K L Deemed to be University
Department of CSE -- KLVZA
Course Handout
2020-2021, Even Sem

Course Title	:Computer Networks & Security
Course Code	:19CS2109
L-T-P-S Structure	: 3-1-0-0
Pre-requisite	:
Credits	: 4
Course Coordinator	:DIVYA VADLAMUDI
Team of Instructors	:
Teaching Associates	:

Syllabus : Introduction: Overview of networking using the Internet as an example, networks topologies, LANs and WANs, OSI reference model, Internet TCP/IP Protocol Stack. Link layer: Link layer services, error detection and correction, Sliding Window, Stop and Wait protocols. MAC Layer: Aloha, CSMA, CSMA/CD, CSMA/CA protocols. Network layer: Network layer design issues, Routing algorithms: Shortest path, Flooding, Distance vector, Link state, Hierarchical, broadcast and multicast routing, congestion control algorithms, QoS. Internetworking, IPv4, Network Address Translation, ARP, OSPF, BGP Transport layer: Elements of Transmission protocols, UDP, TCP. Application layer: WWW, HTTP, electronic mail, Domain Name System Network Security: Introduction to Security: Security Concepts, Security Attacks, Security Services and Mechanisms, A Security Model, Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Overview on DES, Asymmetric Encryption Algorithm-RSA

Reference Books :1. Kurose, J and Ross, K Computer Networking: A Top-Down Approach Addison-Wesley- 6th edition-(2012). 2.A.S. Tanenbaum, David J. Wetheral “Computer Networks” Pearson, 5th – Edition-(2011). 3. Behrouz A. Forouzan , “Data Communication and Networking”, TMH, 5th Edition , (2012). 4.William Stallings, “Cryptography and Network Security”, Pearson Education, 6th Edition, 2015. 5.Peterson, LL and Davie BS “Computer Networks -- A Systems Approach”, Morgan Kaufmann,Elsevier,-5th edition-(2012).

Web Links :1. https://www.udemy.com/computer-networks-course-networking-basics/ 2.https://lagunita.stanford.edu/register?course_id=Engineering%2FNetworkingSP%2FSelfPaced&enrollment_action=enrol 3. www.netacad.com

MOOCS :1. Bits and Bytes of Computer Networking https://www.coursera.org/learn/computer-networking? 2. CCNA MODULE 1: https://www.netacad.com/portal/ 3. Packet Tracer: https://www.netacad.com/courses/packet-tracer 4. Computer Communications: https://www.coursera.org/specializations/computer-communications?

Course Rationale : Computer networks is a network which allows computing nodes to get interconnected and exchange data.The connections between nodes are established using either cable media or wireless media. The best-known computer network is the Internet. Two such devices can be said to be networked together when one device is able to exchange information with the other device, whether they have a direct connection to each other or not. Computer network support applications such as access to the World Wide Web, shared use of application and storage servers, printers, and fax machines, and use of email and instant messaging applications.This course also introduces the fundamental principles of cryptography and its applications on the network security domain.

Course Objectives : This course provides students an overview of the concepts and fundamentals of computer networks. Internet is a computer network that millions of people use every day. This course examines some of the important concepts related to computer networks like OSI, TCP/IP reference models for networking protocols. Students learn what happens to the data in the computer before it is prepared for transmission, how protocols work to transmit the data and how it is received at other computers. Error

control and recovery methods for lost or corrupted data are also investigated. A layered model for computer communications is thoroughly examined. This course is to make the students understand basic concepts in Computer Networks & Security and their mathematical models.

COURSE OUTCOMES (COs):

CO NO	Course Outcome (CO)	PO/PSO	Blooms Taxonomy Level (BTL)
CO1	Outline OSI and TCP/IP reference models and classify the error control mechanisms like CRC and Hamming code.	PSO1,PO1	2
CO2	Infer Channel allocation problem and algorithms to avoid it.Classify list of static and dynamic routing algorithms like Dijkstra, Distance vector routing and link state.	PO1,PSO1	2
CO3	Identify the importance of IPv4 classful, classless addressing schemes and outline the functionalies of transport layer like TCP Connection management and congestion control.	PSO1,PO2	3
CO4	Identify the functionality of DNS, HTTP and SMTP protocols.Apply Encryption algorithms like DES and RSA on the given examples.	PSO1,PO2	3

COURSE OUTCOME INDICATORS (COIs)::

Outcome No.	Highest BTL	COI-1	COI-2	COI-3
CO1	2	**Btl-1** Relate Computer Networks Hardware, software and History of the computer networks	**Btl-2** Illustrate reference models OSI and TCP/IP, Protocol Stack, Error control mechanisms	
CO2	2	**Btl-1** List Sliding window protocols and algorithms for avoiding problem of channel allocation	**Btl-2** Illustrate Routing algorithms in network layer.	
CO3	3	**Btl-1** List Congestion control algorithms and Quality of services in network layer.	**Btl-2** Infer Connection less transport layer protocol (UDP), Connection oriented transport layer protocol(TCP) and working principle of congestion control algorithm	**Btl-3** Apply problems on IPV4 addressing
CO4	3	**Btl-1** List the performance issues and working principles of Domain name, Electronic mail systems	**Btl-2** Outline the goals, services and mechanisms of Security, Compare and Contrast all possible passive and active attacks.	**Btl-3** Apply the given example problems to understand and solve Symmetric and Assymetric encryption algorithms like DES and RSA.

