Course Code	:	**CSPC53**
Course Title	:	**Computer Networks**
Number of Credits	:	**3-0-0-3**
Pre-requisites (Course Code)	:	-
Course Type	:	**PC**

Course Objectives

- To provide insight about fundamental concepts and reference models (OSI and TCP/IP) and its functionalists
- To gain comprehensive knowledge about the principles, protocols, and significance of Layers in OSI and TCP/IP
- To know the implementation of various protocols and cryptography techniques

Course Contents

UNIT I
Introduction to computer networks: Network Component and Categories - Topologies - Transmission Media - Reference Models: ISO/OSI Model and TCP/IP Model.

UNIT II
Physical Layer: Digital and Analog Signals - Periodic Analog Signals - Transmission Impairments - Digital data transmission techniques - Analog data transmission techniques - Multiplexing and Spread Spectrum.

UNIT III
Data Link Layer: Error Detection and Correction - Parity - LRC - CRC - Hamming Code - Flow Control and Error Control - Stop and wait - ARQ - Sliding window - HDLC - Multiple Access Protocols - CSMA - CSMA/CD and CSMA/CA - IEEE 802.3 Ethernet.

UNIT IV
Network Layer: Packet Switching and Datagram approach - IP Addressing methods - Subnetting - Routing - Distance Vector Routing - RIP - Link State Routing - OSPF - BGP - Multicast Routing - MOSPF - DVMRP - Broadcast Routing.

UNIT V
Transport Layer: Transport Services - UDP - TCP - Congestion Control - Quality of Services (QOS) - Application Layer: Domain Name Space (DNS) - Electronic Mail - WWW - Cryptography Techniques.

Course Outcomes

Upon completion of the course, the students will be able to:

- Gain insight about basic network theory and layered communication architectures
- Propose algorithms at the appropriate layer for any communication network task
- Provide solutions to various problems in network theory
- Conceptualize and design a network stack

Text Books

1. Andrew S. Tanenbaum, David J. Wetherall, “Computer Networks”, Fifth Edition, Prentice Hall, 2011.
2. Behrouz A. Foruzan, “Data Communication and Networking”, Fifth Edition, Science Engineering & Math Publications, 2013.

Reference Books

1. W. Stallings, “Data and Computer Communication”, Tenth Edition, Pearson Education, 2014.