# JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
(Established by Govt. of A.P., ACT No.30 of 2008)
ANANTHAPURAMU – 515 002 (A.P) INDIA

## MASTER OF COMPUTER APPLICATIONS

| Course Code | COMPUTER NETWORKS | L | T | P | C |
|---|---|---|---|---|---|
| 21F00203 | | 4 | 0 | 0 | 4 |
| | Semester | II | | | |

**Course Objectives:**

- Introduce the basic concepts of Computer Networks.
- Introduce the layered approach for design of computer networks
- Expose the network protocols used in Internet environment
- Explain the format of headers of IP, TCP and UDP
- Familiarize with the applications of Internet
- Elucidate the design issues for a computer network

**Course Outcomes (CO):** Student will be able to

- Identify the software and hardware components of a Computer network (L1)
- Design software for a Computer network (L6)
- Develop new routing, and congestion control algorithms (L3)
- Critique the existing routing protocols (L5)
- Explain the functionality of each layer of a computer network (L2)
- Employ the appropriate transport protocol based on the application requirements (L3)

**UNIT – I** Lecture Hrs:

What is the Internet, The Network Edge, The Network Core, Delay, Loss, and Throughput in Packet-Switched Networks, Protocol Layers and their Service Models, Networks under attack, History of Computer Networking and the Internet

**UNIT – II** Lecture Hrs:

Principles of Network Applications, The web and HTTP, File transfer: FTP, Electronic mail in the internet, DNS-The Internet's Directory Service, Peer-to-Peer Applications

**UNIT – III** Lecture Hrs:

Introduction and Transport-Layer Services, Multiplexing and De-multiplexing,Connectionless Transport: UDP,Principles of Reliable Data transfer, Connection-Oriented Transport: TCP, Principles of Congestion Control, TCP Congestion Control

**UNIT – IV** Lecture Hrs:

Introduction, Virtual Circuit and Datagram Networks, The Internet Protocol(IP): Forwarding and Addressing in the Internet, Routing Algorithms, Routing in the Internet, Broadcast and Multicast Routing

**UNIT – V**

Introduction to the Link Layer, Error-Detection and Correction Techniques, Multiple Access Links and Protocols, Switched Local Area Networks, Link Virtualization: A Network as a Link Layer, Data Centre Networking, Retrospective: A Day in the Life of a Web Page Request

**Text Books:**

1. James F. Kurose, Keith W. Ross, "Computer Networking: A Top-Down Approach", 6th edition, Pearson, 2019.