PROGRAM OUTCOMES & PROGRAM SPECIFIC OUTCOMES (POs/PSOs)

Po No.	Program Outcome
PO1	Engineering Knowledge :An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization for the solution of complex engineering problems in engineering
PO2	Problem Analysis :An ability to identify, formulate, research literature, analyze complex engineering problems in mechanical engineering using first principles of mathematics, natural sciences and engineering sciences
PO3	Design/ development of solutions :An ability to design solutions for complex engineering problems and system component or processes that meet the specified needs considering public health & safety and cultural, societal & environment
PO4	Conduct investigations of complex problems :An ability to use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to obtain solutions to engineering problems
PO5	Modern tool usage :Ability to create, select and apply appropriate techniques, resources and modern engineering activities, with an understanding of the limitations
PO6	The engineer and society :Ability to apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO7	Environment and sustainability Ability to demonstrate the knowledge of engineering solutions, contemporary issues understanding their impacts on societal and environmental contexts, leading towards sustainable development
PO8	Ethics : An ability to apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice
PO9	Individual and team work :An ability to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings
PO10	Communication :Ability to communicate effectively oral, written reports and graphical forms on complex engineering activities
PO11	Project management and finance :Ability to demonstrate knowledge and understanding of the engineering and management principles and apply those one’s own work, as a member and leader in team, to manage projects and in multi-disciplinary environments
PO12	Lifelong learning An ability to recognize the need for and having the preparation and ability to engage independent and life-long learning in broadest context of technological change
PSO1	An ability to design and develop software projects as well as Analyze and test user requirements.
PSO2	An Ability to gain working Knowledge on emerging software tools and technologies.

Lecture Course DELIVERY Plan:

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
1	CO1	COI-1	Course Handout	LMS	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
2	CO1	COI-1	Overview of Networks : Uses of Computer networks	R Book [1] Chapter 1.1,1.2,1.3 pg. No. 2-34 , R BOOK [2] CH 1.1, Page no 11.	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
3	CO1	COI-1	Overview of Networks : Uses of Computer networks	R Book [1] Chapter 1.1,1.2,1.3 pg. No. 2-34 ,R BOOK [2]CH 1.1, Page no 11.	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
4	CO1	COI-1	Reference model-OSI	R BOOK [1], CH 1, Page no 49-53, R BOOK [2], CH 1.4, Page no 37-41	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
5	CO1	COI-1	Reference model-OSI	R BOOK [1], CH 1, Page no 49-53, R BOOK [2], CH 1.4, Page no 37-41	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
6	CO1	COI-1	Reference model-TCP/IP	R BOOK [1], CH 1, Page no 49-53, R BOOK [2], CH 1.4, Page no 37-41	Chalk,PPT,Talk	End Semester Exam,Home Assignment,SEM-EXAM1
7	CO1	COI-2	Data link layer design issues	R BOOK [2], CH 3.1, Page no.138	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
8	CO1	COI-2	Framing	R BOOK [2], CH 31.2, Page no.141	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
9	CO1	COI-2	Error correction	R BOOK [2],CH 10, Page no.267	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
10	CO1	COI-2	Error detection	R BOOK [2],CH 10, Page no.267	Chalk,PPT,Talk	End Semester Exam,MOOCs Review,SEM-EXAM1,Tutorial
11	CO2	COI-1	Elementary data link protocols-1	R BOOK [3], CH 10, Page no.307	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
12	CO2	COI-1	Elementary data link protocols-2	R BOOK [3], CH 10, Page no.307	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
13	CO2	COI-1	Sliding window protocols- Sliding Window, Stop and Wait protocols	R BOOK [2], CH 3.4, Page no.158-165	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
14	CO2	COI-1	Protocol using go back N	R BOOK [2], CH 3.4, Page no.158-165	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
15	CO2	COI-1	The channel allocation problem	R BOOK [3], CH 12, Page no.363	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
16	CO2	COI-1	MAC Layer: Aloha, CSMA, CSMA/CD, CSMA/CA protocols	R BOOK [3], CH 12, Page no.363	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
17	CO2	COI-1	MAC Layer: Aloha, CSMA, CSMA/CD, CSMA/CA protocols	R BOOK [3], CH 12, Page no.363	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1
18	CO2	COI-2	Network Layer Design Issues, Optimality principle, Shortest path Routing Algorithm	R BOOK [2],CH 5.1.3, Page no.261-269	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM1,Tutorial
19	CO2	COI-2	Flooding, Distance vector	R BOOK [2],CH 5.2.3, Page no.269-271	Chalk,PPT,Talk	End Semester Exam,Home Assignment,SEM-EXAM1
20	CO2	COI-2	Link state Routing, Hierarchical, Broadcast and Multicast Routing	R BOOK [2], CH 5.2.5, Page no.272-281	Chalk,PPT,Talk	End Semester Exam,MOOCs Review,SEM-EXAM1
21	CO3	COI-1	Network Address Translation, ARP	R BOOK [1], CH 4.4 , Page no. 349-352, CH 5.4 Page no. 465-468	Chalk,PPT,Talk	End Semester Exam,Home Assignment,SEM-EXAM2
22	CO3	COI-1	Congestion control algorithms	R BOOK [2], CH 5.3.1, Page no.292-301	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
23	CO3	COI-1	Quality of service, Internetworking	R BOOK [2], CH 5.4, Page no302-308.	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
24	CO3	COI-1	Internetworking	R BOOK [2], CH 5.5, Page no317.	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
25	CO3	COI-1	Internet Protocol, IPv4,Subnetting, Classes less Addressing, Subnetting	R BOOK [3],CH 20, Page no570.	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2,Tutorial

