Course Topics: The course covers fundamental principles of computer networks, as well as currently used network architectures and protocols. Its emphasis is 1) to explain why reliable data transfer, addressing, routing and congestion control are the fundamental concepts, 2) to explore the design principles behind algorithms/protocols for reliable data transfer, addressing, routing and congestion control and 3) to use current protocols such as TCP/IP, ARQ, Ethernet, CSMA/CD, DNS and Internet routing protocols as examples of concrete implementations/designs of these protocols. It will highlight the trade-offs (and approaches to navigate these trade-offs) in the design of computer network protocols.


Schedule:

Week 1: Introduction Chapter 1, pp.1-38
Week 2: Introduction Chapter 1, pp.39-65
Week 3: Reliable Data Transfer Chapter 3.4: Principles of Reliable Data Transfer; Lecture Notes "ARQ Retransmission Strategies"
Week 4/5: Delay Performance Lecture Notes "Delay Performance"
Week 6: Multiaccess Networks&Protocols Lecture Notes on Multiaccess Protocols, Chapter 5.1, 5.3 Introduction, 5.3.2, 5.3.4, 5.5, 6.1, 6.3.2
Week 7/8: Routing&IP Chapter 4.1 (Introduction), 4.2 (Virtual Circuit and Datagram Networks), 4.4 (The IP), 4.5 (Routing Algorithms), 4.6 (Routing in the Internet)
Week 9/10: Congestion Control & TCP Chapter 3.1, 3.2, 3.3, 3.5, 3.6.1, 3.7.1, Lecture Notes on TCP Congestion Control
Week 11: DNS Chapter 2.1, 2.5, 2.6, 2.7, 2.8
Week 12: Review
Assignments: There are five written and one video assignment. Note the due date and time!! Late assignments will not be accepted, and will be given a grade of 0.

- **Written Assignments:** There are five written assignments, each worth 6%. Requests for reconsidering the marking of a written assignment must be submitted in written form within one week after the assignment has been returned. The work that you submit must be your own.

- **Video Assignment:** There is one video assignment worth 30%. For each video assignment, you are assigned a specific topic that you must explain in the video. The audience of your video are 4th year undergraduate students who did not take any course on computer networks. Each video submission has to be between 15 and 20 minutes. Store your videos on MyMedia, and submit the link to the video through MarkUs.

Grading Scheme:
Written Assignments 1-5: 30% (6% each)
Video Assignments: 30%
Final: 40%

Submission Date/Times for Written and Video Assignments:
Assignment 1: Due Friday, Oct. 6, 10pm
Assignment 2: Due Friday, Oct. 20, 10pm
Assignment 3: Due Friday, Nov. 03, 10pm
Video Assignment: Friday, Nov. 17, 10pm
Assignment 4: Due Friday, Nov. 24, 10pm
Assignment 5: Due Wednesday, Dec. 6, 10pm