CS408 – Computer Networks

1. TITLE AND CREDIT HOURS

Computer Networks
3 Credit course

2. INSTRUCTOR

Name	Office	Email and Personal	Office Hours
Kürşat Çağıltay	FENS 2073	kursat.cagiltay@sabanciuniv.edu linkedin.com/in/kursat-cagiltay/	By appointment (e-mail is preferred)

3. DESCRIPTION

This is a 3-credit introductory computer networks course specializing on data-link and upper layer. Physical layer will not be examined in detail. Applications and protocols will be emphasized.

4. STUDENT REQUIREMENTS

Students' primary responsibilities will be studying weekly topics, critiquing and analyzing them, and participating class discussions. This series of integrated exercises, both in-class and outside of class time, will link with concepts covered in lectures.

The classroom is designed to be a nourishing environment for promoting individual and team learning. This learning includes analytical, practical, and collaborative skills. You will be expected to come to class, well prepared to discuss that day's materials.

5. COURSE PHILOSOPHY AND THE INSTRUCTORS' ROLE

I believe that the best way of learning is realized in authentic real-life environments. Therefore, I will try to provide such learning sources for students. In addition to this, if possible experts will also be invited to some class sessions to share their real-life experiences with you.

Traditionally a teacher is seen the primary resource for knowledge and makes that knowledge available to students through lectures and demonstrations. However, especially in ICT/IS field, the teacher cannot know everything, and a teacher no longer needs to be front and center. "Guide on the side," describes the role that modern teachers can take. This does not mean that the role of the teacher is diminished. In fact, the opposite is true. Therefore, in this course, we hope that there can be less "sage on the stage" and more "guide on the side." Such an approach definitely requires your participation and contribution.

6. TEXTBOOK(S) AND OTHER RECOMMENDED MATERIAL

Text: Computer Networking with Internet Protocols and Technologies, William Stallings, ISBN: 0-13-141098-9
Reference: Computer Networks, 4th or 5th edition, Andrew Tanenbaum,

Reference: Computer Networks and Internets, Douglas Comer, 5th or 6th ed.
Reference: Computer Networking: A top-down approach featuring the Internet, Kurose and Ross, 4th or newer ed.
Reference: Data and Computer Communications, Stallings, 6th or newer edition.

Optional:

Some historical resources (in Turkish)
Türkiye'de Internet Dünü Bugünü Yarını, April 2015
https://www.researchgate.net/publication/326191266_Turkiye'de_Internet_Dunu_Bugunu_Yarini

Internet, Published by ODTÜ Press, 1997
https://ocw.metu.edu.tr/course/view.php?id=45

Communication:

Announcements will be made via SUCourse that you will also receive as emails.

All lecture materials, homework and assignments will be posted at SUCourse. The submissions will also be there unless otherwise stated.
Lecture materials will be posted as powerpoint file without annotations made in class. Each powerpoint file will be shared after it is entirely covered in class.

7. ASSIGNMENTS AND GRADES

The following assignments and grades are tentative, some assignments may be revised!

In Class Quizzes 20%,
Homework, and labs 20% (individual weights will be determined later, approx. 4% each)
Term Project : 25% (First phase 10% , Second phase 15%)
Term Project, Group Peer Evaluation: 3%
Final exam 32% (closed everything)

There will be one face-to-face final exam.

Labs, Project and Homework Assignments

There will be 4 labs planned (one of them will last several weeks; we anticipate using 8 weeks of the labs + some extra lectures during lab hours if needed). During these labs you will have hands-on experience and/or practical lectures on socket programming", "Internet protocols (via packet capturing and analysis)", "DNS and various server installations and configurations", "LAN design and implementation / IP subnetting". More information on lab sessions will be posted on the lab web site in time.

The labs WILL NOT be direct application of the lectures, but they will be related to each other. We DO NOT aim to use labs as recitations to help the students to get higher marks in the exams. There will be one recitation before the midterm exam and one recitation before the final exam.

There may be some quizzes at unannounced times. 2-3 of the lowest grades will be deleted to cover missing ones due to any excuses. Thus there will not be any make-up for quizzes.

There will be one or two homework assignments about lecture material. Moreover, there will be either homework, quiz, project or in-lab performance to be graded related to each lab. Moreover, there will be a term project and its weight will be greater than or equal to 16%. Homework assignments are to be done individually, but the project will be done in groups of 4-5 people (not less than that except really exceptional cases). Project requires programming and it is about development of network applications (this may also require an application layer protocol design). The project will be done in 2 or 3 phases with different deadlines and grading. There will be peer evaluation grading to evaluate team members' performances which is about 3%.

8. WEEKLY PROGRAM – (Tentative)

- Introduction
  - Circuit Switching, Packet Switching, Basic delay concepts
  - The protocol concept, OSI Model, TCP/IP Architecture and the Internet
- Applications
  - traditional apps (telnet, SMTP, FTP)
  - modern apps (HTTP, DNS, Sockets)
  - network management (SNMP)
- Data Transmission Basics
- Local Area Networks (LANs) and Ethernet
  - Architecture, Topologies and Technologies
- Data Link Control and Protocols
  - Flow control, Error detection and correction
  - Sliding Window Protocols
- Internet Protocol (IP) and Internetworking
- Routing
- Transport Protocols (TCP)
- Congestion Control
- TCP Traffic Control