FACULTY OF COMPUTER SCIENCE

Master of Computer Application (Sem-II)

In Effect from Academic Year 2023-24

Branch Name:	MCA
Program Code:	CS201
Course Name:	Computer Networking and Security
Course Code:	3CS2010201T
Pre-requisite Course:	A strong understanding of bits bytes and characters, and information of how computers lay out data in memory

Course Objective:

- Introduces students to computer networks and focuses on firm foundation for understanding Data Communications.
- To understand the basis around the OSI Reference Model, TCP/IP model and interactions between them.
- Provides the students with fundamental knowledge of the various aspects of computer networking and enables students to realize recent developments in the area.
- The Introduction to the learners of computer network security.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory		Practical		
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total
4	-	-	4	60	40	-	-	100

Course Contents			
Unit No	**Topic**	**Total Hours**	**Weightage (%)**
1	**Introduction to Computer Networks** Uses of computer network, Network hardware – LAN, MAN, WAN. Connection oriented and connectionless services, OSI model, TCP/IP model, and Comparison of OSI and TCP/IP model.	10	20
2	**The Physical Layer** Guided Media - Twisted Pair, coaxial cable, Fiber optics. Unguided transmission media - Radio wave, microwave and infrared, Multiplexing and De-multiplexing– FDM, TDM, WDM. Switching – Circuit switching, Packet switching.	10	20
3	**The Data Link Layer and Network Layer** **The Data Link Layer** Design Issues - Framing, Error control, Flow control, Error Detection and correction. **The Network Layer:** Introduction, Duties of Network Layer, Connection Oriented Forwarding using Virtual Circuits, Connection Less Forwarding using Datagram, Routing Algorithms.	10	20

4	**The Transport Layer and The Application Layer** **The Transport Layer** Introduction, Duties of Transport Layer Connection Management at Transport Layer, Congestion Control, Comparison with Data Link Layer **The Application Layer** Introduction, Domain Name System: Name Space, Registration Process, Name Servers, Resource Records, Types of Resource Records, Dynamic DNS, overview of Electronic mail, and HTTP, Bluetooth	10	20
5	**Computer Security** Computer Security Concepts, Security Attacks, Security Services, Security Mechanisms, Techniques, Model for Network Security	8	20

Text Books:

1. Computer Network- Andrew S. Tanenbaum, Fifth edition, Pearson.
2. William Stallings. Network Security Essentials By Applications and Standards; 4th ed.; Pearson

References Books:

1. Computer Networks- Bhushan H Trivedi ,Oxford University Press.
2. Data Communications and Networking- Behrouz A. Forouzan, Tata McGraw-Hill, Fifth Edition
3. William Stallings. Cryptography and Network Security- Principles and Practice; 7th ed.;Pearson

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	To **understand** the Factors influencing computer network **development** and the **reasons** for having a variety of different types of networks.	2 Understanding 3 Applying
CLO2	To **understand** the Internet structure and Computer Network Architecture	2 Understanding
CLO3	To **understand how** standard **problems are solved** in Computer Networking.	2 Understanding, 2 Evaluating
CLO4	**Knowing** about Computer Networks, Network Types, Protocol Suite and the basic components of a Network system.	2 Understanding
CLO5	Knowing and **Applying pieces** of hardware and software to make networks more efficient, secure and easier to use	2 Understanding 3 Applying
CLO6	To **understand** the learners to computer network security	2 Understanding

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Mapping of CLOs with POs & PSOs

Course / Learning Outcomes	Program Outcomes(POs)												Program Specific Outcomes (PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1		L	L	M	M	L	H		M	M			M	L
CLO2	M	L	M		M	L	M	L		L	M		M	M
CLO3	M	M		M	M		M	L	M	M	L		H	M
CLO4	M			H	M	L	H	L		M	M	M	H	M
CLO5	L	M	L	L		H	M		L		M		M	M
CLO6	L	M	M			M		M		L	M		M	M

H:High, M:Medium, L:Low