MCA (Master of Computer Applications)
MCA (Master of Computer Applications) Semester I

Course Code	PS01CMCA52	Title of the Course	COMPUTER NETWORKS
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. To understand the basic concepts of computer networks and data communication. 2. To provide understanding of network protocols and standards.

Course Content		
Unit	Description	Weightage* (%)
1.	**Introduction and Data Communication Fundamentals** - Introduction to computer networks - Classification of computer networks - Transmission media : guided and unguided media. - Functions of network connecting devices: Amplifier, Repeater, Bridge, Hub, Switch, Router, Gateway, Modems - Data transmission concepts : transmission modes, multiplexing, switching technologies, asynchronous and synchronous transmission - Introduction to Local Area Networks (LANs), LAN topologies, - Gigabit Ethernet	25
2.	**Layered Protocols** - Protocols, Protocol hierarchies - Design issues for the layers - The OSI reference model and the TCP/IP reference model - The Internet Protocol (IP), IP addresses, Subnets, - Introduction to Transmission Control Protocol (TCP), The TCP segment header - Introduction to User Datagram Protocol (UDP)	25
3.	**Routing, Congestion Control and Internetworking** - Virtual Circuits and Datagrams - Routing Techniques - Congestion Control - Introduction and Issues that arise in Internetworking - Fragmentation	25

	- Tunneling - Virtual Private Networks	
4.	**Wireless Communication and Network Security** - Introduction to Wireless Networks - Satellite Communication (LEO, MEO, GEO) - Wireless LAN protocols - Introduction to Mobile Telephone Systems, Cell Fundamentals - Traditional Cryptography, Substitution Cipher vs Transposition Cipher, Fundamental Cryptographic Principles - Secret-Key Algorithms vs Public-Key Algorithms - Firewalls	25

Teaching-Learning Methodology	Blended learning approach incorporating traditional classroom teaching as well as online / ICT-based teaching practices

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	explain the significance and functioning of computer networks
2.	understand fundamental concepts related to data communication
3.	describe various network protocols and standards

Suggested References:	
Sr. No.	References
1.	Tanenbaum A. S.: Computer Networks, Prentice-Hall of India Pvt. Ltd., New Delhi,

	2002.(5th Edition 2019).
2.	Forouzan B. A.: Data Communications and Networking, 5th Edition, Tata McGraw-Hill, 2013.
3.	Stallings W.: Data and Computer Communications, 10th Edition, Macmillan Pub. Company, New York, 2014.

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