Computer and Communication Networks (CCN)

Institute Core

UG2 (CSE & ECE)

Spring 2023

Lecture-0

Dr. Pavan Kumar B N

Course Syllabus

The following list of topics is tentative. Based on available time slots, some topics may be dropped or added or reordered.

Unit – 1 [6 Hours]: Guided transmission media: twisted pair, coaxial cable, fibre optic cable; Multiplexing: FDM and TDM: Packet switching and circuit switching: Internet protocol stack: ISO OSI reference model, Delay, loss and throughput in packet switched networks.

Unit – 2 [10 Hours]: The web and HTTP; FTP; Electronic mail: SMTP; Domain name systems; Peer-to-peer networks.

Unit – 3 [10 Hours]: Transport layer services; Multiplexing and demultiplexing; Principles of reliable data transfer: Go-Back-N and Sliding window, TCP, UDP, Congestion control.

Unit – 4 [6 Hours]: Network Layer: Services of network layer, Virtual circuit and datagram networks, Internet protocol

Unit – 5 [6 Hours]: Link-state routing and distance vector routing. Hierarchical routing, Routing in the internet, broadcast and multicast routing.

Unit – 6 [10 Hours]: Link layer services, Error detection and correction; Multiple access protocols: ALOHA, Slotted ALOHA, CSMA, CSMA/CD, Ethernet; WiFi. Next generation wireless networks, Intro to self optimization networks (SON).

Course Materials and Course Structures

- Course Materials:
  - Computer Networking: A Top-Down Approach, James F. Kurose and Keith W. Ross
  - Andrew Tanenbaum , Davis Wetherall, Computer Networks
- Course Structure (tentative):
  - 1st Mid-Sem – 20%, 2nd Mid-Sem – 25%, End-Sem – 25% = 70%
  - Scheduled Quizzes – 20% (1. Before Mid-1, 2. Between Mid-1 & mid-2)
  - Assignment – 10%

Course Objectives

- Understanding how a computer network works
- Understanding how the network of networks, Internet, works
- Understanding how different protocols (HTTP, FTP, etc.) work
- Understanding the TCP/IP addressing scheme, routing over Internet, switching in a network
- Understanding how different network devices work (routers, switches, etc.)

- https://www.youtube.com/watch?v=eTBLIYJSzdc