

TCS2001 DATA AND COMPUTER COMMUNICATION NETWORKS

Module 1

Data Communication: Data Communications, Data Networking and Internet, Protocol Architecture, TCP/IP and Internet based Applications, Data Transmission, Data and Signals- periodic analog, Digital signals, Transmission Impairments, Data Rate Limits, Performance.

Module 2

Transmission Methodologies: Digital Transmission- Digital to digital Conversion, Analog to digital conversion, Transmission Modes. Analog Transmission- Digital to Analog conversion, Analog to Analog conversion. Bandwidth utilization- Multiplexing, Spread Spectrum

Module 3

Data Link Layer: Error detection and correction, Block Encoding, Linear Block Encoding, Cyclic codes, Checksum. Data link Control- Framing, Flow and Error Control, Noiseless Channel, Noisy Channel, HDLC, Point to point protocol.

Module 4

Multiple Access & Local Area Networks: Multiple Access, Random Access-CSMA, CSMA/CD, CSMA/CA. Controlled Access-Reservation, Polling, Token Passing in FDDI and CDDI. Channelization- FDMA, TDMA, CDMA. Wired LANs: Ethernet, IEEE standards, Standard Ethernet, Changes in the Standard, Fast Ethernet, Gigabit Ethernet.

Module 5

Connecting Devices and Backbone Networks: Bridges, Functions of a bridge, Bridge Protocol Architecture, Fixed routing, Spanning tree approach, Connecting devices like Repeaters, Hubs, Bridges, Two-layer switches, Routers and Three layer switches, Backbone networks, Bus Backbone, Star Backbone, Connecting remote LANs, Wireless LANs, Applications, Architecture, IEEE 802.11, Architecture and Services, Medium Access Control, Physical layer.

Module 6

Network Layer and Transport Layer: Internetwork protocols, principles of Internetworking, Internet protocol operation, IPV4:ICMP, ARP, IPV6, Internetwork Operations, Multicasting, IGMP, Routing Protocols- distance Vector, Link State routing, path-vector routing, Border Gateway Routing, OSPF, Integrated service Architecture, Differentiated services, service level agreements. Connection oriented transport protocol mechanism, TCP, TCP congestion control, UDP

Module 7

Application Layer: Domain Naming System, Remote Logging- Electronic mail & File Transfer, WWW and HTTP, web documents, HTTP transactions, Network Management system, SNMPV2, V3.

Text Books:

1. Data and Computer communications Eighth edition by William Stallings
2. Data communication and Networking Fourth edition by Behrouz A Forouzan