Kadi Sarva Vishwavidyalaya, Gandhinagar

MASTERS OF COMPUTER APPLICATION (MCA)
Semester – II (Second Year)
Subject: MCA-206 – Foundation in Networking

Teaching Scheme (Per Week)			Examination Scheme				
			Internal		External		Total Marks
Theory (Hours)	Practical (Hours)	Total Credit	MID (Marks)	Internal (Marks)	Theory (Marks)	Practical (Marks)	
3	-	3	25	25	50	-	100

Objectives:

1. To introduce the concept of electronic data transmission, the representation of data in a transmission system and the design of communication methods in a distributed computer system.
2. To discuss the possible network configurations and control strategies necessary for various applications. Protocols, architectures and transmission alternatives, communication environment, regulatory issues, network pricing and management.
3. To give the understanding of the functionality of each layer of OSI model and interactions between them.

Learning Outcomes:

At the end of the course, student will be able to:

1. Create a small network
2. Understand the IPv4 and IPv6 addresses
3. Understand the essentials and working of layers like Application Layer, Transmission Layer, Data Link Layer, Physical Layer etc.
4. Develop network specific programs

Course Contents:

UNIT – I **Basics of Networking** **[25 %]**

Categories of Networks: Local Area Network, Wide Area Network, Metropolitan Area Networks; Physical Topology: bus topology, ring topology, hybrid topology; OSI Reference Model, TCP/IP Model, and Guided & Unguided media. **Connecting Devices:** Physical Media, Switch, Router, Hub, Bridges, Gateway, Repeater.

UNIT – II **Error Detection and Correction, Communication Protocols** **[25%]**

The Nature of Errors; Parity; Cyclic Redundancy Codes; Dealing with Errors, Data Link Layer Protocols.

UNIT – III **MAC layer and Network layer** **[25%]**

ALOHA, CSMA\CD, WDMA, MACA and MACAW Protocols, Routing Protocols – Shortest Path Routing, Distance Vector Routing, Link State Routing

UNIT – IV **Transport layer and Application Layer** **[25%]**

TPDU, Three Way Handshake, Two-Army Problem, DNS, Name Servers, Resolvers, E-mail, SMTP, MIME, POP3

Text Book(s):

1. Computer Networks By Andrew S. Tanenbaum, Latest Edition

Other Reference Books:

A. Behrouz A. Forouzan, "Data Communications and Networking", Tata McGraw-Hill, Fourth Edition

Experiment List (Unit Wise):

UNIT – I
A. Demonstration of switches, hub etc.
B. Cabling
C. Crimping

UNIT – II
A. Programs to perform error detection using following methods –
    a. LRC
    b. VRC
    c. CRC
    d. Checksum
B. Program to implement following protocols –
    a. Stop-n-Wait
    b. Noisy Channel
    c. Sliding Window