BCSE308L	E308L Computer Networks			Т	Р	С
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Pre-requisite	NIL	Syllabus version				
				1.0		

## **Course Objectives**

- 1. To build an understanding among students about the fundamental concepts of computer networking, protocols, architectures, and applications.
- 2. To help students to acquire knowledge in design, implement and analyze performance of OSI and TCP-IP based Architectures.
- 3. To identify the suitable application layer protocols for specific applications and its respective security mechanisms.

## **Course Outcomes**

On completion of this course, student should be able to:

- 1. Interpret the different building blocks of Communication network and its architecture.
- 2. Contrast different types of switching networks and analyze the performance of network
- 3. Identify and analyze error and flow control mechanisms in data link layer.
- 4. Design sub-netting and analyze the performance of network layer with various routing protocols.
- 5. Compare various congestion control mechanisms and identify appropriate transport layer protocol for real time applications with appropriate security mechanism.

Networking Principles and Layered Architecture	processing approximation appropriate accountry meaning management							
Data Communications and Networking: A Communications Model – Data Communications - Evolution of network, Requirements , Applications, Network Topology (Line configuration, Data Flow), Protocols and Standards, Network Models (OSI, TCP/IP)  Module:2   Circuit and Packet Switching   7 hours  Switched Communications Networks – Circuit Switching – Packet Switching – Comparison of Circuit Switching and Packet Switching – Implementing Network Software, Networking Parameters(Transmission Impairment, Data Rate and Performance)  Module:3   Data Link Layer   8 hours  Error Detection and Correction – Hamming Code , CRC, Checksum-Flow control mechanism – Sliding Window Protocol - GoBack - N - Selective Repeat - Multiple access Aloha - Slotted Aloha - CSMA, CSMA/CD – IEEE Standards(IEEE802.3 (Ethernet), IEEE802.11 (WLAN))- RFID- Bluetooth Standards  Module:4   Network Layer   8 hours  IPV4 Address Space – Notations – Classful Addressing – Classless Addressing – Network Address Translation – IPv6 Address Structure – IPv4 and IPv6 header format  Module:5   Routing Protocols   6 hours  Routing-Link State and Distance Vector Routing Protocols- Implementation-Performance Analysis – Packet Tracer  Module:6   Transport Layer   5 hours  TCP and UDP-Congestion Control-Effects of Congestion-Traffic Management-TCP Congestion Control-Congestion Avoidance Mechanisms-Queuing Mechanisms-QoS Parameters  Module:7   Application layer   3 hours  Application layer-Domain Name System-Case Study : FTP-HTTP-SMTP-SNMP  Module:8   Contemporary Issues   2 hours	Module:1	Networking Principles and Layered	6 hours					
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	Application							
Total Lecture hours: 45 hours	Module:8	Contemporary Issues	2 hours					
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Text Book								
1. Behrouz A. Forouzan, Data communication and Networking, 5th Edition, 2017,								

	McGraw Hill Education.						
Reference Books							
1.	. James F. Kurose and Keith W.Ross, Computer Networking: A Top-Down Approach, 6th						
	Edition, 2017, Pearson Education.						
2.	William Stallings, "Data and Computer Communication", 10th Edition, 2017, Pearson,						
	United Kingdom.						
Mode of Evaluation: CAT, Written Assignment, Quiz, FAT							
Red	Recommended by Board of Studies 04-03-2022						
Approved by Academic Council		No. 65	Date	17-03-2022			