

GANPAT UNIVERSITY										
FACULTY OF ENGINEERING& TECHNOLOGY										
Programme		Bachelor of Technology				Branch/Spec.		Computer Engineering/Information Technology		
Semester		V				Version		2.0.0.0		
Effective from Academic Year				2020-21		Effective for the batch Admitted in				July 2018
Subject code		2CEIT503		Subject Name		ComputerNetworks				
Teaching scheme						Examination scheme (Marks)				
(Per week)		Lecture (DT)		Practical(Lab.)		Total				
	L	TU	P	TW						
Credit	4	0	1	-	5	Theory	40	60	100	
Hours	4	0	2	-	6	Practical	30	20	50	
Pre-requisites:										
Operating System										
Objectives of the course:										
1. Build an Understanding of Modern Network Architectures From Design and Performance Perspective. 2. Able to Understand Fundamental Concepts of Communication Networks Like Network Devices, topologies, Types of Network, Addressing Mechanism, Routing. 3. To Make Students Familiar with Services and Functionalities Offered at Each Layer of the Network Protocol Stack. 4. Learn Various Protocols at Data Link Layer, Network Layer, Transport Layer & Application Layer of Network. 5. To Familiarize with The Basic Taxonomy & Terminology of The Computer Networking with the Concept of Layered Approach.										
Theory syllabus										
Unit		Content							Hrs	
1		<b>Overview:</b> Basics of Computer Networks, Network Hardware, Network Software, Uses of Computer Networks, Types of Network, Network Topology , Examples of Network and Protocols, Reference Models: OSI, TCP/IP							08	
2		<b>Physical Layer:</b> Data, Signals, Analog and Digital Transmission, Transmission Media and Impairments, Multiplexing, Transmission in ISDN, Broad Band ISDN							08	
3		<b>Data Link Layer:</b> Design Issues: Services Provided to Network Layer, Framing, Error Detection and Correction, Flow Control, Data Link Control and Protocols, Medium Access, Multiple Access Protocols: ALOHA, CSMA/CD, CSMA/CA, Channelization, Ethernet 802.3, Token Ring 802.5, Circuit Switching & Packet Switching, Switching Networks, Wireless LAN							14	
4		<b>Network Layer:</b> Design Issues, Introduction to Routing, Virtual Circuits, Connectionless Internetworking, Fragmentation, Internet Protocol, IP Addressing Scheme, Sunetworking, Ipv6, ARP, RARP, Routing Algorithms, Congestion Control Mechanisms, QOS							10	
5		<b>TransportLayer:</b> Process to Process Delivery, Client-Server Paradigm, Addressing, Multiplexing and DeMultiplexing, Establishing a Connection, Releasing a Connection, UDP, TCP: Service Model, Connection Management, Silly Window Syndrome, Performance Issues, Congestion Control							10	
6		<b>Application Layer:</b> Introduction to Application Layer Protocols: DNS, SMTP, FTP, HTTP, SNMP, WWW, Socket Programming							06	
7		<b>Overview of Advance Concepts of Networking:</b>							04	

	Infrastructure-less Networks : Wireless Adhoc Network, Sensor Network, IoT, Edge Computing and Other Recent Trends in Networking	
Practical content		
Experiments/Practical/Simulations would be carried out based on syllabus		
Text Books		
1	Data Communication &Networking by Behrouz A.Forouzan, Tata McGrawHill.	
2	Computer Networks by Andrew S. Tanenbaum, PrenticeHall India.	
Reference Books		
1	Computer Networks: A Top Down Approach by Behrouz A. Forouzan. Tata McGrawHill	
2	Data & Computer Communications by William Stallings. PrenticeHallIndia.	
3	Introduction to Wireless and Mobile System by D. P. Agrawal and Q.-A. Zeng, Cengage Learning	
ICT/MOOCs Reference		
1	<a href="https://nptel.ac.in/courses/106/105/106105183/">https://nptel.ac.in/courses/106/105/106105183/</a>	
2	<a href="https://nptel.ac.in/courses/106/106/106106091/">https://nptel.ac.in/courses/106/106/106106091/</a>	
Course Outcomes:		
After successful completion of this course, student will be able to		
1. Analyse the functionality of layered network architecture.		
2. Categorize the different types of network topologies, network devices and their functions within a network.		
3. Recognize the significance of different networking protocols, algorithms and design issues for layered model.		
4. Use network simulator tool(s) to examine key networking algorithms.		
5. Use the knowledge of network protocols and its performance in design and configuration of computer networks.		