

PESIT Bangalore South Campus

15CS46: DATA COMMUNICATION

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No. Of Sessions: 56

Course objectives: This course will enable students to

- Comprehend the transmission technique of digital data between two or more computers and a computer network that allows computers to exchange data.
- Explain with the basics of data communication and various types of computer networks;
- Illustrate TCP/IP protocol suite and switching criteria.
- Demonstrate Medium Access Control protocols for reliable and noisy channels.
- Expose wireless and wired LANs along with IP version.

Class #	Chapter Title/Reference Literature	Topics to be covered	% of Portion Covered	
			Reference Chapter	Cumulative
1	MODULE 1	Introduction: Data Communications, Networks,	21.4	21.4
2		Network Types, Internet History,		
3		Standards and Administration,		
4		Networks Models: Protocol Layering, TCP/IP Protocol suite,		
5		The OSI model,		
6		Introduction to Physical Layer-1: Data and Signals, Digital Signals,		
7		Transmission Impairment, Data Rate limits,		
8		Performance,		
9		Digital Transmission: Digital to digital conversion.		
10		Line coding: Polar		
11		Bipolar		
12		Manchester coding		
13	MODULE 2:	Physical Layer-2: Analog to digital conversion (only PCM),	19.65	41.05
14		Analog to digital conversion (only PCM) cond...		
15		Transmission Modes,		
16		Analog Transmission: Digital to analog conversion,.		

17		Digital to analog conversion,. Cond...		
18		Bandwidth Utilization: Multiplexing and		
19		Spread Spectrum,		
20		Switching: Introduction		
21		Circuit Switched Networks		
22		Packet switching		
23		Packet switching cond...		
24	MODULE 3:	Error Detection and Correction:	19.65	60.7
		Introduction.		
25		Block coding,		
26		Block coding cond....		
27		Cyclic codes,		
28		Checksum,		
29		Forward error correction,		
30		Data link control: DLC services,		
31		Data link layer protocols,		
32		HDLC,		
33		and Point to Point protocol:Framing,		
34		Transition phases		
35	MODULE 4:	Media Access control: Random Access,	19.65	80.35
36		Controlled Access and Channelization,		
37		Controlled Access and Channelization COND...		
38		Wired LANs Ethernet: Ethernet Protocol,		
39		Standard Ethernet,		
40		Fast Ethernet,		
41		Gigabit Ethernet and 10 Gigabit Ethernet		
42		Wireless LANs: Introduction,		
43		Introduction cond...		
44		IEEE 802.11 Project		
45		Bluetooth.		
46	MODULE 5:	Other wireless Networks: WIMAX,	19.65	100
47		Cellular Telephony,		
48		Satellite networks,		
49		Network layer Protocols : Internet Protocol,		
50		ICMPv4		
51		Mobile IP		
52		Next generation IP: IPv6 addressing		
53		The IPv6 Protocol,		

54		The ICMPv6 Protocol.		
55		Transition from IPv4 to IPv6.		
56		Transition from IPv4 to IPv6 cond..		

Text Book:

Behrouz A. Forouzan, Data Communications and Networking 5E, 5th Edition, Tata McGraw-Hill, 2013. (Chapters 1.1 to 1.5, 2.1 to 2.3, 3.1, 3.3 to 3.6, 4.1 to 4.3, 5.1, 6.1, 6.2, 8.1 to 8.3, 10.1 to 10.5, 11.1 to 11.4, 12.1 to 12.3, 13.1 to 13.5, 15.1 to 15.3, 16.1 to 16.3, 19.1 to 19.3, 22.1 to 22.4)

Reference Books:

1. Alberto Leon-Garcia and Indra Widjaja: Communication Networks - Fundamental Concepts and Key architectures, 2nd Edition Tata McGraw-Hill, 2004.
2. William Stallings: Data and Computer Communication, 8th Edition, Pearson Education, 2007.
3. Larry L. Peterson and Bruce S. Davie: Computer Networks – A Systems Approach, 4th Edition, Elsevier, 2007.
4. Nader F. Mir: Computer and Communication Networks, Pearson Education, 2007

