Programme	**:**	**Diploma in ET**/CE/EE//ME/MT/CM/IT/DDGM
Programme Code	**:**	01/02/**03**/04/05/06/07/08/16/**17**/21/22/**23**/24/26
Name of Course	**:**	**Computer Networks**
Course Code	**:**	**ET 487**

Teaching Scheme:

	Hours /Week	**Total Hours**
Theory	**04**	**64**
Practical	**02**	**32**

Evaluation Scheme:

	Progressive Assessment	**Semester End Examination**			
		Theory	**Practical**	**Oral**	**Term work**
Duration	**Two class tests, each of 60 minutes**	**3 Hrs.**	--	--	--
Marks	**20**	**80**	--	--	**25**

Course Rationale:

There is revolution in computer Network field with new technologies coming in. This Course introduces concepts, topologies, protocols and components of Computer Network systems

Course Objectives:

After studying this course, the student will be able to

- Understand physical topology and interfacing concepts of Network.
- Classify Networks in different ways.
- Understand OSI & TCP/IP reference model.
- Understand Network Components.
- Brows & Operate Internet.
- Familiarize with Network Administration and utilities.
- Hands on experience with Network commands.

Course Content:

Chap No.	Name of Topic/Sub topic		Hrs	Marks
1.	**Introduction**			
	Uses of computer Networks		**12**	**16**
	1.1	Network Hardware Transmission Technology- Broadcast link and Point to point link,		
	1.2	Types of communication-simplex,half duplex ,full duplex		
	1.3	Types of network topology-Bus,Star,Mesh,Ring,Tree		
	1.4	Introduction to LAN,MAN,WAN		
	1.5	Design Issues, interfaces & services.		
	1.6	Connection Oriented & Connectionless services.		
	1.7	Reference Models - OSI & TCP/IP, their comparison.		
	The Physical Layer			
	1.8	Transmission Media – Guided and Wireless transmission		
	1.9	Physical layer design issues		
2.	**The Data Link Layer**			
	2.1	Data Link Layer Design issues.	**10**	**12**
	2.2	Classification of Error Detection & Correction(only)		
	2.3	Automatic Repeat Request. - Stop and Wait ARQ.		
	2.4	Sliding Window Protocols. - 1 bit sliding window protocol.		
	2.5	Go Back N ARQ.		
	2.6	Selective Repeat ARQ.		
	2.7	Introduction & Frames format of Point -To-Point protocol.		
3.	**Medium Access Sub layer**			
	3.1	Channel Allocation Problem - Static & Dynamic.	**10**	**12**
	3.2	Multiple Accesses protocols – Pure ALOHA and slotted ALOHA, CSMA-CSMA/CA AND CSMA/CD.		
	3.3	Classification of Collision Free Protocols.		
	3.4	Introduction of hardware component Hub, switch, bridges, router, gateway.		
4.	**The Network Layer**			
	4.1	Network layer Design issues.	**10**	**12**
	4.2	Circuit Switching, Packet Switching.		
	4.3	Routing Algorithms-Dijkstra's algorithm,Distance vector routing algorithm.		
	4.4	The network layer in the internet - the IP protocol,		
	4.5	IP addresses subnets,IPv4		
	4.6	Address Resolution Protocol.		
	4.7	Reverse Address Resolution Protocol.		

5	**The Transport Layer**			
	5.1	The transport service	**12**	**16**
	5.2	Elements of Transport Protocols		
	5.3	The internet transport protocol		
	5.4	TCP Service model.		
	5.5	TCP Segment Header.		
	5.6	TCPConnection-Connection Establishment, Termination & Release.		
	5.7	User Datagram Protocol (UDP)		
	5.8	Port Number, User Datagram format		
6.	**The Application Layer**			
	6.1	Client -Server model.	**10**	**12**
	6.2	Socket Interface.		
	6.3	Domain name system. (DNS)		
	6.4	Electronic mail (SMPT) and File Transfer. (FTP)		
	6.5	HTTP and World Wide Web.		
	6.6	Network Security-Cryptography.		
	6.7	Symmetric-Key Cryptography.		
	6.8	Public-key Cryptography.		
		TOTAL	**64**	**80**

List of Practical/Experiments/Assignments:

Sr. No.	Name of Experiment/Assignment
1.	Installation of Windows XP and Networking operating system
2.	Study of component required for LAN networking.
3.	Preparation of patch cords & cross connection cable required for LAN.
3.	Installation of shared devices. (for e.g. printer)
5.	Implementation of LAN using star topology and connectivity between two computers using cross over UTP CAT5 cable.
6.	Installation and configuration of Web Server
7.	Installation and configuration of Network Application FTP.
8.	Installation and configuration of Network Application Telnet.
9.	Installation of network browser for dialup connecting to network.
10.	Visit to any two Industries to observe Network

Instructional Strategy:

Sr. No.	Topic	Instructional Strategy
1.	Introduction & Physical layer	Explanation & demonstration of N/W Components, card, cables.
2.	The Data Link Layer	Explanation.
3.	Medium Access Sub layer	Explanation & demonstration of N/W connection technologies.
4.	The Network Layer	Explanation & demonstration IP address
5.	The Transport Layer	Explanation & Demonstration Port number & TCP
6.	The Application Layer	Explanation & hands on experience DNS,FTP,,SMPT,HTTP ,Network security services

Text Books:

Sr. No	Title	Author	Publication
1.	Computer Networks	Andrew S. Tanenbaum.	Pearson Education.
2.	Data Communication & Networking	Behrouz A. Forouzan.	Tata McGraw-Hill.

Reference Books:

Sr. No	Title	Author	Publication
1.	Data & Computer Communications	William Stallings.	Printice-Hall India
2.	Computer Networks and Internetworking	D. E. Comer	Pearson Education.

Learning Resources :

OHP, LCD, Projector, and Transparencies, White board, computers, websites,
Magazines : Electronics for You, Network Security, DIGIT.

Specification Table:

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1.	Introduction & Physical layer	06	04	06	16
2.	The Data Link Layer	04	04	04	12
3.	Medium Access Sub layer	04	04	04	12
4.	The Network Layer	04	04	04	12
5.	The Transport Layer	06	04	06	16
6.	The Application Layer	04	04	04	12
	Total	28	24	28	80

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