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
26	CO3	COI-1	Network layer in the Internet Inter Domain Routing:OSPF,BGP	R BOOK [2], CH 5.6.4, Page no.346	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
27	CO3	COI-2	The transport service	R BOOK [3], CH 23, Page no.703	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
28	CO3	COI-2	Elements of Transport Protocols: Connection Establishment & Release	R BOOK [3], CH 23, Page no.703	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
29	CO3	COI-2	Other Elements of Transport Protocols	R BOOK [3], CH 23, Page no.703	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
30	CO3	COI-2	TCP(handshake, windowing, congestion control)TCP Header, UDP Header	R BOOK [2], CH 6.2.2, Page no.379	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
31	CO3	COI-3	Connection establishment and termination	R BOOK [2], CH 6.2.2, Page no.379	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
32	CO3	COI-3	TCP Congestion Control	R BOOK [2], CH 6.5.9, Page no.418	Chalk,PPT,Talk	End Semester Exam,MOOCs Review,SEM-EXAM2
33	CO4	COI-1	HTTP,Electronic Mail	R BOOK [3], CH 6, Page no.797	Chalk,PPT,Talk	End Semester Exam,Home Assignment,SEM-EXAM2
34	CO4	COI-1	Domain Name System	R BOOK [3], CH 6, Page no.797	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
35	CO4	COI-1	Introduction to Security	R BOOK [3], CH 6, Page no.797	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
36	CO4	COI-2	Security Attacks	RB-4 Chapter 1.4,1.5,pageno.19 to 25	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
37	CO4	COI-2	Security Services and Mechanisms,Model	RB-4 Chapter 1.3,pageno.15	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
38	CO4	COI-2	Classical Encryption techniques: Symmetric Cipher Model	RB-4 Chapter 2.1,pageno.33 to 38	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
39	CO4	COI-2	Introduction to Substitution Techniques and Transposition Techniques	RB-4 Chapter 2.3,pageno. 53	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
40	CO4	COI-3	Overview on DES	RB-4 Chapter 3.1,pageno. 68	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2
41	CO4	COI-3	DES Problem	RB-4 Chapter 3.1,pageno. 68	Chalk,PPT,Talk	End Semester Exam,SEM-EXAM2,Tutorial
42	CO4	COI-3	Asymmetric Encryption Algorithm-RSA	RB-4 Chapter 9.2,pageno. 277	Chalk,PPT,Talk	End Semester Exam,MOOCs Certification,MOOCs Review,SEM-EXAM2

Lecture Session wise Teaching – Learning Plan

SESSION NUMBER : 1

Session Outcome: 1 Understand Course Handout

Session Outcome: 2 Understand the overview of Computer Network

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll	1	PPT	--- NOT APPLICABLE ---
20	Course Handout	1	PPT	--- NOT APPLICABLE ---
10	Introduction to Computer Networks	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts clarification)	1	PPT	--- NOT APPLICABLE ---
5	Summary	1	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 2

Session Outcome: 1 Understand the overview of Computer Network

Time(min)	Topic	BTL	Teaching-	Active

			Learning Methods	Learning Methods
5	Poll	1	PPT	--- NOT APPLICABLE ---
20	Introducing key terms in networks	1	PPT	--- NOT APPLICABLE ---
10	Introduction to Computer Networks	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts clarification)	1	PPT	--- NOT APPLICABLE ---
5	Summary	1	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 3

