As Per NEP 2020

Tolani College of Commerce (Autonomous)

Knowledge is Supreme

Title of the Course: <u>Computer Networks</u>

Programme: B.Sc(Information Technology) Semester III

Syllabus for 4 credit Course

From the academic year- 2024-2025

Name of the Course: Computer Networks

Sr. No.	Heading	Particulars
1	**Description of the course :**	Computer networking refers to interconnected computing devices that can exchange data and share resources with each other. These networked devices use a system of rules, called communications protocols, to transmit information over physical or wireless technologies.
2	**Vertical :**	Major
3	**Type :**	Theory and Practical
4	**Credit**:	4 credits (2 Credits = Theory and 2 Credits= Practical work)
5	**Hours Allotted :**	60 Hours
6	**Marks Allotted**:	100 Marks Continuous Evaluation: 40 Semester-End: 60
7	**Course Objectives**: **1.** To understand the basics of networking, including different types of networks, network topologies, and network protocols. **2.** To understand the role of devices such as routers, switches and hubs in a network. **3.** To learn about how devices communicate using IP addresses. **4.** To learn about common networks security threats and measures to protect network.	
8	**Course Outcomes**: **1.** Learners should be able to explain the architecture of computer networks. **2.** Learners should be able to describe and differentiate between common network protocols. **3.** Leaners should be able to configure IP addresses and subnet mask. **4.** Leaners should be able to identify and explain the function of networking devices.	

9	**Module 1: Introduction of Network Models /Layer and Switching: (15 hours)**
	• Introduction Data communications Networks, Network types Internet history Standards and administration, Protocol layering, TCP/IP protocol suite, The OSI model.
	• Introduction, circuit switched networks, packet switching, structure of a switch. Data and signals, Periodic analog signals, Digital signals, Transmission impairment, Data rate limits, performance.
	• Network layer services, packet,switching, network layer performance, IPv4 addressing, forwarding of IP packets, Internet Protocol, ICMPv4, Mobile IP
	Module 2: Introduction to the Data Link Layer and Bandwidth Utilization: (15 hours)
	• Link layer addressing, Data Link Layer Design Issues, Error detection and correction, Block coding, Cyclic codes, Checksum ,Forward error correction, Error correcting codes, Error detecting codes.
	• Multiplexing and Spectrum Spreading,Multiplexing, .
	• Transmission media,Guided Media, Unguided Media.
	Module 3: Data Link Control , Media Access Control and Wireless LANs(15 hours)
	• DLC services,Data link layer protocols,HDLC ,Point-to-point protocol.
	• Random access,Controlled access,Channelization ,Wired LANs – Ethernet Protocol, Standard Ethernet ,Fast Ethernet, Gigabit Ethernet, 10 gigabit ethernet
	• Introduction,IEEE 802.11 project, Bluetooth,WiMAX, Cellular telephony, Satellite networks.
	Module 4: Introduction to the Transport Layer, Next generation IP and Transport layer(15 hours)
	• Introduction, Transport layer protocols (Simple protocol, Stop-and-wait protocol, Go-Back-n protocol, Selective repeat protocol, Bidirectional protocols), Transport layer services, User datagram protocol, Transmission control protocol,
	• Next generation IP: IPv6 addressing, IPv6 protocol, ICMPv6 protocol,
	• transition from IPv4 to IPv6.

10	**Reference Books:** **1)** Behrouz A. Forouzan, Data Communication and Networking, Tata McGraw Hill, 5th Edition,2013. **2)** https://www.javatpoint.com/computer-network-tutorial
11	**Internal Continuous Assessment: 40%**	**Semester End Examination : 60%**
12	**Continuous Evaluation through:**	Practical Assessment
13	**Format of Question Paper:**	

Scheme of Evaluation Pattern
Table 1A: Scheme of Continuous Evaluation (CE/Practical)
Scheme of Evaluation Pattern

Sub-components	Maximum Marks	Conditions for passing
1) Practical exam	30	a) A learner must be present for each of the sub-components
2) Journal and Viva	10	
Total	40	

Table 1B: Scheme of Semester End Examination (SEE) Evaluation
Question Paper Pattern for Semester End Examination (SEE)

Maximum Marks: 60   **Duration: 2 Hrs.**

Note: All questions are compulsory. Each question has an internal choice.

Question Number		Nature of Questions	Maximum Marks
1)		**Attempt any 3**	
	a)		15
	b)		
	c)		
	d)		
	e)		
2)		**Attempt any 3**	
	a)		15
	b)		
	c)		
	d)		
	e)		
3)		**Attempt any 3**	
	a)		
	b)		
	c)		
	d)		
	e)		
4)		**Attempt any 3**	
	a)		15
	b)		
	c)		
	d)		
	e)		