

**ADVANCED COMPUTER NETWORKS**

**17ECMC2T5D**

**Credits: 4**

**Lecture: 4 periods/week**

**Internal assessment: 40 marks**

**Semester end examination: 60 marks**

---

**Prerequisites:** Computer Networks.

**Course Objectives:**

- To study protocols, network standards, networking models, IP addressing, cabling, and networking components.
- To accumulate existing state-of-the-art in network protocols, architectures, Routing techniques and applications.
- To be familiar with contemporary issues in networking technologies
- To provide an awareness of network security issues in data communication.

**Course Outcome:**

- To master the terminology and concepts of the OSI reference model and the TCP-IP reference model.
- To be familiar with Routing techniques and Protocols of Internet.
- Differentiate between TCP and UDP protocol of transport layer
- Acquire knowledge related to applications and their security related aspects in networking.

**UNIT-I**

**Computer Networks and the Internet:** History of Computer Networking and the Internet, Networking Devices, Physical media, ISPs and Internet Backbones.

**Networking Models:** 5-layer TCP/IP Model, 7-Layer OSI Model, Internet Protocols and Addressing, Equal-Sized Packets Model: ATM.

**UNIT-II**

**Routing and Internetworking: Logical Addressing:** IPv4 Addresses, IPv6 Addresses -

**Internet Protocol:** Internetworking, IPv4, IPv6, Transition from IPv4 to IPv6 –

**Routing Techniques:** Unicast Routing, Multicast Routing

**UNIT-III**

**Transport and End-to-End Protocols:** Transport Layer, Transmission Control Protocol (TCP), User Datagram Protocol (UDP), Stream Control Transmission Protocol (SCTP),

**Congestion Control and Quality of Service:** Data Traffic, Congestion, Congestion Control, Quality of service, Techniques to Improve QoS, QoS in switched networks.

**UNIT-IV**

**Application Layer:** The Web and HTTP, File Transfer: FTP, Electronic Mail in the Internet, Domain Name System (DNS), P2P File Sharing

**Network Security:** Security Services, Digital Signature, Entity Authentication, Key Management.

**Text Book:**

1. Data Communications and Networking – Behrouz A. Forouzan. Fourth Edition TMH.

**References:**

1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.