

Course Name: Computer Networks

Credit Hours: 2-1

Contact Hours: 2-3

Pre-requisites: None

Course Introduction:

The Computer Networks course is designed to provide students with a comprehensive understanding of the concepts and principles of computer networking. Students will learn about different network architectures, protocols, and technologies that enable communication and data exchange between computers and devices in a network.

CLO No	Course Learning Outcomes	Bloom Taxonomy
CLO-1	Understand different network topologies, architectures, and protocols, and choose the appropriate one for a given network design problem.	C1 (Knowledge)
CLO-2	Understand how data is transmitted and received across different network layers, and identify and resolve network-related problems.	C3 (Apply)
CLO-3	Apply configuration of transport layer protocols such as TCP and UDP, and flow and congestion control,	C3 (Apply)

	and application layer protocols such as HTTP, FTP, SMTP, and DNS, and socket programming.	
CLO-4	Understand, identify and apply cryptography and security protocols such as SSL/TLS and IPsec.	C3 (Apply)

Course Outline:

#	Weekly Distribution of Course Contents
Week-1	Introduction to Computer Networks
Week-2	Network concepts and architecture
Week-3	OSI and TCP/IP reference models
Week-4	Network topologies and protocols
Week-5	Network layers (Physical, Data Link)
Week-6	Network layers (Transport, Application layers)
Week-7	Wireless and Mobile Networks
Week-8	Network security threats and attacks
Week-9	Cryptography and network security protocols
Week-10	Network management functions and services
Week-11	Network performance and quality of service
Week-12	Cloud computing and applications
Week-13	Security concerns in Cloud computing
Week-14	Software and Hardware Virtualization techniques
Week-15	Software-defined networking (SDN),
Week-16	Internet of Things (IoT) network

Reference Materials:

13. "Computer Networking: A Top-Down Approach" by James F. Kurose and Keith W. Ross (7th edition, 2021)
14. "Computer Networks" by Andrew S. Tanenbaum and David J. Wetherall (5th edition, 2011)

15. "Network Security Essentials: Applications and Standards" by William Stallings (6th edition, 2016)
16. "Computer Networking Problems and Solutions: An innovative approach to building resilient, modern networks" by Russ White and Ethan Banks (2017)