

COMPUTER NETWORKS

Course code: 15CS2201

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Pre requisites: Operating Systems

Course Outcomes: A Student Who Successfully Completes This Course Should, at a Minimum, Be Able To

CO1: Understand Basics of Computer Networks and different Transmission Media.

CO2: Differentiate Protocols which play a major role in providing internet effectively.

CO3: Understand various protocol layers and inner operations.

CO4: Understand architectures of network protocols.

CO5: Understand security issues in network protocols.

UNIT-I: (10-Lectures)

NETWORK MODELS: Layered Tasks, WAN, LAN, MAN, OSI model, TCP/ IP protocol stack, addressing (Text book 2), Novell Networks Arpanet, Internet. (Text book 1).

PHYSICAL LAYER: Transmission media: copper, twisted pair, wireless; switching and encoding asynchronous communications; Narrow band ISDN, broad band ISDN and ATM. (Text book 1)

UNIT-II: (10-Lectures)

DATA LINK LAYER: Design issues, framing, error detection and correction, CRC, Elementary data link protocols, Sliding Window Protocol, Slip, HDLC, Internet, and ATM.

MEDIUM ACCESS SUB LAYER: Random access, Controlled access, Channelization, IEEE 802.X Standards, Ethernet, wireless LANS, Bridges. (Text book 2)

UNIT-III: (10-Lectures)

NETWORK LAYER: Network Layer Design Issues, Routing Algorithms, Internetworking, Network Layer in Internet. (Text book-1)

CONGESTION CONTROL: General Principles, policies, traffic shaping, flow specifications, Congestion control in virtual subnets, choke packets, loads shedding, jitter control.(Text book-2)

UNIT-IV: (10-Lectures)

TRANSPORT LAYER: Transport Services, Elements of Transport Protocols, Internet Transport Protocols (TCP & UDP); ATM AAL Layer Protocol.(Text book-1)

APPLICATION LAYER: Network Security, Domain name system, SNMP, Electronic Mail: the World WEB, Multi Media

UNIT-V: (10-Lectures)

SONET/ SDH: SONET/SDH Architecture, SONET Layers, SONET Frames, STS Multiplexing, SONET Networks.

TEXT BOOKS:

1. Andrew S Tanenbaum: Computer Networks, 6th Edition. Pearson Education/PI, 2012.
2. 2 .Behrouz A. Forouzan: Data Communications and Networking, 4th Edition TMH, 2012.

REFERENCES:

1. S.Keshav: An Engineering Approach to Computer Networks, 2nd Edition, Pearson Education, 2001.
2. William, A. Shay : Understanding communications and Networks, 3rd Edition, Thomson Publication, 2006