

Course Name : **Computer Engineering Group**
Course Code : **CO/CM/IF/CD**
Semester : **Fourth Semester**
Subject Title : **Computer Networks**
Subject Code : **9066**

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	PAPER HRS.	TH	TEST	PR	OR	TW	TOTAL
03	--	02	03	80	20	--	--	25@	125

Rationale:

Today is age of Information Technology. In many applications, we send information from one place to another place. So networking of computer is very essential. The many business applications like Railway reservation, Industrial sale, purchase, Industrial automation, on line Banking, E-business, E-Commerce and many applications. All this applications and many other require knowledge of computer network.

Computer network organize information from hundreds of offices spread over wide geographical area and output remote information at a push of button. This gives type of network. Two or more computer interconnected through via copper wire, fiber optics, microwave, infrared and satellite i.e. wire and wireless communication.

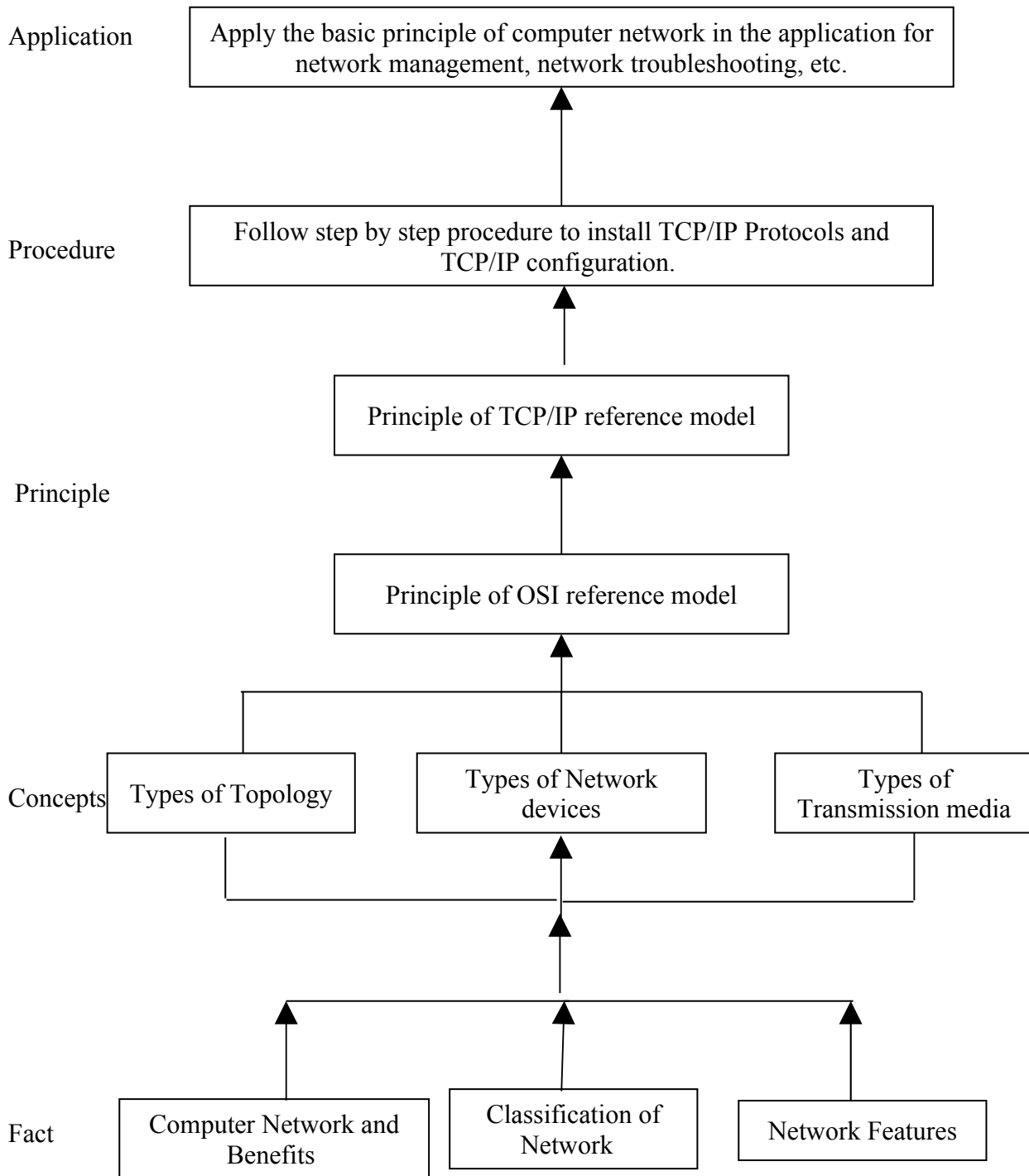
Here we set basic concept of networking, its applications, topologies, communication media, network directing devices, protocol used, OSI reference model and TCP/IP model.

