Semester Lecture Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim Goa

Name of Faculty: Shubha Kamat	**Subject:** Computer Science	
Paper code: CSC105 Computer Networks	**Program/Course:TYBSc**	**Division:**
Academic year: 2024 - 2025	**Semester: V**	**Total Lectures: 60**

Course Objectives:

- **To provide strong background of Network Concepts**
- **To be familiar with the components required to build and design different types of networks**
- **To explain various protocols associated with network layers.**

Course Learning Outcome:

- **Describe network models and networks based on type and topology.**
- **Categorize and use transmission media based on characteristics and applications.**
- **Detect and correct errors using various techniques.**
- **Explain different protocols for data transmission at DLL.**
- **Be able to set up the network and also implement subnetting.**
- **Be able to apply different transport and application layer protocols.**

Month	**Lectures From:**	**To:**	**No. of lectures allotted**	**Topic, Subtopic to be covered**	**Learning outcome**	**ICT Tools**	**Reference books**
June	28	6 July	4	Introduction: Networks:Components and Categories, Types of Connections, Topologies, Transmission Modes	Describe network models and networks based on type and topology.	LCD, PPTs	Data Communication and Networking by Behrouz Forouzan, MGH 5th edition

July	8	13	4	Switching: Circuit, Message, Packet switching Protocols and Standards: Layered Architecture, OSI model, TCP/IP model	Describe network models and networks based on type and topology.	LCD, PPTs	---do--
	15	20	4	Applications, Data Encoding:, Manchester and differential		LCD, PPTs	---do--
	22	27	4	Transmission Media: Twisted pair, Coaxial Cable,Fiber Optics, Wireless media Physical Layer Devices: Hub Repeater	Categorize and use transmission media based on characteristics and applications.	-do-	---do--
	29	3 Aug	4	Functions of Data link Layer, Data Framing techniques: Error detection and correction:	Detect and correct errors using various techniques.	-do-	---do--
August	5	10	4	Elementary Data Link Protocols:	Explain different protocols for data transmission at DLL.	-do-	---do--
	12	17	4	MAC Sublayer, Random Access Protocols: ALOHA, CSMA,CSMA/CD, CSMA/CA Collision Free Protocols	--do---	-do-	---do--
	19	24	4	Network Standards: IEEE 802.3 (Ethernet) Frame Format, Categories of Standard Ethernet,- 10 Bast T, 10 Base Fast Ethernet, IEEE 802.11 Architecture, Frame structure	--do--	-do-	---do--

	26	31	4	Data link layer Devices bridges and Switches Functions of Network layer, Network Service: Virtual Circuits, Datagrams	Be able to set up the network and also implement subnetting. --do--		Computer Networks by Andrew S Tenenbaum, Pearson Education India, 5th edition.
September	2	14	4	Routing Algorithms: Shortest path, Flooding, Distance Vector, Link State, Hierarchical	--do--		---do--
	16	21	4	Congestion Control: Algorithms and Congestion Prevention Policies Internet Protocols: IP frame Format, IP addressing, Subnets, Internet Control Protocols: ICMP, ARP, RARP, DHCP	--do--		---do--
	23	28	4	Internetworking: Network Layer Devices: Router. Functions of Transport Layer Transport Services: Connectionless, Connection oriented, Transport Service Primitives Berkley Sockets, Gateways	Be able to apply different transport protocols.		---do--
	30	5 Oct	4	Transport layer Protocols: User Datagram Protocol,Transmission Control Protocol, Quality Service Parameters	--do--		---do--
October	7	12	4	Functions of Applications layer	Be able to apply different application layer protocols.		---do--
	14	22	4	Electronic mail , Domain Name System, Revision	--do--		---do--

Week	Practical	ICT tools
1	Study performance of network with star topology through NS2	LCD projector
2	Implementation of Framing using Bit stuffing	-do-
3	Implementation of Framing using Character stuffing	-do-
4	Simulation of stop and wait protocol using NS2	-do-
5	Implementation of Dijkstra Algorithm for shortest path algorithm	-do-
6	Configuring TCP/IP on a desktop	-do-
7	Using diagnostic Network Commands : Ping, Traceroute, netstat, nslookup	-do-
8	Simulate a Mobile Adhoc network (MANET) using NS2	-do-
9	Using Network Protocol Analyser tool	-do-
10	IP address Manipulation	-do-
11	Simulation of Congestion control Algorithms using NS2	-do-
12	Implementation of IP fragmentation and reassembly	-do-
13	Simple TCP client and server application	-do-
14	Simple UDP client and server application	-do-
15	Revision	

Theory : ISA 20 marks SEE 80 marks

Practical : SEExam 50 marks