K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
LESSON PLAN 2022-23 ODD SEMESTER

COURSE INCHARGE : **NAVEEN V / SNEHA G KULKARNI**

COURSE CODE/TITLE : **21MAT31/TRANSFORM CALCULUS, FOURIER SERIES AND NUMERICAL TECHNIQUES**

YEAR/ SEMESTER/SECTION : **II / III**

BRANCH : **AI&ML**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module 1: Laplace Transform						
1	Definition and Laplace transforms of elementary functions	L+D	BB	1	1	31/10/2022
2	Shifting property and examples	L+D	BB	1	2	3/11/2022
3	Multiplication by 't' property and examples	L+D	BB	1	3	4/11/2022
4	Division by 't' property and examples	L+D	BB	1	4	7/11/2022
5	Laplace transforms of Periodic functions	L+D	BB	1	5	8/11/2022
6	unit-step function	L+D	BB	1	6	10/11/2022
7	Inverse Laplace Transform: Definition and problems	L+D	BB	1	7	12/11/2022
8	Inverse Laplace Transform by perfect square	L+D	BB	1	8	14/11/2022
9	Inverse Laplace Transform by partial fractions, logarithemic functions	L+D	BB	1	9	15/11/2022

10	Convolution theorem to find the inverse Laplace transforms	L+D	BB	1	10	17/11/2022
11	Solution of linear differential equations using Laplace transforms	L+D	BB	1	11	18/11/2022
Module 2: Fourier Series						
14	Periodic functions, Dirichlet's condition	L+D	BB	1	12	21/11/2022
15	Fourier series of periodic functions for the period $(0,2\pi)$	L+D	BB	1	13	22/11/2022
16	Fourier series of periodic functions for an arbitrary period $(0.2l)$	L+D	BB	1	14	24/11/2022
17	Fourier series in $(-\pi, \pi)$	L+D	BB	1	15	25/11/2022
18	Fourier series in $(-l, l)$	L+D	BB	1	16	26/11/2022
19	Fourier half range series in $(0, \pi)$	L+D	BB	1	17	1/12/2022
20	Fourier half range series in $(0,l)$	L+D	BB	1	18	2/12/2022
21	Practical Harmonic analysis	L+D	BB	2	20	5/12/2022,6/12/2022
22	Miscellaneous problems	L+D	BB	1	21	8/12/2022
Module 3: Infinite Fourier Transforms and Z-Transforms						
24	Infinite Fourier transforms	L+D	BB	1	22	9/12/2022
25	Fourier Sine Transforms	L+D	BB	1	23	10/12/2022
26	Fourier Cosine Transforms	L+D	BB	1	24	12/12/2022
27	Inverse Fourier transforms	L+D	BB	1	25	13/12/2022
28	Basics, Standard functions of Z – Transforms	L+D	BB	1	26	15/12/2022
29	Damping and shifting rules	L+D	BB	1	27	16/12/2022
30	Problems on Z – Transforms	L+D	BB	1	28	19/12/2022
31	Inverse Z – Transforms	L+D	BB	2	30	20/12/2022,22/12/2022

32	Solution of difference equations	L+D	BB	1	31	23/12/2022
33	Miscellaneous problems	L+D	BB	1	32	24/12/2022
Module 4: Numerical Solution of Partial Differential Equations						
34	Classifications of second-order partial differential equations	L+D	BB	2	34	26/12/2022,27/12/2022,
35	finite difference approximations to derivatives	L+D	BB	2	36	29/12/2022,30/12/2022
36	Solution of Laplace's equation using standard five-point formula	L+D	BB	2	38	31/12/2022,5/01/2023
37	Solution of heat equation by Schmidt explicit formula and Crank- Nicholson method	L+D	BB	2	40	6/01/2023,9/01/2023
38	Solution of the Wave equation	L+D	BB	1	41	10/01/2023
39	Miscellaneous problems	L+D	BB	1	42	12/01/2023
Module 5 : Numerical Solution of Second Order ODE's and Calculus of Variations						
40	Solution of second order D.E Introduction: Solution of second order D.E Runge – Kutta method	L+D	BB	1	43	13/01/2023
41	Solution of second order D.E by Milne's predictor and corrector method	L+D	BB	2	45	16/01/2023,17/01/2023
42	Variation of function and functional, variational problems	L+D	BB	2	47	19/01/2023,20/01/2023
43	Derivation of Euler's equation &problems	L+D	BB	2	49	23/01/2023,24/01/2023
44	Problems on Euler's equation	L+D	BB	1	50	27/01/2023
45	Geodesics on a plane	L+D	BB	1	51	28/01/2023
46	Miscellaneous problems	L+D	BB	1	52	30/01/2023
47	Written Quiz	L+D	BB	1	53	31/01/2023
48	Poster Presentation Assignment	L+D	BB	1	54	7/02/2023
49	Revision	L+D	BB	3	57	9/02/2023,10/02/2023, 11/02/2023

Text Books:

- B. S. Grewal: "Higher Engineering Mathematics", Khanna publishers, 44th Ed.2018
- E. Kreyszig: "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed. (Reprint), 2016.

