

Course Code: 502
Course Title: Network Technology

Course Code	502									
Course Title	Network Technology (Minor-5)									
Credits	4									
Course Category	Minor Course (Minor-05)									
Level of Course	200-299 (Intermediate Level Course)									
Teaching per Week	4 Hours									
Minimum Hours per Semester	60 hours of Theory (Including class work, examination, preparation etc.)									
Review / Revision	-									
Implementation Year:	A.Y. 2025-2026									
Purpose of Course	To provide students with a foundational understanding of computer networks, covering basic concepts, architectures, protocols, and services. It aims to equip learners with the knowledge of both traditional and emerging network technologies, including Internet, Intranet, and Mobile Ad hoc Networks (MANET), essential for careers in Computer and IT industries.									
Course Objective	1) To introduce students to the fundamental concepts and types of computer networks and topologies. 2) To explain the architecture and functioning of the Internet and Intranet, including various networking devices and media. 3) To explore the structure and functions of the OSI model and important network protocols. 4) To provide knowledge of modern networking trends such as Mobile Ad hoc Networks (MANET), VANET, FANET, and SPANC. 5) To demonstrate the working of application layer services such as email communication and web access through case studies.									
Pre-requisite	Learner should have a basic understanding of computer fundamentals and operating systems. Familiarity with hardware components and general internet usage will be beneficial for better comprehension of networking concepts.									
Course Outcomes	CO1 (Remembering & Understanding): Identify and describe types of computer networks, topologies, and related terminologies. CO2 (Understanding & Applying): Explain the working of Internet and Intranet and identify common networking devices and cables. CO3 (Understanding & Applying): Describe Mobile Ad hoc Networks (MANET, VANET, SPANC, FANET) and explain the OSI model and its layers. CO4 (Applying): Apply knowledge of networking protocols, data packets, and addressing schemes (IP, HTTP, HTTPS) in basic scenarios. CO5 (Analyzing): Analyze the role of application layer services in email communication and URL structure. CO6 (Evaluating & Creating): Evaluate how different network protocols function across layers and create logical interpretations of data flow in web and email transactions.									
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	
	CO1									
	CO2									
	CO3									
	CO4									
	CO5									
	CO6									
Course Content	Unit-1: Introduction to Network 1.1 Basics of network 1.1.1 Types of networks 1.1.2 Different topologies (Bus, ring, star, mesh, tree) 1.2 Types of networks (LAN, MAN, WAN) 1.3 Terminologies (Intranet, Internet, Unicast, Broadcast, Multicast) Unit-2: Internet and Intranet 2.1 Concepts of Internet and Intranet 2.1.1 Working of Internet and its architecture 2.1.2 Working of Intranet and its architecture									

	2.1.3 Network Devices terminologies: Hub, modem, switch, Routers, Gateways, Access point 2.2 Types of Cables: co-axial, UTP, Fiber Optic cable Unit-3: Mobile Ad hoc network 3.1 Concepts and types of MANET (Mobile Ad hoc network) 3.1.1 VANET (Vehicular Ad hoc Network) 3.1.2 Smart phone Ad hoc Network (SPANC) 3.1.3 Flying Ad hoc network (FANET) 3.2 concepts of OSI(Open Source Interconnection) layers 3.2.1 types of layers 3.2.2 Introduction of OSI Layers and their purpose: Physical layer, Data link layer and Network Layer, Transport layer and Session Layer. 3.3 Important protocols of Network layers 3.3.1 Concepts of Data packets and Datagram 3.3.2 Presentation layer protocols and their purpose: 3.3.2.1 SSL, HTTP, FTP, Telnet 3.3 Concepts of IP address 3.4 Difference between http and https Unit-4: Mail Services 4.1 Application Layer services: 4.1.1 concepts of email 4.1.2 working of email account and services 4.1.3 URL and URL types (Absolute, Relative) 4.2 Case study of email: 4.2.1 From sender to receiver (Mailer, Mail Server, Mailbox) 4.2.2 Functionality and use of protocols at different layers 4.3 Case study of locating Website: 4.3.1 URL and locating URL 4.3.2 Steps and protocols involved in accessing URL 4.3.3 Concepts of search engine and purpose.
Reference Books	1. Computer Networks, Andrew S. Tanenbaum, Pearson, ISBN: 9780132126953 2. Computer Networking: A Top-Down Approach, James F. Kurose & Keith W. Ross, Pearson, ISBN: 9780133594140 3. Data Communications and Networking, Behrouz A. Forouzan, McGraw-Hill Education, ISBN: 9780071326285 4. Computer Networking: Principles, Protocols and Practice, Olivier Bonaventure, Self-published, ISBN: 9780994000403 5. Computer Networks: A Systems Approach, Larry L. Peterson & Bruce S. Davie, Elsevier, ISBN: 9780123850591 6. Networking: A Beginner's Guide, Bruce Hallberg, McGraw-Hill Education, ISBN: 9780072226786 7. Data and Computer Communications, William Stallings, Pearson, ISBN: 9780133506488 8. Computer Networks and Internets, Douglas E. Comer, Pearson, ISBN: 9780136067416 9. Network Warrior, Gary A. Donahue, O'Reilly Media, ISBN: 9781449387866 10. High-Performance Browser Networking, Ilya Grigorik, O'Reilly Media, ISBN: 9781449344760
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. - Class attendance, class assignment, home assignment, Unit Tests. 50% External assessment. - Theory/Written examination