



CVM
UNIVERSITY

Aegis: Charutar Vidya Mandal (Estd.1945)

FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

Programme: BACHELOR OF TECHNOLOGY (Electronics and Communication)

Semester: VII

Course Code: 202060701

Course Title: Computer Data Network

Course Group: Professional Core Course

Course Objectives: This course aims to learn about computer network organization and implementation. Further, student acquire a theoretical understanding of data communication and computer networks. Familiarize the student with current topics such as security, network management, and gaining practical experience in installation, monitoring, and troubleshooting of current LAN systems.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
Lecture	Tutorial	Practical		Theory		J/V/P*		Total
				Internal	External	Internal	External	
3	0	2	4	50/18	50/17	25/9	25/9	150/53

* J: Jury; V: Viva; P: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	Introduction to computer networks and Internet: Network applications, network hardware, network software, reference models: OSI, TCP/IP, Internet, Connection oriented network - X.25, frame relay. Understanding of network and Internet, The network edge, The network core, Understanding of Delay, Loss and Throughput in the packet- switching network, protocols layers and their service model, History of the computer network.	9
2	Application Layer: Domain name system, electronic mail, World Wide Web: architectural overview, dynamic web document and http. Application layer protocols: Simple Network Management Protocol, File Transfer Protocol, Simple Mail Transfer Protocol, Telnet.	9
3	Transport Layer: Transport service, elements of transport protocol, Simple Transport Protocol, Internet transport layer protocols: UDP and TCP.	9



4	Network Layer: Introduction to forwarding and routing, Network Service models, Virtual and Datagram networks, study of router, IP protocol and addressing in the Internet, Routing algorithms, Broadcast and Multicast routing	9
5	The Link layer and Local area networks: Introduction to link layer services, error-detection and correction techniques, Multiple access protocols, addressing, Ethernet, switches, VLAN.	9
		45

List of Practicals / Tutorials:

1	Study of different types of network cables and practically implement the cross-wired cable and straight through cable using clamping tool.
2	Study of different network devices in detail.
3	Study of basic network command and Network configuration commands
4	Connect the computers in LAN.
5	Implement different LAN topologies using Network Simulator.
6	Implement the concept of VLAN using Network Simulator
7	Implement the concept of static routing
8	Implement the concept of dynamic routing (RIP, OSPF, BGP).
9	Packet capture and header analysis by wire-shark(TCP,UDP,IP)
10	Configure a network topology using packet tracer software
11	Network Troubleshooting.

Reference Books:

1	Kurose and Ross, Computer Networking- A Top-Down approach , 6 th edition, Pearson.
2	Fred Halsall, Addison Wesley, Computer Networking and the Internet , 5 th edition,
3	Behrouz Forouzan, TCP/IP Protocol Suite (4th edition), , McGraw Hill
4	Behrouz Forouzan, Data Communications and Networking , 5 th Edition, Mc Graw Hill.
5	Andrew Tanenbaum, Computer Networks , 5 th edition, Prentice Hall.

Supplementary learning Material:

1	NPTEL Video Lectures
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Pedagogy:

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods
- Seminar/Poster Presentation
- Industrial/ Field visits
- Course Projects

**Internal Evaluation:**

The internal evaluation comprised of written exam (40% weightage) along with combination of various components such as Certification courses, Assignments, Mini Project, Simulation, Model making, Case study, Group activity, Seminar, Poster Presentation, Unit test, Quiz, Class Participation, Attendance, Achievements etc. where individual component weightage should not exceed 20%.

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						R: Remembering; U: Understanding; A: Applying; N: Analyzing; E: Evaluating; C: Creating
R	U	A	N	E	C	
10	25	35	20	5	5	

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Describe the basic terminologies used in networking and layered architecture of computer network.	20
CO-2	Comprehend basic protocols of application layer and how they can be used to assist in network design and implementation.	25
CO-3	Describe and implement the essential principles of a connectionless and connection-oriented protocols used for reliable data transfer, flow control and congestion control.	20
CO-4	Design network architecture, assign IP addressing and apply various routing algorithms to find shortest paths for network-layer packet delivery.	35

Curriculum Revision:	
Version:	2.0
Drafted on (Month-Year):	June -2022
Last Reviewed on (Month-Year):	-
Next Review on (Month-Year):	June-2025