Session Outcome: 1 Remembers Network Topologies

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recapitulate	2	Talk	--- NOT APPLICABLE ---
10	Uses of Computer Networks	2	PPT	--- NOT APPLICABLE ---
10	Star, Ring Topology	2	PPT	--- NOT APPLICABLE ---
10	Mesh, Bus Topology	2	PPT	--- NOT APPLICABLE ---
10	Hybrid Topology	2	PPT	--- NOT APPLICABLE ---
5	Q & A (doubts clarification), Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 4

Session Outcome: 1 Remembers Network Hardware and Software

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---

10	Network Hardware	2	PPT	--- NOT APPLICABLE ---
10	PAN, LAN, MAN, WAN	2	PPT	--- NOT APPLICABLE ---
10	Network Software	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 5

Session Outcome: 1 Demonstrate functionalities of Seven Layers in OSI Model

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Physical, Data link & Network Layers	2	PPT	--- NOT APPLICABLE ---
20	Transport, Session & Presentation Layers	2	PPT	--- NOT APPLICABLE ---
10	Application Layer	2	PPT	--- NOT APPLICABLE ---
5	Q & A (doubts clarification) and Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 6

Session Outcome: 1 Illustrate functionalities of Layers in TCP/IP Model

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Link Layer	2	PPT	--- NOT APPLICABLE ---
10	Internet Layer	2	PPT	--- NOT APPLICABLE

10	Transport & Application Layer	2	PPT	--- NOT APPLICABLE ---
5	Protocols used in TCP/IP Protocol Suite	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts clarification), Summary	2	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 7

Session Outcome: 1 Remember Data Link Layer and Design Issues

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Introduction	2	PPT	--- NOT APPLICABLE ---
20	Services Provided to Network Layer	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	Talk	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 8

Session Outcome: 1 Remembers Framing Techniques

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Character Count	2	PPT	--- NOT APPLICABLE ---
10	Character Stuffing	2	PPT	--- NOT APPLICABLE ---
10	Bit Stuffing	2	Chalk	--- NOT APPLICABLE ---
10	Advantages and Disadvantages	2	PPT	--- NOT

				APPLICABLE ---
5	Q & A (doubts Clarification)/Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 9

Session Outcome: 1 Applies Various Error Correcting Techniques

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Hamming Distance	2	PPT	--- NOT APPLICABLE ---
20	Hamming Code	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 10

Session Outcome: 1 Applies Various Error Detecting Techniques

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Parity	2	PPT	--- NOT APPLICABLE ---
10	Checksum	2	PPT	--- NOT APPLICABLE ---
10	CRC	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 11

Session Outcome: 1 Elementary Data Link Protocols

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
20	Introduction	2	PPT	--- NOT APPLICABLE ---
20	Simplex Protocol	2	PPT	--- NOT APPLICABLE ---
5	Q & A (doubts clarification)/ Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 12

Session Outcome: 1 Illustrate Elementary Data Link Protocols

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Stop-and-Wait for Error Free	2	PPT	--- NOT APPLICABLE ---
20	Stop-and-Wait for Noisy Channel	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 13

Session Outcome: 1 Illustrate Sliding Window Protocols-one bit and stop and wait

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
20	One-bit	2	PPT	--- NOT APPLICABLE

20	Stop and wait protocol	2	PPT	--- NOT APPLICABLE ---
5	Q & A (doubts Clarification) Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 14

Session Outcome: 1 Illustrate Sliding Window Protocols

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Go-back-N	2	PPT	--- NOT APPLICABLE ---
20	Selective Repeat	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 15

Session Outcome: 1 Distinguishes Static & Dynamic Channel Allocations

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Static Channel Allocation	2	PPT	--- NOT APPLICABLE ---
20	Dynamic Channel Allocation	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 16

Session Outcome: 1 Illustrates Multiple Access & Carrier Sense Protocols

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	ALOHA,	2	PPT	--- NOT APPLICABLE ---
10	Pure & Slotted ALOHA	2	PPT	--- NOT APPLICABLE ---
10	1-CSMA, P-Persistent, Non-Persistent	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 17

Session Outcome: 1 Illustrates Multiple Access & Carrier Sense Protocols

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	CSMA CSMA/CD	2	PPT	--- NOT APPLICABLE ---
20	CSMA/CA	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 18

Session Outcome: 1 Illustrate Network Layer Design Issues Protocols

Time(min)	Topic	BTL	Teaching-Learning	Active Learning

			Methods	Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Network Layer Design issues	2	PPT	--- NOT APPLICABLE ---
10	Optimality Principles	2	PPT	--- NOT APPLICABLE ---
20	Shortest path Routing algorithm	2	PPT	--- NOT APPLICABLE ---
5	Q & A (doubts Clarification) Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 19

Session Outcome: 1 Apply Distance Vector Routing Algorithm

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Flooding	2	PPT	--- NOT APPLICABLE ---
10	Distance Vector Routing	2	PPT	--- NOT APPLICABLE ---
10	Example	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 20

