COMPUTER NETWORKS

Course code: 13CS2201

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Pre requisites: ACA, DATA COMMUNICATION SYSTEM

Course Educational Objectives:
The main objective of this course is to make the student learn the design of computer networks.

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

1. Understand Basics of Computer Networks and different Transmission Media.
2. Differentiate Protocols which play a major role in providing internet effectively.
3. Understand various protocol layers and inner operations.
4. Understand architectures of network protocols.
5. Understand security issues in network protocols.

UNIT-I
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
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

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

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

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