CS 302: Computer Networks (3-0-2: 4)

Network Layer : Network Layer Addressing IP version 4 and 6 and Internetworking. Address Mapping, Error Reporting : ICMP, IGMP. Delivery, Forwarding and Routing Algorithms : Intra- and Interdomain Routing, Distance Vector Routing, Link State Routing Path Vector Routing, Multicast Routing Protocol, Wireless Routing Protocols (DSR, DSDV and AODV).

Transmission Layer : TCP/IP protocol suite. Details of UDP, TCP and SCTP. Congestion Control and Quality of Service.

Application Layer : DNS, E-MAIL, TELNET, FTP, WWW, HTTP etc.,

Network Management : SNMP.

Security : Cryptography and Network Security, Internet Security : IPSec, SSL/TLS and PGP.

Basics of Software Defined Networking and Future Trends.

Suggested List of Laboratory Experiments:

1. Exercises in Network programming (client server socket programming in C and Java).
2. Packet Monitoring and Analysis using WireShark.
3. TELNET and FTP.
4. Configuring and testing Open Source Network Simulators.
5. Simulation experiments for protocol performance.
6. Network management experiments.
7. SDN controller based network management.

Text Books:

1. B. Forouzan, “Data Communication and Networks”, McGraw-Hill Publication.
2. W. Stalling, “Data and Computer Communications”, PHI (EEE).

References:

1. A. S. Tanenbaum., “Computer Networks”, Pearson Education Asia.
2. A. L. Garcia and I. Widjaja, “Communication Networks Fundmental Concepts and Key Architectures”, Tata McGraw-Hill Publication.