Session Outcome: 1 Session Outcome: Applies Link State Routing

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Link State Routing	2	PPT	--- NOT

				APPLICABLE ---
20	Example	2	PPT	--- NOT APPLICABLE ---
10	Inter Domain Routing	2	PPT	--- NOT APPLICABLE ---
5	Q & A (doubts Clarification) Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 21

Session Outcome: 1 Illustrate ARP & NAT

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
20	ARP	2	PPT	--- NOT APPLICABLE ---
10	NAT	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 22

Session Outcome: 1 Illustrates Congestion Control Algorithms

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Approaches to Congestion Control	2	PPT	--- NOT APPLICABLE ---
10	Traffic Aware Routing, Admission Control	2	PPT	--- NOT APPLICABLE ---
10	Traffic Throttling, Load Shedding	2	PPT	--- NOT APPLICABLE ---

10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 23

Session Outcome: 1 Demonstrates QOS need in Networking

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Traffic Shaping, Packet Scheduling	2	PPT	--- NOT APPLICABLE ---
10	Admission Control, Integrated Services	2	PPT	--- NOT APPLICABLE ---
10	Differential Services	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 24

Session Outcome: 1 Illustrate Internetworking

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Tunnelling	2	PPT	--- NOT APPLICABLE ---
10	Internetwork Routing	2	PPT	--- NOT APPLICABLE ---
10	Packet Fragmentation	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE

5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 25

Session Outcome: 1 Applies IP Addresses

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	3	PPT	--- NOT APPLICABLE ---
5	Network layer in the internet	3	PPT	--- NOT APPLICABLE ---
10	IP Addresses	3	PPT	--- NOT APPLICABLE ---
10	Classless Addressing	3	PPT	--- NOT APPLICABLE ---
10	Subnetting	3	PPT	--- NOT APPLICABLE ---
5	Q & A (doubts Clarification)	3	PPT	--- NOT APPLICABLE ---
5	Summary	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 26

Session Outcome: 1 Applies Routing Protocol OSPF,BGP

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	3	PPT	--- NOT APPLICABLE ---
10	Introduction	3	PPT	--- NOT APPLICABLE ---
10	OSPF	3	PPT	--- NOT APPLICABLE ---
10	BGP	3	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	3	PPT	--- NOT

				APPLICABLE ---
5	Summary	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 27

Session Outcome: 1 Remember Transport Layer Service

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Services Provided to Upper Layers	2	PPT	--- NOT APPLICABLE ---
10	Transport Service Primitives	2	PPT	--- NOT APPLICABLE ---
10	Berkley Sockets	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 28

Session Outcome: 1 Remembers Elements of Transport Protocol

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Addressing	2	PPT	--- NOT APPLICABLE ---
10	Connection Establishment	2	PPT	--- NOT APPLICABLE ---
10	Connection Release	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---

5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 29

Session Outcome: 1 Remembers Elements of Transport Protocol

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	Error & Flow Control	2	PPT	--- NOT APPLICABLE ---
20	Multiplexing	2	PPT	--- NOT APPLICABLE ---
5	Crash Recovery	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification) summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 30

Session Outcome: 1 Interprets TCP header

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	TCP Service Model	2	PPT	--- NOT APPLICABLE ---
10	TCP Protocol	2	PPT	--- NOT APPLICABLE ---
10	TCP Header Segment	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 31

Session Outcome: 1 Illustrate TCP Connection Establishment & Release

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	TCP Connection Establishment	2	PPT	--- NOT APPLICABLE ---
10	TCP Connection Release	2	PPT	--- NOT APPLICABLE ---
10	TCP Connection Management Modelling	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 32

Session Outcome: 1 Distinguishes TCP & UDP

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	TCP Congestion Control	2	PPT	--- NOT APPLICABLE ---
10	UDP Header Segment	2	PPT	--- NOT APPLICABLE ---
10	Differences between TCP & UDP	2	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	2	PPT	--- NOT APPLICABLE ---
5	Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 33

Session Outcome: 1 Illustrate HTTP, Working of E-Mail

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	2	PPT	--- NOT APPLICABLE ---
10	HTTP, Connection, Methods	2	PPT	--- NOT APPLICABLE ---
10	Header, Caching	2	PPT	--- NOT APPLICABLE ---
10	Architecture, Services, User Agent	2	PPT	--- NOT APPLICABLE ---
10	Message Format, Transfer, Delivery	2	PPT	--- NOT APPLICABLE ---
5	Q & A (doubts Clarification) Summary	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 34

Session Outcome: 1 Apply Domain Name Server

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	3	PPT	--- NOT APPLICABLE ---
10	Domain Name System	3	PPT	--- NOT APPLICABLE ---
10	DNS Space	3	PPT	--- NOT APPLICABLE ---
5	Resource Records	3	PPT	--- NOT APPLICABLE ---
10	DNS servers	3	PPT	--- NOT APPLICABLE ---
5	Q & A (doubts Clarification)	3	PPT	--- NOT APPLICABLE ---
5	Summary	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 35