Reference Books:

- **V. Ramana:** "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed.
- **Srimanta Pal & Subodh C.** Bhunia: "Engineering Mathematics" Oxford University Press, 3rd Reprint, 2016.

Details of the teaching aids:

1.BLACK BOARD USAGE

2. SELF STUDY

Course In charge

Module coordinator

HOD

Head of the Department
Dept. of Science and Humanitie
K.S. Institute of Technology
Bengaluru - 560 109

PRINCIPAL

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109.

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
LESSON PLAN 2022-22 ODD SEMESTER

NAME OF THE STAFF : Dr. AMULYASHREE S

SUBJECT CODE/NAME : 21CS32/ DATA STRUCTURES AND APPLICATIONS

SEMESTER/YEAR : III A/ II

ACADEMIC YEAR : 2022-2023

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
MODULE 1:Basic Data structures Concepts and application						
1	**Data Structures,** Classifications (Primitive & Non Primitive),Data structure Operations, Review of Arrays, Structures	L+D	BB	2	2	2/11/2022
2	Self-Referential Structures	L+ D	BB	1	3	3/11/2022
3	Dynamic Memory Allocation Functions	L+ D	BB	1	4	8/11/2022
4	Representation of Linear Arrays in Memory, Dynamically allocated arrays	L+D	BB	2	6	9/11/2022 9/11/2022
5	**Array Operations:** Traversing, inserting, deleting, searching,and sorting.	L+D	BB	2	8	10/11/2022 12/11/2022
6	Multidimensional Arrays	L+D	BB	2	10	12/11/2022 15/11/2022
7	Representation of Polynomials with arrays	L+D	BB	2	12	16/11/2022
8	Sparse Matrices with arrays	L+D	BB	2	14	17/11/2022 22/11/2022
9	Revision	L+D	BB	1	15	23/11/2022
10	**Data Structures,** Classifications (Primitive & Non Primitive),Data structure Operations, Review of Arrays, Structures	L+D	BB	2	2	2/11/2022
MODULE 2: Stacks and Queues						
11	**Stacks:** Definition, Stack Operations and Array Representation of Stacks	L+D	BB	2	17	23/11/2022 24/11/2022

12	Stack Applications: evaluation of postfix expression	L+D	BB	1	18	25/11/2022
13	Infix to postfix conversion,	L+ D	BB	2	20	26/11/2022
	IA-I (28/11/2022)					
14	Infix to prefix conversion Stacks using Dynamic Arrays	L+D	BB	2	22	1/12/2022 6/12/2022
15	Recursion - Factorial, GCD, Fibonacci Sequence	L+D	BB	1	22	7/12/2022
16	Tower of Hanoi, Ackerman's function	L+D	BB	1	23	7/12/2022
17	**Queues:** Definition, Array Representation and Queue Operations	L+D	BB	2	25	8/12/2022 13/12/2022
18	Circular Queues	L+D	BB	1	26	14/12/2022
19	Circular queues using Dynamic arrays	L+D	BB	1	27	14/12/2022
20	Dequeues, Priority Queues	L+D	BB	2	29	15/12/2022 20/12/2022
21	Revision	L+D	BB	1	30	21/12/2022
	MODULE 3: Linked Lists					
22	**Definition and classification of linked lists.**	L+D	BB	1	31	21/12/2022
23	Representation of different types of linked list in memory	L+D	BB	1	32	22/12/2022
24	Linked list operations: Traversing, Searching, Insertion, andDeletion	L+D	BB	3	35	24/12/2022 24/12/2022 27/12/2022
25	Doubly Linked lists	L+D	BB	2	37	28/12/2022 28/12/2022
26	Circular linked lists	L+D	BB	1	38	29/12/2022
27	Circular linked lists	L+D	BB	1	39	28/12/2022
28	Header linked lists	L+D	BB	1	40	29/12/2022
29	Linked Stacks and Queues Applications of Linked lists	L+D	BB	1	41	30/12/2022
	MODULE 4: Trees					
34	**Terminology, Binary Trees, Properties of Binary trees**	L+D	BB	1	42	31/12/2022
35	Array and linked Representation of Binary Trees	L+D	BB	1	43	31/12/2022
	IA-II (2/12/2022)					
36	Binary Tree Traversals - Inorder, postorder and preorder	L+D	BB	1	44	6/1/2023
37	Threaded binary trees	L+D	BB	1	45	10/1/2023
38	Threaded binary trees	L+D	BB	1	46	11/1/2023
39	Binary Search Trees – Definition, Insertion, Deletion, Traversal, Searching	L+D	BB	1	47	11/1/2023
40	Application of tree – Evaluation of expression	L+D	BB	1	48	12/1/2023

