

**SES's L.S. RAHEJA COLLEGE OF ARTS AND COMMERCE
(AUTONOMOUS)**



BOARD OF STUDIES: Information Technology and Data Science

Programme: B.Sc. (Cyber Security & Digital Forensics)

Semester: I

Nomenclature of the Course: Basics of Computer Networks

NEP Vertical: Major

Credit: 02

Total Marks: 50

Academic Year: 2026–27

(As per Choice Based Credit System under NEP 2020)



Unit-wise Detailed Syllabus

Unit	Detailed Contents	Andragogy	Hours
Unit I: Fundamentals of Computer Networks	1. Introduction to Computer Networks – Need & Applications 2. Types of Networks – PAN, LAN, MAN, WAN 3. Network Topologies – Bus, Star, Ring, Mesh 4. Networking Devices – Hub, Switch, Router, Bridge, Gateway 5. Transmission Media – Guided & Unguided 6. OSI Model – Layer-wise Functions 7. TCP/IP Model – Comparison with OSI	Diagram-based explanation, Layer mapping activities, Real device demonstration	15
Unit II: IP Addressing & Network Security Basics	1. IP Addressing – IPv4 Structure 2. Classes of IP Address 3. Subnet Mask & Basic Subnetting 4. Common Protocols – HTTP, HTTPS, FTP, DNS, DHCP 5. Routing – Static vs Dynamic (Conceptual) 6. Introduction to Firewalls & IDS 7. Common Network Attacks – DoS, MITM (Conceptual) 8. Basic Networking Commands – ping, ipconfig, tracert	Problem-solving exercises, IP calculation practice, Scenario discussion on attacks	15

Learning Objectives

1. To understand basic networking concepts and architecture.
2. To learn OSI and TCP/IP models.
3. To understand IP addressing and subnetting basics.
4. To identify common network protocols and devices.
5. To gain awareness of basic network security threats.

Course Outcomes (CO)

CO No.	Course Outcome	Bloom's Level
CO1	Explain fundamental networking concepts and models	Understand (L2)
CO2	Describe networking devices and transmission media	Remember (L1), Understand (L2)
CO3	Apply IP addressing and basic subnetting concepts	Apply (L3)
CO4	Analyze network protocols and their applications	Analyze (L4)
CO5	Identify basic network security threats	Understand (L2), Analyze (L4)

Suggested Readings

Sr. No.	Title	Author
1	Computer Networking: A Top-Down Approach	Kurose & Ross
2	Data Communications and Networking	Forouzan
3	Computer Networks	Tanenbaum
4	Network Security Essentials	William Stallings

QUESTION PAPER PATTERN

A) Continuous Evaluation – 20 Marks

Particulars	Marks
Class Test	10
Assignment / Case Study	10
Total	20

(B) Semester End Examination – 30 Marks

Duration: 1 Hour

Duration: 1 Hour		
Question No.	Description	Total Marks
Q1	Attempt Unit I	
	A – Remembering	15
	B – Analysing	
	C – Applying	
OR		
	P – Remembering	15
	Q – Analysing	
	R – Applying	
Q2	Attempt Unit II	
	A – Remembering	15
	B – Analysing	
	C – Applying	
OR		
	P – Remembering	15
	Q – Analysing	
	R – Applying	