Session Outcome: 1 Remembers Security

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	3	PPT	--- NOT APPLICABLE ---
10	Information, Computer Security	3	PPT	--- NOT APPLICABLE ---
10	Network Security Security	3	PPT	--- NOT APPLICABLE ---
10	Trends	3	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	3	PPT	--- NOT APPLICABLE ---
5	Summary	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 36

Session Outcome: 1 Remembers Security Attacks

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	3	PPT	--- NOT APPLICABLE ---
10	Security Attacks	3	PPT	--- NOT APPLICABLE ---
10	Passive Attacks	3	PPT	--- NOT APPLICABLE ---
10	Active Attacks	3	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	3	PPT	--- NOT APPLICABLE ---
5	Summary	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 37

Session Outcome: 1 Remembers Security Services, mechanisms

Time(min)	Topic	BTL	Teaching-Learning	Active Learning

			Methods	Methods
5	Poll/Recap	3	PPT	--- NOT APPLICABLE ---
10	Security Services	3	PPT	--- NOT APPLICABLE ---
10	Security Mechanisms	3	PPT	--- NOT APPLICABLE ---
10	Security Models	3	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	3	PPT	--- NOT APPLICABLE ---
5	Summary	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 38

Session Outcome: 1 Distinguishes Classical Encryption Techniques

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	3	PPT	--- NOT APPLICABLE ---
10	Classical Encryption Techniques	3	PPT	--- NOT APPLICABLE ---
10	Symmetric Cipher Model	3	PPT	--- NOT APPLICABLE ---
10	Cryptography, Cryptanalysis	3	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	3	PPT	--- NOT APPLICABLE ---
5	Summary	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 39

Session Outcome: 1 Illustrate Substitution and Transposition Techniques.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	3	PPT	--- NOT

				APPLICABLE ---
10	Substitution Techniques	3	PPT	--- NOT APPLICABLE ---
20	Transposition Techniques	3	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	3	PPT	--- NOT APPLICABLE ---
5	summary	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 40

Session Outcome: 1 Interpret Block Cipher principles

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	3	PPT	--- NOT APPLICABLE ---
10	Introduction on Block Cipher	3	PPT	--- NOT APPLICABLE ---
20	Overview on Data Encryption Standard	3	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	3	PPT	--- NOT APPLICABLE ---
5	summary	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 41

Session Outcome: 1 Interpret Block Cipher principles

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	3	PPT	--- NOT APPLICABLE ---
20	DES Encryption Algorithm	3	PPT	--- NOT APPLICABLE ---
10	S-DES problem	3	PPT	--- NOT APPLICABLE ---

10	Q & A (doubts Clarification)	3	PPT	--- NOT APPLICABLE ---
5	summary	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 42

Session Outcome: 1 Interpret Asymmetric Encryption Algorithm

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Poll/Recap	3	PPT	--- NOT APPLICABLE ---
20	Asymmetric Encryption Algorithm	3	PPT	--- NOT APPLICABLE ---
10	Example: RSA	3	PPT	--- NOT APPLICABLE ---
10	Q & A (doubts Clarification)	3	PPT	--- NOT APPLICABLE ---
5	summary	3	PPT	--- NOT APPLICABLE ---

Tutorial Course DELIVERY Plan:

List of Experiments supposed to finish in Open Lab Sessions:

Lab session no	List of Experiments	CO-Mapping
1	Framing	CO1
2	Error Detection	CO1
3	Error Correction	CO1
4	Routing algorithms	CO2
5	IP Addressing	CO3
6	Subnetting	CO3
7	Classic Encryption Techniques	CO4
8	DES,RSA	CO4

Tutorial Session wise Teaching – Learning Plan

SESSION NUMBER : 1

Session Outcome: 1 Understand the mechanisms of Framing

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	PPT	--- NOT APPLICABLE ---
25	Character Count,Character Stuffing	2	PPT	--- NOT APPLICABLE ---
20	Bit Stuffing	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 2

Session Outcome: 1 Understand Error Detection

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	PPT	--- NOT APPLICABLE ---
25	Error Detection-Parity	1	PPT	--- NOT APPLICABLE ---
20	Error Detection-crc	1	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 3

Session Outcome: 1 Understand Error Correcting Codes

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	2	PPT	--- NOT APPLICABLE ---
25	2D Parity	2	PPT	--- NOT APPLICABLE ---
20	Hamming Code	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 4

Session Outcome: 1 Understand Various Routing Algorithms

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	2	PPT	--- NOT APPLICABLE ---
45	ROuting Algorithm Problems-Dijkstra's	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 5

Session Outcome: 1 Understand and Apply Problems on IPv4 addressing Scheme

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	2	PPT	--- NOT APPLICABLE ---
45	IPv4 addressing Problems	2	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 6

