CS 408 - Computer Networks
Spring 2021, 3 credits

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.

Prerequisite: CS 204 – Advanced Programming. Although Math 203 is not a formal prerequisite, probability knowledge is partially needed.

Instructor: Saeed Nourizadeh Azar, FENS 2017, saeed@sabanciuniv.edu
TAs: Mustafa Aydın, Office Hour: TBD, mustafaaydin@sabanciuniv.edu
Amir Sepahi, Office Hour: TBD, amirsepahi@sabanciuniv.edu

Lect. Schedule: M 16:40-17:30, W 8:40–10:30,
Lab Schedule: Section A:
Section B:

No labs in the first and possibly in the second week. We will make announcements about when they will start.

Text: Computer Networking with Internet Protocols and Technologies, William Stallings, ISBN: 0-13-141098-9
Reference: Computer Networking: A top-down approach, Kurose and Ross, 7th.
Reference: Computer Networks, 4th or 5th edition, Andrew Tanenbaum,
Reference: Computer Networks and Internets, Douglas Comer, 5th or 6th ed.
Reference: Data and Computer Communications, Stallings, 6th or newer edition.

Outline
- 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)
- 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

Labs, Project and Homework Assignments
There will be 3-4 labs (some of them may last several weeks). During these labs you will have hands-on experience and/or practical lectures on "C# language, socket programming", "Internet protocols (via packet capturing and analysis)", "DNS and various server installations and configurations (subject to online availability)", "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 are 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.

Make-up Policy: No make-up! If you miss something, you miss it whatever the reason is! If the reason is really valid, you may take an oral examination instead of a written make-up.

Tentative Grading (subject to change)
Midterm exam 30% (closed everything)
Final exam 30% (closed everything)
Quizzes 10%,
Homework, project and labs 30%

Important Dates
Midterm Exam:
Final Exam: as scheduled by SR
Homework, project and lab deadlines will be specified separately
Plagiarism will not be tolerated