VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

DATA COMMUNICATIONS AND COMPUTER NETWORKS

B.TECH-V Semester **L/T/P/C**
3/0/0 /3

Pre-requisites: None

Course Objectives:

- To expose the students to the basic principles of the technology of data communications and networking.
- To understand the concept of data communication and its components.
- To comprehend the use of different types of transmission media and network devices, error detection and correction in transmission of data.
- To understand the concept of flow control, error control, LAN protocols and functions performed by Network Management System.

UNIT-I: Introduction

Introduction: Data Communications, Networks, The Internet, Protocols and Standards, Network Models, Layered Tasks, The OSI Model, TCP/IP Protocol Suite, Addressing.
Physical Layer and Media: Data and Signals, Analog and Digital, Multiplexing. **Transmission Media:**Guided Media, Unguided Media, Switching.

UNIT-II: Data Link Layer

Data link layer: Error Detection and Correction, Framing, Flow and Error Control, Protocols, Noiseless Channels, Noisy Channels, HDLC, Point to Point Protocol, Multiple Access, Random Access, Controlled Access, Channelization.

UNIT-III: Network Layer

Network Layer: Logical Addressing, IPv4 Addresses, CIDR, Subnets, Classfull and special addressing, IPv6 Addresses, Transition from IPv4 to IPv6, Network Layer: Address Mapping, ICMP, IGMP, ICMPv6.
Network Layer: Delivery, Forwarding, Shortest Path Algorithm, Routing Protocols- Intradomain & Interdomain Routing, Distance Vector Routing, Link-State Routing, Path Vector Routing Protocols.

UNIT-IV: Transport Layer

Transport Layer: Process to Process Delivery: UDP, TCP and SCTP, Data Traffic, Congestion, Congestion Control, Two Examples, Quality of Service, Techniques to improve QoS.

UNIT-V: Application Layer

APPLICATION LAYER:DNS, Remote Logging,ELECTRONIC MAIL, File Transfer, The World Wide Web, HTTP—The Hypertext Transfer Protocol.

Course Outcomes:

CO-1. Illustrate basic computer network technology, functions of each layer in the OSI and TCP/IP reference model.
CO-2. Gain the knowledge onerror control and flow control mechanisms.
CO-3. Obtain the skills of subnetting and routing mechanisms.
CO-4. Analyze the features and Operations of TCP/UDP, congestion control and QoS Techniques.