Session Outcome: 1 Understand IPv4 Addressing and Subnetting

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	2	PPT	--- NOT APPLICABLE ---
45	Subnetting Problems	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 7

Session Outcome: 1 Understand and apply Classic Encryption Techniques

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	2	PPT	--- NOT APPLICABLE ---
20	Substitution Techniques	3	PPT	--- NOT APPLICABLE ---

25	Transposition Techniques	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 8

Session Outcome: 1 Understand and Apply DES and RSA encryption Algorithms

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance	1	PPT	--- NOT APPLICABLE ---
20	DES	3	PPT	--- NOT APPLICABLE ---
25	RSA	3	PPT	--- NOT APPLICABLE ---

Practical Course DELIVERY Plan: NO Delivery Plan Exists

Practical Session wise Teaching – Learning Plan

No Session Plans Exists

Skilling Course DELIVERY Plan: NO Delivery Plan Exists

Skilling Session wise Teaching – Learning Plan

No Session Plans Exists

WEEKLY HOMEWORK ASSIGNMENTS/ PROBLEM SETS/OPEN ENDEDED PROBLEM-SOLVING EXERCISES etc:

Week	Assignment Type	Assignment No	Topic	Details	co

COURSE TIME TABLE:

	Hour	1	2	3	4	5	6	7	8	9
Day	Component									
Mon	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--
Tue	Theory	-	-	--	--	--	--	-	-	-

		- -	- -					- -	- -	- -
	Tutorial	- -	- -	--	--	--	--	- -	- -	- -
	Lab	- -	- -	--	--	--	--	- -	- -	- -
	Skilling	- -	- -	--	--	--	--	- -	- -	- -
Wed	Theory	- -	- -	--	--	--	--	- -	- -	- -
	Tutorial	- -	- -	--	--	--	--	- -	- -	- -
	Lab	- -	- -	--	--	--	--	- -	- -	- -
	Skilling	- -	- -	--	--	--	--	- -	- -	- -
Thu	Theory	- - -	- - -	V-S1,V-S2,V-S3,V-S4,V-S5,V-S6,V-S7,V-S8	V-S1,V-S2,V-S3,V-S4,V-S5,V-S6,V-S7,V-S8	--	V-S1,V-S2,V-S3,V-S4,V-S5,V-S6,V-S7,V-S8	- - -	- - -	- - -
	Tutorial	- - -	- - -	--	--	V-S1,V-S2,V-S3,V-S4,V-S5,V-S6,V-S7,V-S8	--	- - -	- - -	- - -
	Lab	- - -	- - -	--	--	--	--	- - -	- - -	- - -
	Skilling	- - -	- - -	--	--	--	--	- - -	- - -	- - -
Fri	Theory	- - -	- - -	V-S9,V-S10,V-S11,V-S12,V-S13,V-S14,V-S15,V-S16	V-S9,V-S10,V-S11,V-S12,V-S13,V-S14,V-S15,V-S16	--	V-S9,V-S10,V-S11,V-S12,V-S13,V-S14,V-S15,V-S16	- - -	- - -	- - -
	Tutorial	- - -	- - -	--	--	V-S9,V-S10,V-S11,V-S12,V-S13,V-S14,V-S15,V-S16	--	- - -	- - -	- - -
	Lab	- - -	- - -	--	--	--	--	- - -	- - -	- - -
	Skilling	- - -	- - -	--	--	--	--	- - -	- - -	- - -
Sat	Theory	- - -	- - -	---	---	---	---	- - -	- - -	- - -
	Tutorial	- - -	- - -	---	---	---	---	- - -	- - -	- - -
	Lab	- - -	- - -	---	---	---	---	- - -	- - -	- - -
	Skilling	- -	- -	---	---	---	---	- -	- -	- -

		-	-					-	-	-
Sun	Theory	- -	- -	--	--	--	--	- -	- -	- -
	Tutorial	- -	- -	--	--	--	--	- -	- -	- -
	Lab	- -	- -	--	--	--	--	- -	- -	- -
	Skilling	- -	- -	--	--	--	--	- -	- -	- -

REMEDIAL CLASSES:

Supplement course handout, which may perhaps include special lectures and discussions that would be planned, and schedule notified according

SELF-LEARNING:

Assignments to promote self-learning, survey of contents from multiple sources.

S.no	Topics	CO	ALM	References/MOOCS

DELIVERY DETAILS OF CONTENT BEYOND SYLLABUS:

Content beyond syllabus covered (if any) should be delivered to all students that would be planned, and schedule notified accordingly.

