C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF: - Computer Science
DEPARTMENT OF: - Master of Computer Applications
SEMESTER: -III
CODE: - 5CS03MFN1
NAME: – FUNDAMENTALS OF NETWORKING (FON)

Teaching and Evaluation Scheme

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03MFN1	FUNDAMENTALS OF NETWORKING (FON)	4	0	0	4		30	1.5	70	3	---	---	---	**100**

Objectives:-

- To gain knowledge of Computer Network peripherals and devices.
- Gain the knowledge of the Communication system and understand Client server Applications & Architecture.
- Protect the system from the other network, learn different security system.
- To increase technical knowledge in field of Layers Classification.
- Basics of Algorithm and Protocol of data link layer and network layer.

Prerequisite:-

- Basic Knowledge of Computer Hardware and Software.
- Good Knowledge of Programming Language (i.e. C, C++)
- Basic knowledge of Core Java programming Language.

Course Outline:-

Sr. No.	Course Content	Hours
1	**Introduction of Computer Network** Introduction To Networking, Components Of Networking, Different Computing Models Of Network, Centralized, Distributed, Collaborative, Networking Configuration Client/Server Based, Peer To Peer Networking, Local and Wide Area Network. Intranets and Internets Network Services, File Services, File Transfer Services, Printing Services, Application Services, Wide area and local networks, fundamentals of communication theory, channel speed and bit rate, voice communication and analog waveforms, bandwidth and the frequency spectrum.	**8**
2	**Networking Standards** Introduction to Standards, Standard Organization and the OSI rules and the Communication Process. The OSI reference Model, How Peer OSI Layer Communicates, Protocol Stacks, Conceptualizing the layers of the OSI Model, OSI physical layer, OSI Data Link Layer, Concepts Of OSI Network Layer, Transport Layer, Session Layer, Presentation Layer, Application Layer, IEEE 802 family standard	**7**

3	**Transmission Media** Introduction to Transmission Media, Characteristics, Cost, Installation, Requirements, Bandwidth Band Usage, Attenuation and Electromagnetic Interference, Cable Media Coaxial Cable, Twisted-Pair Cable, Fiber Optic Cable, Summary Of Cable. Wireless Media, Reason for wireless Network, Wireless Communication with LANs, Comparison Of Different Wireless Media, Time Division Multiplexing (TDM), Time Division Multiple Access (TDMA).	**8**
4	**Connectivity Devices** Introduction to Modems, Asynchronous Transmission, Synchronous Transmission, Network Adapter card, Repeaters Hubs Passive, Active, Intelligent, Bridges, Routers, Brouters, Gateways, Routing Routing Algorithms Distance Vector Routing, Link State Routing.	**6**
5	**Network Topologies and architectures** Introduction to Access Methods, Contention Polling, Token Passing, Comparing Contention and Token Passing, Demand Priority, Network Topologies, Bus Topologies, Ring Topologies and Star Topologies Mesh Topology, Network Architectures Ethernet.	**6**
6	**Switching & Routing In Networks** Message Switching, Packet Switching when and when not to use packet switching, packet routing, and packet switching support to circuit switching networks.	**5**
7	**TCP/IP** TCP/IP and internetworking, related protocols, ports and sockets, The IP address structure, IP datagram	**5**

Learning Outcomes:

- Able to identify the network Devices.
- Able to create basic client / server application.
- Able to perform application of communication protocol (Data link and Network layers).
- Able to understand Transport layer communication protocol.
- Able to improve quality of services in network implementation with protocol.

Teaching & Learning Methodology:

The module will be delivered via lectures (by teaching aids i.e. Projectors PPT and PDF's) and assignments. Students are also expected to undertake self-study during this course.

Books Recommended:

1. Computer Networking, ***Andrew S. Tanenbaum*****,** Prentice Hall, Fourth Edition.
2. Data Communications and Networking, ***Behrouz A. Forouzan*****,** Tata McGraw-Hill, Fourth Edition.
3. Networking essentials -By Joe casad, Dan newland (Tech media)
4. Data and computer communication -By Stallings (Macamillan)
5. Design & analysis of computer communication network -By V Ahuja (PHI)
6. Black U "Computer network – protocol standards and interfaces", PHI
7. Stallings, W "Computer communication network" 4th edition PHI
8. Networking essentials -By Joe casad, Dan newland (Tech media)