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 201 – Introduction to Computing, however sophomores are not recommended to take this course. Although Math 203 is not a formal prerequisite of this course, probability knowledge is partially needed.

**Instructor:** Albert Levi, FENS 1091, x9563, levi@sabanciuniv.edu

**TAs:** Ramin Armanfar, Office Hour: TBD, raminarmanfar@sabanciuniv.edu

Ömer Mert Candan, Office Hour: TBD, mcandan@sabanciuniv.edu

**Lect. Schedule:** W 15:40 - 16:30, FENS G032  
F 8:40 – 10:30,  FENS G032

**Lab Schedule:**  
Section A1 & A2: W 17:40 – 19:30 FENS G035  
Section B: Th 17:40 – 19:30 FMAN G056

There will not be labs in the first couple of weeks. We will make announcements about when they will start.

**Text:**  

**Reference:**  
Computer Networks, 4th or 5th edition, Andrew Tanenbaum  
Computer Networks and Internets, Douglas Comer, 5th or 6th ed.

**Reference:**  
Computer Networking: A top-down approach featuring the Internet, Kurose and Ross, 4th, 5th or 6th ed.

**Reference:**  
Data and Computer Communications, Stallings, 6th or newer edition.

**Tentative 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 4-5 labs. 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, 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 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 20%. Homework assignments are to be done individually, but the project will be done in groups. Project requires programming and it is about development of applications that run on networks (this may also require an application layer protocol design). The project will be done in three 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.

**Tentative Grading (subject to change)**

Midterm exam 30% (closed everything)

Final exam 35% (closed everything)

Homework, project and labs 35%

**Important Dates**

Midterm Exam: Thursday Nov. 19, at 19:40 in FENS G077.

Final Exam: as scheduled by SR

Homework, project and lab deadlines will be specified separately

**Class Website:** [http://people.sabanciuniv.edu/levi/cs408](http://people.sabanciuniv.edu/levi/cs408)

Plagiarism will not be tolerated.