S.no	Advanced Topics, Additional Reading, Research papers and any	CO	ALM	References/MOOCS

EVALUATION PLAN:

Evaluation Type	Evaluation Component	Weightage/Marks		Assessment Dates	Duration (Hours)	CO1	CO2	CO3	CO4
End Semester Summative Evaluation Total= 40 %	**End Semester Exam**	Weightage	40		180	10	10	10	10
		Max Marks	100			25	25	25	25
In Semester Summative Evaluation Total= 30 %	**Semester in Exam-I**	Weightage	10		140	5	5		
		Max Marks	50			25	25		
	Semester in Exam-II	Weightage	10		140			5	5
		Max Marks	50					25	25
	MOOCs Certification	Weightage	10		30				10
		Max Marks	40						40
In Semester Formative Evaluation Total= 30 %	**Tutorial**	Weightage	10		50	2.5	2.5	2.5	2.5
		Max Marks	80			20	20	20	20
	Home Assignment and Textbook	Weightage	10		50	2.5	2.5	2.5	2.5
		Max Marks	40			10	10	10	10

	MOOCs Review	Weightage	10		50	2.5	2.5	2.5	2.5
		Max Marks	40			10	10	10	10

ATTENDANCE POLICY:

Every student is expected to be responsible for regularity of his/her attendance in class rooms and laboratories, to appear in scheduled tests and examinations and fulfill all other tasks assigned to him/her in every course
In every course, student has to maintain a minimum of 85% attendance to be eligible for appearing in Semester end examination of the course, for cases of medical issues and other unavoidable circumstances the students will be condoned if their attendance is between 75% to 85% in every course, subjected to submission of medical certificates, medical case file and other needful documental proof to the concerned departments

DETENTION POLICY :

In any course, a student has to maintain a minimum of 85% attendance and In-Semester Examinations to be eligible for appearing to the Semester End Examination, failing to fulfill these conditions will deem such student to have been detained in that course.

PLAGIARISM POLICY :

Supplement course handout, which may perhaps include special lectures and discussions

COURSE TEAM MEMBERS, CHAMBER CONSULTATION HOURS AND CHAMBER VENUE DETAILS:

Supplement course handout, which may perhaps include special lectures and discussions

Name of Faculty	Delivery Component of Faculty	Sections of Faculty	Chamber Consultation Day (s)	Chamber Consultation Timings for each day	Chamber Consultation Room No:	Signature of Course faculty:
SRIKANTH VEMURU	L	1-MA	-	-	-	-
SRIKANTH VEMURU	T	1-MA	-	-	-	-
PAVAN KUMAR THUMMALA	L	17-MA	-	-	-	-
PAVAN KUMAR THUMMALA	T	17-MA	-	-	-	-
S Venkateswarlu	L	9-MA,2-MA	-	-	-	-
S Venkateswarlu	T	9-MA,2-MA	-	-	-	-
DIVYA VADLAMUDI	L	16-MA,4-MA	-	-	-	-
DIVYA VADLAMUDI	T	16-MA,4-MA	-	-	-	-
NAGAMALLESWARI DUBBA	L	15-MA,23-	-	-	-	-

		MA,5-MA				
NAGAMALLESWARI DUBBA	T	15-MA,23-MA,5-MA	-	-	-	-
swetha Kolachana	L	7-MA,18-MA	-	-	-	-
swetha Kolachana	T	7-MA,18-MA	-	-	-	-
RAMAIAH CHALLA	L	3-MA,20-MA	-	-	-	-
RAMAIAH CHALLA	T	3-MA,20-MA	-	-	-	-
CHANDOL MOHAN KUMAR	L	19-MA,12-MA	-	-	-	-
CHANDOL MOHAN KUMAR	T	19-MA,12-MA	-	-	-	-
ASDAQUE HUSSAIN MOHAMMED	L	10-MA,21-MA	-	-	-	-
ASDAQUE HUSSAIN MOHAMMED	T	10-MA,21-MA	-	-	-	-
VIJAY KUMAR BURUGARI	L	24-MA,11-MA,6-MA	-	-	-	-
VIJAY KUMAR BURUGARI	T	6-MA,24-MA,11-MA	-	-	-	-
Ganeshan Ramasamy	L	8-MA,25-MA,13-MA	-	-	-	-
Ganeshan Ramasamy	T	8-MA,25-MA,13-MA	-	-	-	-
V PANDEY	L	14-MA,22-MA	-	-	-	-
V PANDEY	T	14-MA,22-MA	-	-	-	-

GENERAL INSTRUCTIONS

Students should come prepared for classes and carry the text book(s) or material(s) as prescribed by the Course Faculty to the class.

NOTICES

Most of the notices are available on the LMS platform.

All notices will be communicated through the institution email.

All notices concerning the course will be displayed on the respective Notice Boards.

Signature of COURSE COORDINATOR

(DIVYA VADLAMUDI)

Signature of Department Prof. Incharge Academics & Vetting Team Member

Department Of CSE

HEAD OF DEPARTMENT:

Approval from: DEAN-ACADEMICS
(Sign with Office Seal) [object HTMLDivElement]