Semester 3

Computer Networks Track

Data Communication and Networking **3 Credit Hours**

Objectives

Introduction to Data Communication and Networks, the Internet, Protocols and Standards, Layered Tasks, OSI Model, Layers in the OSI Model and their Brief Functionality, TCP/IP Protocol Suite, Physical Addresses ,Logical Addresses, Port Addresses, Analog and Digital Signals, Periodic Analog Signals, Digital Signals, Transmission Impairment ,Data Rate Limits, Performance, Frequency Division Multiplexing , Wavelength Division Multiplexing, Time Division Multiplexing, Guided media, Unguided Media, Types of Errors, Redundancy, Linear Block Codes, Cyclic Codes, Framing, Flow and Error Control, CSMA/CD, CSMA/CA, Standard Ethernet, Fast Ethernet, Gigabit Ethernet, Connecting Devices, Passive and Active Hubs, Bridges, Switches, Routers, IPV4 addressing, Classful Addressing, Classless Addressing, Network Address Translation, Internetworking, Need of Network Layer, Internet as a Datagram Network, Internet as a Connectionless Network, IPv4 Datagram, Fragmentation, Checksum. Forwarding Techniques, Forwarding Process, Routing Table, UDP: Well-Known Ports for UDP, User Datagram, Checksum, UDP Operation, Use of UDP. TCP: TCP Services, TCP Features.

Principal.
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Prerequisites
None

Text Book
Behrouz A. Forouzan, Data Communications and Networking,4th Edition, ISBN-13 978-0-07-296775-3

Reference Material
Andrew S. Tanenbaum, Computer Networks, 5th Edition, ISBN 10: 0-13-212695-8