

# CSC457 Principles of Computer Networks - Fall 2021

Lectures: Wednesday 3-5pm

Tutorials: Fridays 4-5pm

Instructor: Peter Marbach (email: marbach@cs.toronto.edu)

Office hour: Wenesdays 5-6pm

**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.

**Text Book:** "Computer Networking: A Top-Down Approach Featuring the Internet"; J. F. Kurose and K. W. Ross. Addison Wesley.

## 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 Retranmission 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 two video assignments. 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. 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 Assignments:* There are two video assignments, each 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.** Your submissions will be marked based on correctness, completeness, presentation, and creativity. Store your videos on MyMedia, and submit the link to the video through MarkUs.

### **Grading Scheme:**

Written Assignments 1-5: 40% (8% each)  
Video Assignments 1-2: 60% (30% each)

### **Submission Date/Times for Written and Video Assignments:**

Assignment 1: Due Friday, Oct. 1, 10pm  
Assignment 2: Due Friday, Oct. 15, 10pm  
Assignment 3: Due Friday, Oct 29, 10pm  
Video Assignment 1 : Friday, Nov. 19, 10pm  
Assignment 4: Due Friday, Nov. 26, 10pm  
Assignment 5: Due Wednesday, Dec. 8, 10pm  
Video Assignment 2: Due Sunday, Dec. 11, 10pm