

This page contains the outline for [Computer Networks](#) for fall 2018. Changes to this outline will be announced in class and will also be posted on the [updates page](#). The reading assignments are all from the text (unless otherwise noted) and should be completed *before* the listed week. **Note that additional reading may be assigned in class (and will be posted on the [new readings](#) page).**

Week #1 (08/20/18) - Introduction and overview

- Topics: Basic communications model. Protocol layers and service models. Basic definitions. The OSI model. The Internet protocols. The role of standards organizations.
- Reading: None
- Events: None

Week #2 (08/27/18) - Overview of the Internet

- Topics: What is the Internet? Delay in the Internet (traceroute and ping). History of the Internet. Security in the Internet. Concept of Quality of Service (QoS).
- Reading: Preface plus Chapter 1
- Events: Assignment #1 due Thursday at the beginning of class

Week #3 (09/03/18) - Application layer

- Topics: Application layer protocols. Client-server as a key model. Web, HTTP, FTP, SMTP, POP3, and DNS. Peer-to-peer file sharing networks. Protocol design.
- Reading: Chapter 2 thru 2.6 and see also [new readings](#) page
- Events: None

Week #4 (09/10/18) - Sockets programming

- Topics: Sockets programming in C. A simple client-server implementation. A simple web server implementation. Brief discussion of project.
- Reading: Chapter 2.7 thru end-of-chapter
- Events: Assignment #2 due Thursday at the beginning of class

Week #5 (09/17/18) - Transport layer

- Topics: Brief discussion of project. Reliable data transfer - Stop-and-wait and Go-back-N design and evaluation. TCP and UDP semantics and syntax.
- Reading: Chapter 3 thru 3.4
- Events: None

Week #6 (09/24/18) - Transport layer (continued)

- Topics: TCP RTT estimation. Principles of congestion control - efficiency and fairness, reactive and proactive.
- Reading: Chapter 3.5 thru end-of-chapter

- Events: Assignment #3 due Thursday at the beginning of class

Week #7 (10/01/18) - Security in networks

- Topics: Threats and attacks. Symmetric and public key cryptography. Authentication. Firewalls. VPNs.
- Reading: Chapter 8
- Events: None

Week #8 (10/08/18) - Network layer and routing

- Topics: Principles of routing. Inside an IP router. IP semantics and syntax. Multicast routing.
- Reading: Chapter 4.1 thru 4.3, 4.5, and end-of-chapter
- Events: Assignment #4 due Thursday at the beginning of class

Week #9 (10/15/18) - Network layer and routing

- Topics: Link-state and distance vector routing. Midterm exam review.
- Reading: Chapter 5.1 thru 5.3, 5.7, and end-of-chapter
- Events: Midterm Exam on Thursday in class.

Week #10 (10/11/18) - Link layer (continued)

- Topics: Error detection (parity, checksum, and CRC). Multiple access protocols (collision and token based). IEEE 802.3 Ethernet.
- Reading: Chapter 6 thru 6.3
- Events: None

Week #11 (10/29/18) - Link layer (continued) and physical layer

- Topics: Switching and bridging. Media. Signal strength and interference. Data encoding.
- Reading: Chapter 6.4 thru end-of-chapter and see also [new readings](#) page
- Events: Assignment #5 due Thursday at the beginning of class

Week #12 (11/05/18) - Wireless and mobile networks

- Topics: IEEE 802.11 WiFi, Bluetooth, and cellular networks
- Reading: Chapter 7 and see also [new readings](#)
- Events: None

Week #13 (11/12/18) - Network management

- Topics: What is network management. SNMP. Other tools and trouble-shooting. Traffic analysis. Configuration management.
- Reading: Chapter 5.6 and 5.7
- Events: Assignment #6 due Thursday at the beginning of class.

Week #14 (11/19/18) - Hot topics -- IoT, NFV, and SDN

- Topics: Software Defined Networks (SDN) and Internet of Things (IoT). Review for comprehensive final exam.
- Reading: Chapter 4.4 and 5.5
- Events: None

Week #15 (11/26/18) - Course wrap-up and review for final exam

- Topics: Course wrap-up and review for comprehensive final exam.
- Reading: None
- Events: Assignment #7 due Thursday at the beginning of class. Project due on Monday by 8pm for 110% maximum grade, Tuesday by 8pm for 105% maximum grade, and Wednesday by 8pm for 100% maximum grade.

Week #16 (12/03/18) - Final Exam week

- Topics: None
- Reading: None
- Events: Comprehensive final exam at 12:30pm on Thursday, December 6th

Last update on August 18, 2018