

CS 549: Performance Analysis of Computer Networks
Course Outline, Feb-June 2023

Classes: B Slot. Mon 9 am, Wed 8 am, Thur 11 am, Fri 2 pm.
Classroom: A17-1B.

Tentative distribution of topics:

Lectures	Topic	Reference
1--3	Introduction to computer networks	T3. Ch 1
4--6	Measurement tools and techniques	T4. Ch 4--6
7--10	Introduction to queueing theory	T2. B.3 & D.1.
11-14	Multiaccess communication schemes	T3. Ch 5
15-17	Analysis of MAC protocols	T1. Ch 4
18	Link Scheduling & Network capacity	T2. Ch 8
19--21	Experiment design	T4. Ch 16-17, 20
22	Review of network layer	T3. Ch 4. T2. Ch 13
23--29	Routing algorithms and their analysis	T2. Ch 14
30--35	Advanced queueing theory	T1. Ch 3
36--39	Advanced topics	-
40--42	Mini project presentations/demos	-

Textbooks:

1. *Data networks*, D. Bertsekas and R. Gallager, 2008, Prentice-hall.
2. *Communication networking: an analytical approach*, A. Kumar, D. Manjunath and J. Kuri, 2004, Elsevier.
3. *Computer networking: a top-down approach*, J.F. Kurose and K.F. Ross, 2017, Pearson.
4. *The art of computer systems performance analysis*, R. Jain, 2013, Wiley India.

Instructor:

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Teaching Assistants:

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Grading scheme:

There will be 2 quizzes (18% x 2) and an end sem exam (36%). There will be 4 theory assignments and 3 programming assignments (weighing 4% and 9% resp.) A mini project that will have a weightage of 15%. An additional 5% will be awarded for participation.

Tentative schedule:

Week 1	30 Jan -- 5 Feb	
Week 2	6 Feb -- 12 Feb	Theory Assignment 1
Week 3	20 Feb -- 26 Feb	Lab Assignment 1
Week 4	27 Feb -- 5 Mar	--
Week 5 & Week 6	6 Mar -- 12 Mar	Quiz 1
Week 7	13 Mar -- 19 Mar	Lab Assignment 2
Week 8	20 Mar -- 26 Mar	Theory Assignment 3
Week 9	27 Mar -- 2 Apr	Lab Assignment 3
Week 10	3 Apr -- 9 Apr	–
Week 11	10 Apr -- 16 Apr	Quiz 2
Week 12	17 Apr -- 23 Apr	–
Week 13	24 Apr -- 30 Apr	Theory Assignment 4, Mini project
Week 14 & Week 15	1 May -- 14 May	Mini project
	15 May –	End-sem exam

Prerequisite reading for those who have not done CDP:

1. Chapter 1
2. Chapter 4, Section 4.1
3. Chapter 5, Section 5.1

from the book

Computer Networks by Andrew S. Tanenbaum & David J. Wetherall.