MIDDLE EAST TECHNICAL UNIVERSITY
Department of Computer Engineering

COURSE SYLLABUS

Course

Course Code	5710435
Course Section	01 & 02
Course Title	DATA COMMUNICATIONS AND NETWORKING
Course Credit	3
Course ECTS	6.0
Catalog Description	Introduction to data communications. OSI Reference Model. Physical layer. Electrical interface and data transmission. Data link layer. Media access sublayer. LAN/MAN technologies. Network layer. Inter-networking. Bridging and routing. Transport layer. Introduction to upper layers' issues.
Prerequisites	Knowledge on Operating Systems, and any of C, C++, Python3, Java and Bash.
Schedule	01: Mon 12:40 - 13:30 & Wed 10:40-12:30 02: Mon 16:40 - 17:30 & Wed 15:40-17:30
Website & Communication	https://odtuclass.metu.edu.tr

Instructor

Name	Dr. Cevat ŞENER
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Assistants

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Objectives

At the end of this course, students will be able to:
Understand the basic principles of communication protocols in the context of the Internet.
Explain the operation and architecture of the Internet including the software and hardware components to provide Internet services.
Compare and contrast various application layer protocols such as HTTP, SMTP, FTP, DNS; connection-oriented communication protocols such as TCP and connectionless communication protocols such as UDP at the transport layer; virtual-circuit and packet switching at the network layer; link-state and distance-vector routing at the network layer; and multiple access techniques at the link layer.
Explain the key features of mobile networks such as cellular networks and **elaborate** on the impact of mobility on routing protocols.
Devise protocols for reliable data transfer over unreliable channels, congestion control or flow control either in the user or kernel space of operating systems at the transport layer.
Design and implement networking protocols at any layer of the OSI communication stack above the physical layer using socket programming interface.

Textbook

Kurose, J.F. and Ross, K.W., Computer Networking: A Top Down Approach, 7th Ed., Pearson, 2016.

Readings

Stallings, W., Data and Computer Communications, 10th Ed., Prentice Hall, 2013.

Tanenbaum, A.S., Computer Networks, 5th Ed., Prentice Hall, 2011.

Outline (*tentative*)

Introduction	Kurose & Ross, Chapter 1	
Physical Layer	Stallings, Chapters 3-5	
Application Layer	Kurose & Ross, Chapter 2	Assignment #1: Wireshark
Transport Layer	Kurose & Ross, Chapter 3	Assignment #2: Socket Programming
Network Layer / Data Plane	Kurose & Ross, Chapter 4	Assignment #3: Wireshark
Network Layer / Control Plane	Kurose & Ross, Chapter 5	Assignment #4: Wireshark
Link Layer	Kurose & Ross, Chapter 6	Assignment #5: Wireshark

Grading (*tentative*)

Assignments	49%	Breakdown TBA. Assignment #2 may have higher weight.
Midterm Exam	24%	9-Dec-2020 Wed (tentative, TBA)
Final Exam	27%	

Policies

Late Submission of Assignments

A penalty of $5 \times LateDay^2$ is applied for at most 3 late days unless otherwise is stated.

Make up for Exams

Makeup exam is possible only if a legal documented excuse (e.g. approved medical report) is provided.

Final Exam Entrance Conditions

In order to be allowed to take the final exam, students MUST score **a total of at least 30%** from the Assignments graded.

Other

No grouping or cooperation is allowed for the assignments unless otherwise stated.
The university regulations will be applied in case of cheating on attendance, assignments, exams, etc.