

Subject Code: 1ET4050402	Subject Title: Data Communication and Networking
Pre-Requisite	--

RATIONALE:

One of the major components of computer based information systems is Data communication networks. Through data communication networks we can share hardware, Software, Processing, Data and Applications besides getting global connectivity for internet based communication and services. For diploma students it is important to understand the function of data communication and obtain requisite knowledge about hardware and software requirements of networks and acquire skills to establish a network using necessary hardware & software tools and configure various services over it. The objectives of this course are to make students learn the technology of establishing, commissioning (making operational) and maintaining computer networks and understanding of communication techniques.

COURSE OBJECTIVE:

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning outcomes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

- Describe various protocols, models in networks.
- Explain operations of TCP, HTTP and DNS.
- Illustrate use of Subnets, Ipv4 and Ipv6 in computer networks.
- Design simple computer networks.
- Establish and Commission simple computer networks
- Identify and solve network operational problems.
- Understand various techniques used for data transmission

TEACHING AND EVALUATION SCHEME:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)			
Lecture	Tutorial	Practical	Credit	Theory		Practical	
				University Assessment	Continuous Assessment	University Assessment	Continuous assessment
3	-	2	4	60	40	20	30

DETAILS OF COURSE CONTENTS:

Unit	Topic and Sub-topics	Total Hrs.	WEIGHTAGE %
Unit – I Conditioning and Transmission	1.1 Definition & history of networks 1.2 Usage of Computer Networks 1.3 Standard Organizations and Protocols 1.4 Block diagram of data comm. Network 1.5 Analog and Digital Signals 1.6 A/D and D/A converters	08	20

Unit – II The Reference Model for network communication	2.1 OSI model & function of each Layer 2.2 TCP/ IP model 2.3 Connection oriented Vs Connectionless approach 2.4 Comparison of OSI & TCP/IP Models	09	20
Unit – III Network Hardware and Software	3.1 Types of Transmission Media 3.2 Guided Media: Twisted Pair, Coaxial Cable, Fiber 3.3 Un Guided Media : Electromagnetic spectrum, Radio Transmission, Microwave Transmission, Infrared Transmission,, Satellite Communication 3.4 File Server, Print Server, Proxy Server, Database Server	08	20
Unit- IV Network Applications and Integrated Service Digital Networks	4.1 Domain Name System (DNS) 4.2 New Technology File System (NTFS) 4.3 High Performance File System(HPFS) 4.4 File Allocation Table (FAT) 4.5 File Transfer Protocol (FTP) 4.6 ISDN; Broad band ISDN 4.7 Data communication Inter networking	08	20
Unit-V Basics of Analog and Digital Communication	5.1 Basic CommunicationSystem 4.2 Modulation techniques 4.3 Necessity of modulation 4.4 AM, FM, PM 4.5 Digital Modulation (PAM,PWM,PCM) 4.6 Analog transmission of digital data (ASK, FSK,PSK) 4.7 Communication receivers (AM,FM)	09	20

COURSE OUTCOME:

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- Describe various protocols, models in networks.
- Explain operations of TCP, HTTP, and DNS.
- Illustrate use of Subnets, Ipv4 and Ipv6 in computer networks.
- Design simple computer networks.
- Establish and Commission simple computer networks
- Identify and solve network operational problems.

SUGGESTED LIST OF PRACTICALS:

S. No.	Unit No.	Practical Exercise/Experiment	Hrs. required
1	II	Network the various computer topologies.	02
2	II	Prepare computer system for network.	02
3	II	Install and test Ethernet network interface card and configure it.	02
4	III	Install and test various network connection.	02
5	III	Install network client server and configure.	02
6	III	Install network file server and configure.	02
7	III	Install network print server and configure.	02
8	I	Perform time division multiplexing.	02
9	I	Perform frequency division multiplexing.	02
10	III	Study of Router, repeater and Bridge connected in network.	02
11	V	Test the performance of Amplitude Modulation on Trainer kit.	02
12	V	Test the performance of Frequency Modulation on Trainer kit.	02
13	V	Test the performance of Phase Modulation on Trainer kit.	02
14	V	Test the performance of Pulse Code Modulation on Trainer kit.	02
Total			28

LIST OF REFERENCES:

S.No.	Title of Book	Author	Publication
1.	Computer Networks	Andrew S Tannebaum	Pearson, 2012
2.	Information Technology Today	S. Jaiswal	Galgotia Publications
3.	Computer Networks	Bhushan Trivedi	Oxford University Press, 2013
4.	Data Communication & Networking,	Forouzen	Tata McGraw Hill
5.	Data & Computer Communication,	Williams Stallings	Prentice Hall of India
6.	Networks for Computer Scientists and Engineers	Youlu Zheng & Shakil Akhtar	Oxford University Press, 2012

E-Learning Websites:

www.geeksforgeeks.org