

IT202:Computer Network

CREDITS – 6(L=4, T=0, P=2)

2nd Year, B. Tech. (Information Technology)

Course Objective:

To provide basic knowledge of different types of computer networks, various interfacing standards and protocols.

Teaching and Assessment Scheme:

TeachingScheme			Credits	Assessment Scheme				Total Marks
L	T	P	C	Theory		Practical		
				ESE	CE	ESE	CE	
4	0	2	6	70	30	30	20	150

Details of Assessment Instruments under CE Practical Component:

20	
Term Work	10
Quiz/Assignment/ALA	10

Course Content:

Unit No.	Topics	Teaching Hours
1	Introduction: Why study data communication?, Data Communication, Networks, Protocols and Standards, Standards Organizations .Line Configuration, Topology, Transmission Modes, Categories of Networks, OSI model, TCP/IP model, Comparison of OSI and TCP/IP model, Example network: The internet, X.25, Frame Relay.	06
2	Physical Layer: Basis for data communication, Digital to digital and Analog to digital conversion, transmission modes, Analog transmission: Digital to analog and analog to analog conversion. Multiplexing and spreading techniques. Switching techniques, types of switching, structure of switch, types of switches. Guided Media and Unguided Media: Radio Frequency Allocation, frequency reuse.	09
3	Data Link Layer: Data link Layer Design Issues, Error Detection & Correction, Types of	09

	Errors, Error detection techniques, Error Correction techniques, Multiple-Bit Error Correction, Error control, elementary Data Link Protocols, Sliding Window Protocols, example DLL protocols, Protocols Verification models.	
4	Medium Access Control Sub Layer: Channel Allocation, Multiple Access Protocols, Ethernet, Data Link Layer Switching : Bridges, local Internetworking, Spanning tree bridges, Remote Bridge, Repeaters, Hub, Switches, routers, Gateway, Virtual LANs.	07
5	Network Layer: Design Issues, Routing Algorithms: Shortest Path Routing, Flooding, Distance Vector Routing, Link State Routing, Broadcast, multicast routing, Congestion Control Algorithms, Quality of Service, Internetworking, Example protocols: OSPF, BGP, Internet multicasting IPv4 and IPv6.	15
6	Transport Layer: The transport service: Services provided to the upper layers, Transport service primitives, Socket, Elements of transport protocols: Addressing, Connection establishment, Connection release, Flow control, Multiplexing, Crash recovery. The transport protocol: UDP, TCP.	08
7	Application Layer: DNS: The DNS name space, Resource records, Name servers, Electronic mail: Architecture and services, User agent, Message formats, Message transfer, Final delivery, World Wide Web: Architectural overview, HTTP.	06

List of References:

1. Andrew S. Tanenbaum, “*Computer network*”, Fourth Edition, Pearson.
2. BehrouzForouzan, “*Introduction to Data Communication and Networking*”, Fourth Edition, TataMcGrawHill.
3. Natalia Olifer, Victor Olifer, “*Computer Network*”, Wiley-India edition.
4. William Stallings, “*Data and computer communication*”, Eighth Edition, Pearson.

Course Outcomes (COs):

At the end of this course students will be able to ...

1. Analyze various protocols and network architectures.
2. Examine the OSI layers in a network.
3. Assess network type and its application.
4. Evaluate key networking algorithms in simulation.
5. Identify the different types of network devices and their functions within a network.
6. Design and configure the network.

Course Articulation Matrix:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO13	PSO14	PSO15	PSO16
CO1	3	3	3	3	3	-	3	3	3	3	3	-	3	2	3	3
CO2	-	3	2	3	3	-	2	2	-	3	2	2	1	3	2	3
CO3	2	3	3	3	3	2	3	2	2	2	3	3	3	2	3	3
CO4	3	3	3	3	3	2	3	-	3	3	3	3	3	2	3	2
CO5	3	3	3	3	3	1	3	-	3	3	3	3	3	-	3	2
CO6	2	3	3	3	3	3	3	2	3	2	3	2	3	3	3	3

Delivery Methods:

The course delivery pattern will be....

1. Prerequisite of the subject will be discussed.
2. Lectures will be conducted with the aid of OHP, white board.
3. Laboratories will be conducted with the aid of OHP, white board, computers.

Constituent COs in Assessment Tools:

CO	Assessment Instrument
CO1	Test, Assignment, Quiz
CO2	Test, Assignment, Quiz
CO3	Test, Assignment, Quiz
CO4	Test, Assignment, Quiz, Term Work
CO5	Term Work
CO6	Term Work

Prof. Nikita Patel

BOS member Secretary, Info. Tech.

Prof. Zankhana H. Shah

BOS Chairman, Info. Tech.