IV Year II Semester

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MT 434 COMPUTER NETWORKS (ELECTIVE - VI)

Course Description & Objectives:
Course structure familiarizes students with division of network functionalities; components required for different types of networks, functionality at each layer and flow control and congestion control algorithms

Course Outcomes:
At the end of the course, the students would be able to:

1. *identify the components required to build different types of networks*

2. *choose the required functionality at each layer for given application*

3. *identify solution for each functionality at each layer*

4. *trace the flow of information from one node to another node in the network*

UNIT I: Fundamentals & Link Layer:

Building a network – Requirements - Layering and protocols - Internet Architecture – Network software – Performance ; Link layer Services - Framing - Error Detection - Flow control

UNIT II: Media Access & Internetworking:

Media access control - Ethernet (802.3) - Wireless LANs – 802.11 – Bluetooth - Switching and bridging – Basic Internetworking (IP, CIDR, ARP, DHCP,ICMP

UNIT III: Routing:

Routing (RIP, OSPF, metrics) – Switch basics – Global Internet (Areas, BGP, IPv6), Multicast – addresses – multicast routing (DVMRP, PIM)

UNIT IV: Transport Layer:

Overview of Transport layer - UDP - Reliable byte stream (TCP) - Connection management - Flow control - Retransmission – TCP Congestion control - Congestion avoidance (DECbit, RED) – QoS – Application requirements

UNIT V: Application Layer:

Traditional applications -Electronic Mail (SMTP, POP3, IMAP, MIME) – HTTP – Web Services – DNS - SNMP

TEXT BOOK:

1. Larry L. Peterson, Bruce S. Davie, "Computer Networks: A Systems Approach", Fifth Edition, Morgan Kaufmann Publishers, 2011.

REFERENCES:

1. James F. Kurose, Keith W. Ross, "Computer Networking - A Top-DownApproach Featuring the Internet", Fifth Edition,

Pearson Education, 2009.

2. Nader. F. Mir, Computer and Communication Networks, Pearson Prentice Hall Publishers, 2010.

3. Ying-Dar Lin, Ren-Hung Hwang, Fred Baker, "Computer Networks: An Open Source Approach", Mc Graw Hill Publisher, 2011.

4. Behrouz A. Forouzan, "Data communication and Networking", Fourth Edition, Tata McGraw – Hill, 2011