



SANATAN DHARMA COLLEGE, AMBALA CANTT

College with Potential for Excellence, UGC, New Delhi
NAAC Accredited Grade "A+" with CGPA 3.51 in 3rd cycle
ISO 9001:2015 & ISO 14001:2015 Certified



Department of Computer Science Lesson Plan (Session 2022-2023)

Class: BCA Sem: V Course Code: BCA-354 Nomenclature: Computer Networks

Duration: 15 Weeks

Dates: 5 Sep, 2022- 25 Dec, 2022

SYLLABUS

BCA-354 Computer Networks

Maximum Marks: 100
Internal: 20

External: 80
Time: 3 hours

Minimum Pass Marks: 35

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Introduction to Data Communication and Computer Networks; Uses of Computer Networks; Types of Computer Networks and their Topologies, Network Hardware Components, Connectors, Transceivers, Repeaters, Hubs, Network Interface Cards and PC Cards, Bridges, Switches, Routers, Gateways, Network Software: Network Design Issues and Protocols, Connection-Oriented and Connectionless Services; OSI Reference Model; Networking Models: Distributed Systems, Client/Server Model, Peer-to-Peer Model, Web-Based Model and Emerging File-Sharing Model;

UNIT – II

Analog and Digital data and signals; Bandwidth and Data Rate, Capacity, Baud Rate; Transmission Impairment; Data Rate Limits; Guided Transmission Media; Wireless Transmission ; Communication Satellites; Switching and Multiplexing; Modems and Modulation techniques; ADSL and Cable Modems;

UNIT - III

Data Link Layer Design issues; Error Detection and Correction; Sliding Window Protocols: One-bit, Go Back N and Selective Repeat; Media Access Control: ALOHA, Slotted ALOHA, CSMA, Collision free protocols; Introduction to LAN technologies: Ethernet, Switched Ethernet, Fast Ethernet, Gigabit Ethernet; Token Ring; Introduction to Wireless LANs and Bluetooth; VLANs

UNIT – IV

Routing Algorithms: Flooding, Shortest Path Routing, Distance Vector Routing; Link State Routing, Hierarchical Routing; Congestion Control; Traffic shaping; Choke packets; Load shedding; Elements of Transport Protocols; Network Security Issues: Security attacks; Encryption methods; Digital Signature; Digital Certificate

TEXT BOOKS:

Andrew S. Tanenbaum, "Computer Networks", Pearson Education.

Michael A. Gallo, William M. Hancock, "Computer Communications and Networking Technologies", CENGAGE Learning.

REFERENCE BOOKS:

Behrouz A Forouzan, "Data Communications and Networking", McGraw Hill.

Bhushan Trivedi, "Computer Networks", Oxford

Course Outcomes

After the completion of this course, prospective Computer professionals will have the ability to :

Semester-V Course- BCA-354: Computer Networks At the end of course student should be able to:	
CO-1	Describe the general principles of data communication.
CO-2	Describe how computer networks are organized with the concept of layered approach.
CO-3	Describe how signals are used to transfer data between nodes.
CO-4	Implement a simple LAN with hubs, bridges and switches.
CO-5	Describe how packets in the Internet are delivered.
CO-6	Analyze the contents in a given data link layer packet, based on the layer concept.
CO-7	Design logical sub-address blocks with a given address block.
CO-8	Decide routing entries given a simple example of network topology
CO-9	Explain various transmission media.

S.No	Instructional Technique	Assessment Methods (AM)
1	Chalk & Talk	Assignments
2	ICT tools	Quiz
3	Group discussions	Group Discussions
4	Industrial visit	Oral Tests
5	Case studies	Sessional
6	Small Projects	Presentations
7	Workshop	Seminar
8	Spoken Tutorials	University Exams
9	Flipped Class	
10.	E-Resources	

