Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
MCA22	Computer Networks	4	-	--	4	-	--	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Pre-requisite Course Codes		--	
Course Outcomes	**CO1**	Understand the fundamental concepts of Digital communication in Computer Networks.	
	CO2	Recognize the different Internetworking devices, topologies and their functions	
	CO3	Analyze the various Protocols, Services and features of the layered architecture of Networking.	
	CO4	Illustrate the various TCP /IP Algorithms.	

Module No.	Unit no.	Topics	Ref.	Hrs.
1		**Introduction to digital communication**	**1**	**6**
	1.1	Signal propagation, signal types, signal parameters		
	1.2	Channel effects on transmission –attenuation, effects of limited bandwidth, delay distortion, noise		
	1.3	Multiplexing -FDM ,TDM		
	1.4	Data rate limits-Nyquist's theorem , Shannon's theorem		
2		**Basics of Computer Network**	**1,2**	**4**
	2.1	Topology & types of topologies, types of networks		
	2.2	LAN, MAN, WAN, types of communications (Asynchronous and synchronous)		
	2.3	Modes of communications(simplex, half duplex, full duplex)		
	2.4	Switching Techniques -Circuit switching, Message switching ,Packet switching		
3		**Networking models**	**1,2**	**5**
	3.1	Design issues of the layer, ISO-OSI Reference Model, Internet Model (TCP/IP),		
	3.2	Comparison of ISO-OSI & TCP/IP Model.		
	3.3	Connectivity Devices : Passive & Active Hubs, Switch, Bridges,Gateways.		
4		**Physical Layer**		**3**
	4.1	Wired media – Twisted Pair ,Coaxial Cable ,Fiber Optics	**1,2,3**	
	4.2	Wireless media - The electromagnetic Spectrum ,Radio Transmission ,Microwave transmission ,Infrared Waves		
5		**Data Link Layer**	**1,2,3**	**11**
	5.1	Error Detection and Correction Techniques		

	5.2	Multiple Access Protocols, LAN Addresses and ARP & RARP , PPP: The Point-to-Point Protocol		
	5.3	Medium access sub layer : ALOHA (Pure, slotted, reservation) Carries Sense Multiple Access Protocols, Collision free Protocols		
	5.4	Ethernet standards – IEEE 802.3, 802.5, FDDI, 802.6.08		
6		**Network Layer**	1,2,3	12
	6.1	Network Layer Design issues		
	6.2	Routing Algorithm – Distance Vector and Link state routing –Routing protocols -RIP, OSPF, BGP, IGRP, Congestion control algorithms: Open Loop congestion control, Closed Loop congestion control.		
	6.3	IP Addressing Subnets, IP – IPv4, IPv6, Internet Control Management Protoocl, Internet Group Management Protocol.		
	6.4	Address mapping -ARP, RARP, BOOTP, DHCP,NAT and its type		
7		**Transport layer**	1,2,3	6
	7.1	The TCP protocol and the TCP Segment Header, UDP		
	7.2	Congestion Control algorithm		
	7.3	Quality of Service: Introduction, Queue Analysis, QoS Mechanisms, Queue management Algorithms, Feedback, Resource, Reservation.		
8		**Application layer**	1,2,3	5
	8.1	Principles of Application Layer Protocols, The Web and HTTP		
	8.2	FTP, Telnet ,Simple Network Management Protocol		
	8.3	Electronic Mail in the Internet (SMTP, MIME, POP3, IMAP), DNS		
			Total	**52**

References:

[1] Behrouz Forouzan,"Data communication and Networking ", Tata McGraw Hill edition, Fourth Edition.
[2] Andrew Tanenbaum, "Computer Networks", PHI, Fifth Edition.
[3] Behrouz Forouzan," TCP/IP Protocol Suite" , Tata McGraw Hill edition, Third Edition. Third Edition, 2005, Addison-Wesley.