C. U. SHAH UNIVERSITY, WADHWAN CITY.

Faculty of: **Computer Science**
Course: **Bachelor of Computer Applications**
Semester**: III**
Subject Code**: 4CS03AFN1(Elective – II)**
Subject Name: **Fundamentals of Networking**

Sr. No	Branch Code	Subject Code	Subject Name	Teaching hours/ Week			Credit hours	Credit Points	Evaluation Scheme/ Semester								Total
									Theory				Practical				
				Th	Tu	Pr			Internal Assessment		End Semester Exams		Internal Assessment		End Semester Exams		
									Marks	Duration	Marks	Duration	Marks	Duration	Marks	Duration	
4	2	4CS03AFN1	Fundamentals of Networking	4	-	-	4	4	15(SE) 15(CE)	1 Hr. -	70	2½ Hrs.	-	-	-	-	100

AIM: At the end of this course, build an understanding of the fundamental concepts of computer networking.

COURSE CONTENTS

Unit I Introduction to Network   10 Hrs.

- Network concepts, Use of network

- Types of network: LAN, MAN, WAN, Wireless Network

- Network model: Peer – to – Peer, Client – Server

- Network Services: File service, Print service, Comm. service, Database service, Security service, Application service

- Network Access Methods: CSMA / CD, CSMA / CA, Token passing, Polling

- Network Topologies: Bus, Ring, Star, Mesh, Tree, Hybrid

- Communication Methods: Unicasting, Multicasting, Broadcasting

Unit II Transmission Media and OSI Model   14 Hrs.

- Guided media: Co – axial cable, Twisted pair cable(STP & UTP), Fiber optic cable

- Unguided media: Infrared, Bluetooth, Radio Waves, Microwaves, Wi-fi

- OSI reference model

- TCP/IP network model

Unit III Multiplexing & Switching Concepts   **06 Hrs.**

- Multiplexing & De-multiplexing
- Multiplexing Types: FDM, TDM, CDM, WDM
- Switching Technique: Circuit Switching, Message Switching, Packet Switching

Unit IV Network devices   **14 Hrs.**

- Layer 1 devices: LAN card, Modem, DSL & ADSL, Hub (Active, Passive, Smart hub), Repeater
- Layer 2 devices: Switch (Manageable, non-manageable), Bridge
- Layer 3 devices: Router, Layer 3 Switch, Brouter, Gateway, Network Printer
- Wireless Network device: Wireless switch, Wireless router, Access point

Unit V IP Addressing   **04 Hrs.**

- IP Address: Types of IP address
- IP v4: Class structure
- IP v6: Basic structure of IP v6, Implementation of IP v6

REFERENCE BOOKS:

1. Networking Essential - Glenn Berg Tech. Media
2. Data Communication and Networking - B A Forouzan
3. MCSE Self-Paced Training Kit
4. Computer Networking: A Top - Down Approach, by Ames Kurose, Keith Ross
5. Computer Networks - Andrew S Tanenbaum
6. Computer Networks: A Systems Approach Book by Bruce S. Davie and Larry L. Peterson
7. TCP/IP Tutorial and Technical Overview, (IBM Redbook) - Download
   From http://www.redbooks.ibm.com/abstracts/gg243376.html
8. TCP/IP Guide, Charles M. Kozierok, Available Online - http://www.tcpipguide.com/
   Request for Comments (RFC) - IETF - http://www.ietf.org/rfc.html

- **SWAYAM/NPTEL Link**

  https://nptel.ac.in/courses/106105183