Detailed Lesson Plan

Week	Date	Topic to be Covered	Instructional Technique	Assessment Method
1	5- Sep-22	Introduction to Data Communication and Computer Networks	2-(PPT/Projector)	----
	6-Sep-22	Uses of Computer Networks	2(PPT/Projector)	1
	7- Sep-22	Types of Computer Networks	1	1
2	12-Sep-22	Topologies	1	1,2
	13-Sep-22	Topologies	2-(PPT/Projector)	1,2,3,4
	14-Sep-22	Network Hardware Components	2-(PPT/Projector)	1,2,3,4
3	19-Sep-22	Network Hardware Components	2-(PPT/Projector)	1,2,3,4
	20-Sep-22	Network Hardware Components	1	1,2,3,4
	21-Sep-22	Network Software: Network Design issues	2-(PPT/Projector)	1,2,3,4
4	26-Sept-22	Holiday	--	---
	27-Sept-22	Network Design Protocols	2-(PPT/Projector)	1,2,3,4
	28-Sept-22	Connection –Oriented and Connectionless Services	2-(PPT/Projector)	1,2,3,4
5	3-Oct-22	OSI Reference Model	5	1,2,4
	4-Oct-22	OSI Reference Model	2-(PPT/Projector)	1,2,3,4
	5-Oct-22	Networking Models	2-(PPT/Projector)	1,2,3,4
6	10-Oct-22	Networking Models	---	-
	11-Oct-22	Emerging File –Sharing Model	3	1,2,3,4,6
	12-Oct-22	Assignment-1	2	1,2,3,4,
7	17-Oct-22	Analog and Digital Data and Signals	3	1,2,3,4,
	18-Oct-22	Bandwidth, Data Rate, Capacity, Baud Rate	2	1,2,3,4
	19-Oct-22	Transmission Impairment, Data Rate Limits	2	1,2,3,4
	22-Oct-22 to 26-Oct-22	Diwali Vaccation	--	--
8	31-Oct-22	Guided Transmission Media.	2-(PPT/Projector)	1,2,3,4
	1-Nov-22	Holiday		
	2-Nov-22	Guided Transmission Media	2-(PPT/Projector)	1,2,3,4

9	7-Nov-22	Assignment-2	2-(PPT/Projector)	1,2,3,4
	8-Nov-22	Holiday		
	9-Nov-22	Wireless Transmission ,Communication Satellites	2-(PPT/Projector)	1,2,3,4
10	14-Nov-22	Switching and Multiplexing	2-(PPT/Projector)	1,2,3,4
	15-Nov-22	Modems and Modulation Techniques	3	1,2,3,4
	16-Nov-22	ADSL and Cable Modems	1	1,2,3,4
11	21-Nov-22	Sessional	--	5
	22-Nov-22	Data Link Layer Design issues/Revision	2-(PPT/Projector)	1,2,3,4
	23-Nov-22	Error Detection and Correction and Overview of Sliding Window Protocols	2-(PPT/Projector)	1,2,3,4
12	28-Nov-22	One-bit, Go Back N and Selective Repeat	1	1,2,3,4
	29-Nov-22	Media Access Control: ALOHA, Slotted ALOHA	2-(PPT/Projector)	1,2,3,4
	30-Nov-22	CSMA, Collision free protocols	1	1,3,4
13	5-Dec-22	Introduction to LAN technologies: Ethernet, Switched Ethernet	2-(PPT/Projector)	1,2,3,4
	6-Dec-22	Fast Ethernet, Gigabit Ethernet; Token Ring	1	1,2,3,4
	7-Dec-22	Revision.	9,10	1,2,3,4
14	12-Dec-22	Introduction to Wireless LANs and Bluetooth, VLANs	2-(PPT/Projector)	1,2,3,4
	13-Dec-22	Routing Algorithms: Flooding, Shortest Path Routing	2-(PPT/Projector)	1,2,3,4
	14-Dec-22	Distance Vector Routing; Link State Routing, Hierarchical Routing	1	1,2,3,4
15	19-Dec-22	Congestion Control; Traffic shaping; Choke packets; Load shedding	1	2,3,4
	20-Dec-22	Elements of Transport Protocols; Network Security Issues	2-(PPT/Projector)	1,2,3,4
	21-Dec-22	Security attacks; Encryption methods; Digital Signature; Digital Certificate	1	1,2,3,4

	Teacher Incharge	Head of the Department
Name	Ms. Shaina	Dr. Girdhar Gopal
Sign with Date		

