Computer Networks-CS307
FALL 2020

Course Outline

Instructor: Ishrat Fatima
Email: ishrat.fatima@nu.edu.pk
Office Hours: Friday 11:00 AM -1:00 PM
Office location: Exam hall opposite to Lab 4

TA Name: To be announced
Email address:

Course Information

Program: BS
Credit hours: 3+1
Type: Core
Class meeting time: Mon & Wed: 12:30 to 2pm

Course website: SLATE
Class Venue: CS-7
Pre-requisites: CS218 Data Structures

Objective of the Course

The objective of this course is to introduce the principles and practices of Computer Networking, specifically focusing on the Internet. By the end of the course, students should be able to:

- Understand the anatomy of the Internet
- Understand fundamental layered structure, understand common offered layered services, examine protocols and algorithms used to operate the network
- Create foundation for more advanced courses in computer networks
- Be able to write networking application with Socket programming in C/C++
- Design and test networks on network designing tools
- Simulate existing protocols along with designing new protocols in network simulators

Text Book

Computer Networking: A Top Down approach featuring the Internet, 6th Edition   James F. Kurose and Keith W. Ross

Reference book

Computer Networks, 4th Edition   Andrew Tanenbaum
Data Communications and Networking, 5th Edition   Behrouz A. Forouzan

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Module	No. Of Lectures	Reference Text
Introduction and Overview Basic Concepts of Networking Circuit switching Packet switching Multiplexing (TDM, FDM) Throughput and delay Internet Architecture Protocol Layering	3	**Chapter 1** **Supplement text from Forouzan**
Application Layer Network application architectures	2	**Chapter 2**

HTTP, FTP, Email, DNS Basics of P2P applications		
Transport Layer Multiplexing in UDP and TCP Connectionless Transport: UDP Reliable data transfer and TCP Congestion avoidance and control	**7**	**Chapter 3**
Network Layer The Internet Protocol Routing algorithms Routing protocols Broadcasting and Multicasting	**8**	**Chapter 4**
Link Layer and MAC Layer Functionalities Error Detection & Control, ARP Link layer addressing Bridges and Hubs LAN Technologies Multiple Access	**6**	**Chapter 5** **Supplement text from Tenanbaum**
Advanced Topics (subject to availability of time) Introduction to Internet of things Multimedia networking Applications Introduction to Network Security and Principles of Cryptography Introduction to 1 G, 2G and 3G		**Chapter 7** **Supplement text from Tenanbaum/ Network security: private communication in a public world by Radia Perlman** [Subject to the availability of the time]

Evaluation

Assignments	10%
Quizzes	15%
Mid Exams	30% (15 + 15)
Final Exam	45%
Total:	**100 %**

Course Policies

- **Grading Policy - Absolute**
- Course outline may change 10-20% as we proceed in the semester
- Assignment deadlines for both class and lab are hard.
- Quizzes might be announced or unannounced. We may have 3-6 quizzes during the semester.
- There will be no retake of quizzes or exams. Special consideration may be given only for mid or final exam for an emergency on per case basis. In approved circumstances, percentage of mid will be awarded for final or vise versa.
- Integrity in the assignments/quizzes is expected; otherwise result would be an F grade in the course or may be the case is forwarded to Disciplinary committee.
- (80%) Attendance MUST be ensured according to the University policy to avoid disqualification.