

CENG435 DATA COMMUNICATIONS AND NETWORKING

Tentative Syllabus, 2017-2018 Fall

Instructors:

- Section 1: Hande Alemdar, alemdar@metu.edu.tr, 5591, B106
Office Hour: Fridays 09:30-10:30 and by appointment
- Section 2: Ertan Onur, eronur@metu.edu.tr, 5534, B211
Office Hour: Fridays 09:30-10:30 and by appointment

Assistants:

- Alperen Eroglu, alperen@ceng.metu.edu.tr, 5533, Z019
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Schedule:

- Section 1: Wednesdays, BMB1, 11:40-12:30 and Fridays, BMB1, 10:40-12:30
- Section 2: Wednesdays, BMB3, 11:40-12:30 and Fridays, BMB4, 10:40-12:30

Communication: <http://odtuclass.metu.edu.tr> and <http://cow.ceng.metu.edu.tr>

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. Internetworking. Bridging and routing. Transport layer. Introduction to upper layers' issues.

Course Objectives: At the end of this course, you will be able to:

1. Understand the basic principles of communication protocols in the context of the Internet.
2. Explain the operation and architecture of the Internet including the software and hardware components to provide Internet services.
3. Compare and contrast various application layer protocols such as HTTP, SMTP, DNS; connection-oriented communication protocols such as TCP and connectionless communication protocols such as UDP at transport layer; virtual-circuit and packet switching at network layer; link-state and distance-vector routing at network layer; and multiple access techniques at link layer.
4. 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.
5. 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, 6th Ed., Pearson Education, 2012.

References:

- Tanenbaum, A.S., Computer Networks, 5th Ed., Prentice Hall, 2011.
- Stallings, W., Data and Computer Communications, 9th Ed., Prentice Hall, 2010.

Prerequisites: Mastering a programming language and knowledge on operating systems are required.

Grading: Catalog grading will be employed.

Hello to GENI Platform	1%
Wireshark assignments (WSA)	3 × 5%
Term Project (two deadlines)	19%
Midterm exam I	13%
Midterm exam II	17%
Final	35%

NA grade policy: You will get an NA grade if you have

- not attended at least 1 midterm or
- not submitted at least 2 wireshark assignments or
- not submitted both reports of the term project.

Empty/dummy assignment/project submissions will not be considered as a valid submission.

Makeup policy: The makeup policy applies if and only if you have an officially documented excuse such as medical, or family emergency. You have to inform the instructor about your situation as soon as possible and provide the official documentation. There will be a single make-up examination that will be scheduled after the final for all officially excused exams.

Assignments: The programming assignments/projects must be well documented and complete with test runs conforming to software engineering principles. Any work you submit must be your own.

Late delivery: Late delivery will be accepted for assignments and term projects. Your submission will be assessed out of 100 if it is delivered until the deadline. Late delivery will only be possible for **two days** after the deadlines. Your grade will be assessed out of 90 points on the first day of late delivery and out of 80 points on the second day. Beyond two days, your submission will not be counted as a valid submission and the NA policy will be applied.

Academic honesty: There will be no tolerance to cheating in the exam, to plagiarism (copying someone else's work as if it is yours) and to taking advantage in group assignments and projects. The student who cheats will fail the course and be punished according to METU regulations.

Tentative Course Outline:

Week	Topic	Reading	Homework
1	Courseware, Introduction	Chapter 1	
2	Introduction	Slides	
3	Physical layer	Slides	Hello to GENI OUT-IN
4	Physical, Application layer	Chapter 2	Term Project (TP) OUT
5	Application layer	Chapter 2	
6	Transport layer	Chapter 3	Midterm 1, 06/11/2018
7	Transport layer	Chapter 3	WSA 1 OUT
8	Transport layer	Chapter 3	WSA 1 IN
9	Transport/network layer	Chapter 3,4	Interim TP Milestone
10	Network layer	Chapter 4	WSA 2 OUT
11	Network layer	Chapter 4	Midterm 2, 11/12/2018 and WSA 2 IN
12	Network layer	Chapter 4	WSA 3 OUT
13	Link layer	Chapter 5	
14	Link layer and Review	Chapter 5	Final TP Milestone and WSA 3 IN