Course: 503 - Network Technologies

Course Code	503
Course Title	Network Technologies
Credit	2
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	2021-2022
Implementation	A.Y.2022-2023
Purpose of Course	With extensive use of Internet and Network at offices, it has now become quite essential for students of IT and Computer Science to acquire basic knowledge of Computer Networks. The purpose of this course is to provide basic knowledge of Computer Networks.
Course Objective	The objective is to provide basic knowledge of network components, network operating system, working of networking and security on networks.
Pre-requisite	Fundamental Knowledge of Operating System.
Course outcome	Students will get knowledge of networking, OSI model, configuration & troubleshooting of different network topologies using various network devices.

Course Content	**Unit-1: Introduction to Network**
	1.1 Basics of network
	  1.1.1 Types of networks
	  1.1.2 Different topologies (Bus, ring, star, mesh, tree)
	1.2 Types of networks (LAN, MAN, WAN)
	1.3 Terminologies (Intranet, Internet, Unicast, Broadcast, Multicast)
	
	Unit-2: Internet and Intranet
	2.1 Concepts of Internet and Intranet
	  2.1.1 Working of Internet and its architecture
	  2.1.2 Working of Intranet and its architecture
	  2.1.3 Network Devices terminologies:
	      Hub, modem, switch, Routers, Gateways, Access point
	2.2 Types of Cables: co-axial, UTP, Fiber Optic cable
	
	Unit-3: Mobile Ad hoc network
	3.1 Concepts and types of MANET (Mobile Ad hoc network)
	  3.1.1 VANET (Vehicular Ad hoc Network)
	  3.1.2 Smart phone Ad hoc Network (SPANC)
	  3.1.3 Flying Ad hoc network (FANET)
	3.2 concepts of OSI(Open Source Interconnection) layers
	  3.2.1 types of layers
	  3.2.2 Introduction of OSI Layers and their purpose:
	      Physical layer, Data link layer and Network Layer
	      Transport layer and Session Layer.
	
	Unit-4: Important protocols of Network layers
	4.1 Concepts of Data packets and Datagram
	4.2 Concepts and purpose of various protocols:
	  4.2.1 Purpose of Presentation layer
	  4.2.2 Presentation layer protocols and their purpose:
	    4.2.2.1 SSL, HTTP, FTP, Telnet
	  4.2.3 Concepts of Application Layer protocols and terminologies:
	    4.2.3.1 SMTP, DNS (Domain Name Server), POP (Post office Protocol)
	4.3 Concepts of IP address

	4.4 Difference between http and https

	Unit-5: Mail Services
	5.1 Application Layer services:
	  5.1.1 concepts of email
	  5.1.2 working of email account and services
	  5.1.3 URL and URL types (Absolute, Relative)
	5.2 Case study of email:
	  5.2.1 From sender to receiver (Mailer, Mail Server, Mailbox)
	  5.2.2 Functionality and use of protocols at different layers
	5.3 Case study of locating Website:
	  5.3.1 URL and locating URL
	  5.3.2 Steps and protocols involved in accessing URL
	  5.3.3 Concepts of search engine and purpose.
	[All Units carry Equal Weightage]

Reference Books	1. Networking Complete – 3 rd Edition – BPB Publications 2. Networking Essentials Study Guide – MCSE – Tata McGraw Hill Publication 3. Computer Networks – A S Tanenbaum - PHI 4. Data Communication & Networking – B A Forouzan – Tata McGraw Hill Publication 5. Computer Networks – Bhushan Trivedi – Oxford University Press
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	30% Internal assessment. 70% External assessment.