Programme: M.C.A

Course Code: CSC-104 **Title of the Course:** Internet Technologies

Number of Credits: 3 (3L-0T-0P) **Contact Hours:** 36 hours (36L-0T-0P)

Effective from AY: 2021-22

Prerequisites for the course:	Programme requisites	
Objectives:	The objective to introduce the TCP/IP architecture and allied protocols of the Internet by following a top-down approach.	
Content:	**Computer Networks and the Internet:** Networking and Inter-networks, Internetworking devices, Internet: Network edge and Network core. TCP/IP protocol stack: Protocol stack, Connection oriented, connectionless services, Packet switching, circuit switching, Delay, Loss, and Throughput in Packet-Switched Networks.	6 hours
	Application layer: Principles of Application Layer Protocols, the Web and HTTP, MIME, mail access protocols, DNS, Peer to Peer Applications.	8 hours
	Transport layer: Transport-layer services, Multiplexing and demultiplexing, UDP protocol, Principles of reliable data transfer, Connection oriented transport - TCP protocol, Principles of congestion control, TCP congestion control.	6 hours
	Network layer: Packet switching: virtual circuit & datagram networks, The Internet Protocol (IP): Forwarding and Addressing in the Internet, route aggregation, subnetting, CIDR, IP datagram, fragmentation, NAT, DHCP, ICMP. Routing protocols: shortest path, link state routing algorithm, distance vector routing. Internet routing: Autonomous Systems (AS), RIP, OSPF, BGP. Address Resolution Protocol (ARP) and RARP.	10 hours
	Internet Security protocols Basic cryptography concepts, Secure Socket Layer (SSL), Internet Security Protocol (IPSec), Virtual Private Network (VPN).	6 hours
Pedagogy:	lectures/ tutorials/assignments/self-study	

References/ Readings	1. Forouzan, Behrouz A., and Firouz Mosharraf. "Computer networks: a top-down approach". McGraw-Hill, 2012. 2. Andrew S. Tanenbaum., "Computer Networks", (5th Edition) Prentice Hall of India. 3. James F. Kurose, Keith W. Ross, "Computer Networking: A Top-Down Approach" Pearson, Sixth Edition 2017.
Learning Outcomes	After completion of this course, students will be able to • Have a good understanding of layered communication architecture (TCP/IP) and knowledge of some of the important networking protocols • Understand the concepts of reliable data transfer and how TCP implements these concepts. • Basic knowledge of the routing algorithms.