Objective:

Students will be able to:

1. Identifying the benefits of network.
2. Distinguish between Network classifications.
3. Describe different types of Topology.
4. Describe different types of Network devices.
5. Compare different transmission media.
6. Compare OSI and TCP/IP model.
7. Configure TCP/IP.

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hours	Marks
01	<p>Basic Network Concepts:</p> <p>1.1 Understanding Network - Human Networks; Computer Networks; Network Plan.</p> <p>1.2 Identifying the Benefits of Network - Sharing Information; Sharing Resources; Facilitating Centralized Management – Managing Software, Maintaining the Network, Backing Up Data.</p> <p>1.3 Distinguishing Between Network classifications - Classifying Networks by their Geography – LAN, MAN, WAN; Classifying Networks by their Component Role - Peer to Peer, Server based Network.</p> <p>1.4 Network Features - File Sharing; Printer Sharing; Application Services; E-Mail; Remote Access.</p>	08	12
02	<p>Network Topologies and Networking Devices:</p> <p>2.1 Type of Topology - Bus Topology; Ring Topology; Star Topology; Mesh Topology; Tree Topology; Hybrid Topology.</p> <p>2.2 Network Control Devices -Hubs; Switches; Routers; Bridges; Repeaters; Gateways; Modems</p>	08	16
03	<p>Transmission Media:</p> <p>3.1 Guided Media -Twisted Pair -UPT, STP; Coaxial Cable; Optical Fiber - Optical Fiber Structure, Light Source for Fiber, Propagation Mode, Advantages of optical fiber, Disadvantages of optical fiber.</p> <p>3.2 Un-Guided Media: Wireless Communication – Communication Band; Microwave Communication; Satellite Communication – Access Method; Cellular (Mobile) Telephone – Band in Cellular Telephony, Calls Using Mobile Phones, Transmitting receiving operations; New Developments.</p>	08	16
04	<p>Network Reference Model:</p> <p>4.1 OSI Reference Model - Interlayer Communication – Data Encapsulation, Horizontal Communication, Vertical Communication, Encapsulation Terminology; Physical</p>	12	16

	<p>layer; Data link layer; Network layer; Transport layer; Session layer; Presentation layer; Application layer.</p> <p>4.2 TCP/IP Reference Model – Link; Internet; Transport; Application layer.</p> <p>4.3 Comparison of the OSI and TCP/IP reference models.</p>		
05	<p>TCP/IP Fundamentals:</p> <p>5.1 TCP/IP Protocols - SLIP and PPP; ARP; IP; ICMP; TCP and UDP.</p> <p>5.2 IP Addressing - IP Address Assignments; IP Address Classes; Subnet Masking; Registered and unregistered Addresses.</p> <p>5.3 TCP/IP Configuration - Installing the TCP/IP Protocol; Configuring TCP/IP - Configuring Basic TCP/IP Properties, Configuring Advanced TCP/IP Properties</p>	12	20
Total		48	80

Practical:

Skills to be developed:

1) Intellectual skills

- Understanding of basics concept of network.
- Comparison of different network.
- Installation of protocols.

2) Motor skills

- Proper handling of Computer System hardware.

LIST OF PRACTICAL:

- 1 Draw layout of LAB Network.
- 2 Use step by step procedure for i.e. File sharing & Printer sharing.
- 3 Compare different Network Topologies.
- 4 Compare Network directing devices.
i.e. Hub, Switch, Router.
- 5 Create a Network cable using RJ45 connectors.
- 6 To locate MAC address of computer
- 7 Installation of TCP/IP Protocol
i.e. NetBEUI Protocol.
- 8 Implementing a TCP/IP Network configuring

Learning Resources:

1. Books:

Sr. No.	Title	Author	Publication
01	Introduction to Networking	Richard A. McMohan, Sir	Tata McGraw-Hill Edition
02	Networking + Certification (Second Edition)	Microsoft Press	--
03	Complete Reference Networking	Craig Zacker	Tata McGraw-Hill Edition
04	Data Communication and Networking	Achyut S. Godbole	Tata McGraw-Hill Edition

2. CDs:

Book of **Microsoft Certified Software Engineering (MCSE)** of Microsoft Publication gives CD. Demonstration of this CD for understanding basic concept.