  
Topics: Network Security (part 2)  
Spam and the Management of Large Email Systems (Supplemental Lecture)

Lecture #12, April 27, 2015  
Homework #4 due  
Topics: IP Telephony and Internet Video, Network Quality of Service (QoS)

Lecture #13, May 4, 2015  
Homework #5 due  
Topics: Networking for the Internet of Things (IoT), Network Architectures for Cloud Computing, SDN

**FINAL EXAM, May 11, 2015**

On-campus, closed-book, two hour exam will be held at Harvard for all students in the New England area. It will be held in Sever Hall room 103 between 5:30 and 7:30. Logistics information for proctored exams will be available on the course website for distance students.

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Note that this syllabus will be updated as needed.  
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