COMPUTER NETWORKS **Credit : 3**

1. Introduction : Network Hardware & Software, OSI Reference Model, TCP/IP Model, Comparison of the OSI & TCP/IP model. Lecture : 2

2. The Physical Link layer : Guided Transmission Media, Physical Layer Standard. Lecture : 2

3. The Data Link Layer : Need for Data Link Control, Service provided by the Data Link Layer, Frame Design Consideration, Flow control Mechanism, Data Link Error control, Error Control in Stop-and-wait Mechanism & Sliding Window Mechanism, Sequence numbering, Piggybacking Acknowledgements, Data Link Management. Lecture : 8

4. MAC Protocols : Random access Protocols – ALOHA. Lecture : 2

5. IEEE 802.3 Ethernet : Contention Access, CSMA/CD, Physical Topology of Ethernet, Ethernet Repeater, Types of Ethernet. Lecture : 5

6. Bridges and Layer-2 Switches : LAN Bridge, Transparent Bridges, Spanning tree algorithm. Source routing bridge, route discovery in source routing, layer 2 Ethernet switches. Lecture : 5

7. The network layer : network layer design issue, purpose of network layer, Functions of the Network Layer. Lecture : 5

8. Introduction to Internet Protocol : IPv4 Format, ICMP. Lecture : 2

9. Routing Algorithms : Static Routing, Dynamic Routing, Distance Vector Routing Algorithm, Routing Information Protocol, Link State Routing, OSPF Routing Protocol. Interior and Exterior Protocol, and Border Gateway Protocol. Lecture : 10

10. Introduction to Transport Layer: TCP & UDP. Lecture : 1

11. Introduction to Application Layer: TCP/IP Application Protocol. Lecture : 1

Text Book:

1. Data Communication & Networking by Forouzan, Tata McGraw Hill.

2. Computer Network, 4e, by Andrew S. Tenenbaum, Pearson Education/ PHI.

3. Data Communication and Computer Networks, by Prakash C.Gupta, PHI.

4. Networking Ali-in-one Desk Reference by Doug Lowe, Wiley Dreamtech

Reference Books:

1. Computer Networking: A Top-Down Approach featuring the Internet, 3e by James F.Kurose.

2. Computer Network by Godbole, Tata McGraw Hill.

3. Computer Networking, by Stanford H. Rowe, Marsha L. Schuh