PARUL UNIVERSITY - Faculty of IT & Computer Science

Department of Computer Application

SYLLABUS FOR 3rd Sem B.Sc. (IT), BCA, IMCA, IMCA (A.Y.-IV) PROGRAMME

Data Communication and Computer Networks (05101202)

Type of Course: B.Sc. (IT), BCA, IMCA, IMCA (A.Y.-IV)

Prerequisite: Basic Knowledge of Network

Rationale: Basic skills for Computer Science Student.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
3	1	0	4	60	0	20	20	0	100

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Network Basics**: What is network?, Use of network, Network hardware, Network software, Reference models.	12%	6
2	**The physical layer- I**: Transmission media, Magnetic media, Twisted pair , coaxial cable, Fiber optic , Wireless transmission, Electromagnetic spectrum, Radio transmission, Microwave transmission, Infrared, light wave.	13%	6
3	**The physical layer -II**: The Telephone system structure, Local loop, Transmission impairment, Modem, Fibre in local loop, Trunks and multiplexing, FDM, TDM, Switching, Circuit switching, cross bar and space division multiplexing, Time division switching, Cellular radio, Cordless phone, Analog phone, Advance telephone system, Communication satellite, Geosynchronous satellite, low-orbit satellite, satellite versus fiber.	20%	10
4	**Data link layer**: Design issues, Framing, Error control , Flow control, Error-detection and correction static, Sliding window protocol.	10%	5
5	**Network Layer**: Routing algorithm, Shortest path, Flooding, Flow based, Distance vector, Link state , Hierarchical, broadcast ,Multicast routing, Network layer in internet, The IP protocol, IP address, subnets, internet control protocol, IGRP, OSPF, EIGRP,BGP,CIDR, IPV6.	20%	9

6	**Transport layer**: Transport services, Element of transport protocol, The internet transport protocol (TCP and UDP), Congestion control, Principle of reliable data transfer	15%	7
7	**Application layer**: Network security, DNS, Electronic Mail, The world wide web.	10%	5

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Computer Networks
   Andrew S. Tanenbaum; Fifth edition
2. Data Communication and Networking
   Behrouz A. Forouzan

Course Outcome:

After Learning the course the students shall be able to:

1. Understand basics of data communications and computer network
2. Describe OSI reference model and basic functionalities of DNS, WWW and Selected protocols
3. Identify relevant data transmission technique and media
4. Implement framing error handling and congestion control techniques
5. Describe need for computer network security
6. Understand campus area network and its establishment