CMPE 344 Computer Networks (Summer 2018)

Instructor:	Assoc. Prof. Dr. Gürcü Öz
Office Hours:	Please refer to the course Web site.
Course Web Site:	http://cmpe.emu.edu.tr/courses/cmpe344

Course Description: Introduction to fundamental concepts of computer networks. Basic performance and engineering trade-offs in the design and implementation of computer networks. Network hardware/software, protocols and layers, OSI and TCP/IP reference models. Data link layer design issues including encoding, framing, error detection, reliable delivery, and multiple access. Multiplexing, switching, and routing. LANs, wireless LANs, cellular networks. TCP/IP protocol family. Network applications. New trends in computer-communication networks.

Pre-requisite: CMPE 242 and MATH 322. **Credit Hours:** (4, 2) 4. **Designation:** Area Core.

Textbook: L. L. Peterson and B. S. Davie, Computer Networks: A Systems Approach, 5th ed., Morgan Kaufmann, 2012.

Reference: A. S. Tanenbaum, Computer Networks, 5th ed., Pearson, 2010.

Important Dates: 9 August 2018. Finals: 13–15 September 2018

Grading Policy: Midterm 40%, Final 50%, Labs 10%.

Lab Policy: There are **no** exemptions from labs. Consult the course Web site for details of lab assignments and other lab policies.

Attendance and Participation: Attendance to every lecture is mandatory.

Academic Dishonesty: Any conduct that attempts to gain unfair academic advantage is considered academic dishonesty. Copying labs and assignments, cheating during exams, substituting for another person are some examples of academic dishonesty. Cases of academic dishonesty will not be tolerated and will be punished according to EMU's disciplinary policies.

Tentative Outline: Below is a tentative outline for this course. I reserve the right to adjust the pace and topics of the class as the semester progresses.

Week 1 Foundations, network performance, importance of statistical multiplexing (Ch. 1)
Week 2 Link layer services, effect of errors on communication, Ethernet: physical properties, multiple access (Ch. 2)
Week 3 Wireless technologies: Bluetooth, Wi-Fi, cellular (Ch. 2)
Weeks 4-5 Packet switching concepts, bridges and LAN switches (Ch. 3)
Weeks 5 Midterm Week
Weeks 6-7 Internetworking with IP (Ch. 3)
Week 8 Address translation, host configuration, VPNs, IPv6, End-to-end protocols: UDP and TCP (Ch. 3, 4, 5)
Week 9-10 A brief overview of the application layer (Ch. 9)
Week 10 Finals

Reading the textbook is a **must** for success in this course. Please schedule your reading according to the tentative outline given above.

Topics and related reading assignments from the textbook:

- **Chapter 1:** Applications of computer networks, network hardware/software, resource sharing, reference models, performance (Read: 1.1-1.5)

- **Chapter 2:** Direct link networks, reliable transmission, Ethernet, wireless networks (Bluetooth, Wi-Fi, cellular), multiple access (Read: 2.1, 2.5-2.7)

- **Chapter 3:** Packet switching, bridges and LAN switches, ATM networks, internetworking with IP, addressing, address translation, subnetting, classless addressing (Read: 3.1-3.3)

- **Chapter 4:** The global Internet, IPv6 (Read: 4.1)

- **Chapter 5:** End-to-end protocols: UDP and TCP. (Read: 5.1, 5.2.1-5.2.3)

- **Chapter 9:** A brief overview of traditional applications: e-mail, WWW, DNS, SNMP (Read: 9.1, 9.3, and selected topics)

Tentative Lab Schedule:

3 August	Lab 1: Protocol layers
7 August	Lab 2: Ethernet
8 August	Lab 3: Wireless
5 September	Lab 4: IP
6 September	Lab 5: ARP
7 September	Lab 6: UDP/TCP
11 September	Lab 7: DNS
12 September	Tutorial