

4146 – DATA COMMUNICATION & COMPUTER NETWORKS									
Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)				
Lectures	Practical	Credit			Theory		Practical Ex.	Total	
3	3	6	25	25	3 Hrs	100	-	150	
Pre-requisite		Source	Semester		Theory	Test	Total	TW	PR
Nil		COM			75	25	100	50	-
								Gr Total	
								150	

Rationale: Presently a large corporation, small businesses, non-profit organisation and govt. agencies have computerised their operation. Employers, employees and workers at all levels are becoming increasingly reliant on computers to do their job. Many organisations have a centrally located powerful computer with a number of individual workstations and laptops, spread out over a vast area or even access the globe. For all these computers to work together they must be able to communicate with each other in an organised manner. The objective of this course is to introduce the student to different communication devices, signal standards, networks protocols and systems used for communications with and between computers.

COURSE CONTENTS		Hrs	Mks
1. INTRODUCTION TO DATA COMMUNICATION		8	20
Fundamental communication. Theory – Channel speed, Baud rate, Bandwidths and Frequency Spectrum, Modem, Modulation Techniques, Synchronous and Asynchronous transmission, Half and full Duplex Transmission, Communication media, Communication Port (USART), RS 232C, Current loops, Switching and routing in networks, Circuit switching, Message switching, Packet switching.			
2. TRANSMISSION MEDIA AND TECHNIQUES		8	10
Data Transmission Techniques – Base band/ Modulated/ Broadband. Choice of medium: Copper v/s Optical media, Data traffic, Noise problem, Twisted pair, Co-axial cable, Fibre optical.			
3. LAYERED PROTOCOL & OSI MODEL		8	20
Goals of Layered Protocol. Introduction to standards organisation and the OSI model. Brief overview of each layer – Physical layer, Data Link Layer, Network Layer, Transport Layer – Session Layer, Presentation layer, Application Layer. Communication between layers.			
4. COMMUNICATION PROTOCOLS		8	20
Classification of Communication Protocols. Brief study of the following protocols – Bisync, HDLC, RTS/CTS, XON/XOFF, TDMA, CSMA/CD, TOKEN PASSING.			
5. LOCAL AREA NETWORKS		8	20
Definition of LANS, Network Topologies – Star, Bus, Ring, Mesh & Tree. Network access control: Packet Format, Contention based access methods (CSMA/CD), Non-contention based access methods i.e. Slotted ring, Token passing. LAW implementation using Ethernet – Thick thin cable Ethernet (10 base 5, 10 base 2, 10 base T) IEEE 802.3, Co-axial transceivers circuitry, Network interface controller and its registers. Brief introduction to X25 and TCP/IP.			

6. NETWORK INTERCONNECTION DEVICE	8	10
Repeater, Bridges, Routers, Hubs, gateways, Network Cables, WAN (Wide Area Networks), MAN (Metropolitan Area Networks). WAN/MAN Standards (IEEE 802.6) and Architecture.		
Total	48	100

REFERENCE BOOKS:

1. Computer Networks by Andrew S. Tanenbaum.
2. Computer Networks by Uyless Blavk.
3. Data & Computer Communication by Williams Stallings.
4. Inside Networks by James K. Hardy.
5. Local Area Networks by Brendon Jangney.

