

ITA5003	Data Communication and Networking	L	T	P	J	C
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Pre-requisite	Nil	Syllabus version				
		v. 1.1				
Course Objectives:						
<ol style="list-style-type: none"> 1. To provide the logical description for layered communication with an overview of the global network infrastructure. 2. To facilitate students to understand the state-of-the-art in network protocols, architectures, design principles and applications 3. To empower and provide exposure to recent developments and address contemporary issues. 						
Expected Course Outcomes:						
<ol style="list-style-type: none"> 1. Demonstrate the fundamental knowledge on the components of a data communication system, layered architecture and addressing schemes. 2. Analyze the various characteristics of different types of signals and the performance metrics. 3. Familiarity on the taxonomy of circuit switched networks and their features. 4. Apply error control, flow control and congestion control schemes in data communication and understand the media access mechanisms. 5. Develop solutions for efficient forwarding, delivery and routing of network layer protocols. 6. Identify the most appropriate networking architecture and technology to develop applications addressing the deficiency in transport and application layer protocols for effective communication. 						
Student Learning Outcomes (SLO)						
Module:1		Introduction			3 hours	
Data Communication, Networks, Layered task, OSI Model, Layers in the OSI model, TCP/IP Protocol suite, Addressing.						
Module:2		Physical Layer and Media			6 hours	
Data and Signals, Analog and Digital, Digital Signals, Transmission Impairment, Data Rate Limits, Performance, Multiplexing, Spread Spectrum.						
Module:3		Circuit-Switched Networks			6 hours	
Datagram Networks, Virtual-Circuit Networks, Structure of a Switch.						
Module:4		Data Link Layer			8 hours	
Error Detection and Correction – Block Coding, Cyclic Redundancy Check, Checksum, Data Link Control – Framing, Flow and Error Control, Multiple Access – Random Access, ALOHA, CSMA, CSMA/CD, CSMA/CA, Channelization						

Module:5	Network Layer	8 hours	
IPv4 Addresses, IPv6 Addresses, Logical Addressing Internet Protocol - IPv4, IPv6 596, Transition from IPv4 to IPv6, Address Mapping, Delivery, Forwarding Unicast Routing Protocols, Multicast Routing Protocols			
Module:6	Transport Layer	6 hours	
Process-to-Process Delivery, UDP, TCP, Congestion Control			
Module:7	Application Layer	6 hours	
DNS, Telnet, FTP, SNMP, QOS			
Module:8	Contemporary issues	2 hours	
Expert Talk			
	Total Lecture hours:	45 hours	
Text Book(s)			
1.	Behrouz A. Forouzan, Data Communications and Networking, 2012, 5 th Edition, McGraw-Hill, India.		
Reference Books			
1.	Larry L.Peterson, Bruce S.Davie, Computer Networks: A System Approach, 2012, 5 th Edition, Morgan Kaufmann.		
2	BehrouzA.Forouzan, TCP/IP Protocol Suite, 2012, 5 th Edition, Tata McGraw-Hill.		
3	W.Richard Stevens, TCP/IP Illustrated The Protocols, 2012, 2 nd Edition, Prentice Hall.		
4	Andrew S.Tenanbaum, Computer Networks, 2012, 5 th Edition, Prentice Hall.		
Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar			
Recommended by Board of Studies		12-08-2017	
Approved by Academic Council		No. 46 th	Date 24.08.2017