MODULE 5: Graphs						
41	**Trees 2:** AVL tree	L+D	BB	2	50	17/1/2023 18/1/2023
42	Red-black tree	L+D	BB	2	52	18/1/2023 19/1/2023
43	Splay tree	L+D	BB	2	54	24/1/2023 25/1/2023
44	B-tree	L+D	BB	2	56	28/1/2023 28/1/2023
45	Definitions, Terminologies, Matrix and Adjacency List Representation Of Graphs	L+D	BB	1	57	30/1/2023
46	Elementary Graph operations, Traversal methods: Breadth First Search and Depth First Search.	L+D	BB	2	59	30/1/2023 31/1/2023
47	Hashing: Hash Table organizations, Hashing Functions, Static and Dynamic Hashing	L+D	BB	1	60	1/2/2023
	IA-III (2/2/2023)					

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1:Basic Data structures Concepts and application					
1	**Module 1 Lab Programs** **1.** Design, Develop and Implement a menu driven Program in Cfor the following Array Operations a. Creating an Array of N Integer Elements b. Display of Array Elements with Suitable Headings c. Exit. Support the program with functions for each of the aboveoperations.	L+D, PS	BB	Lab Session-3HR	3	B1:8/11/2022 B2:2/11/2022B3:31/10/2022
2	**2.** Design, Develop and Implement a menu driven Program in Cfor the following Array operations a. Inserting an Element (ELEM) at a given valid Position (POS) b. Deleting an Element at a given valid Position POS)	L+D, PS	BB	Lab Session-3HR	6	B1:15/11/2022 B2:9/11/2022 B3:7/11/2022
	MODULE 2: Stacks and Queues					
3	**Module 2 Lab Programs** **1.** Design, Develop and Implement a menu driven Program in C for the following operations on STACK of Integers (Array Implementation of Stack with maximum size MAX) a. Push an Element on to Stack b. Pop an Element from Stack c. Demonstrate Overflow and Underflow situations on Stack d. Display the status of Stack e. Exit Support the program with appropriate functions for each of theabove operations	L+D, PS	LCD+BB	Lab Session-3HR	9	B1:15/11/2022 B2:16/11/2022 B3:14/11/2022
4	**Module 2 Lab Programs** **2.** Design, Develop and Implement a menu driven Program in C for the following operations on STACK of Integers (Array Implementation of Stack with maximum size MAX) a. Push an Element on to Stack b. Pop an Element from Stack	L+D, PS	LCD+BB	Lab Session-3HR	12	B1:15/11/2022 B2:16/11/2022 B3:14/11/2022

	c. Demonstrate Overflow and Underflow situations on Stack d. Display the status of Stack e. Exit Support the program with appropriate functions for each of theabove operations					
	MODULE 3: Linked Lists					
5	**Module 3 Lab Programs** **1.** Singly Linked List (SLL) of Integer Data a. Create a SLL stack of N integer. b. Display of SLL c. Linear search. d. Create a SLL queue of N Students Data e. Concatenation of two SLL of integers.	L+D	BB	Lab Session-3HR	15	B1:6/12/2022 B2:7/12/2022 B3:5/12/2022
6	**2.** Design, Develop and Implement a menu driven Program in C for the following operations on Doubly Linked List (DLL) of Professor Data with the fields: ID, Name, Branch, Area of specialization a. Create a DLL stack of N Professor's Data. b. Create a DLL queue of N Professor's Data c. Display the status of DLL and count the number of nodes in it.	L+D	BB	Lab Session-3HR	18	B1:13/12/2022 B2:14/12/2022 B3:12/12/2022

	MODULE 4: Trees					
7	**Module 4 Lab Programs** **1.** Given an array of elements, construct a complete binary tree from this array in level order fashion. That is, elements from leftin the array will be filled in the tree level wise starting from level 0. Ex: Input: 1 / \ 2 3 /\ /\ 4 5 6 arr[] = {1, 2, 3, 4, 5, 6} Output : Root of the following tree	L+D	LCD+BB	Lab Session-3HR	21	B1:20/12/2022 B2:21/12/2022 B3:19/12/2022

8	**2.** Design, Develop and Implement a menu driven Program in Cfor the following operations on Binary Search Tree (BST) of Integers a. Create a BST of N Integers b. Traverse the BST in Inorder, Preorder and Post Order	L+D	LCD+BB	Lab Session-3HR	24	B1:27/12/2023 B2:28/12/2023 B3:26/12/2023
MODULE 5: Graphs						
9	**Module 5 Lab Programs** **1.**Design, Develop and implement a program in C for thefollowing operations on Graph (G) of cities a. Create a Graph of N cities using Adjacency Matrix. b. Print all the nodes reachable from a given starting node in adiagraph using DFS/BFS method.	L+D	LCD+BB	Lab Session-3HR	27	B1:10/1/2023 B2:11/1/2023 B3:9/1/2023
10	**2.** Design and develop a program in C that uses Hash Function H:K->L as H(K)=K mod m(reminder method) and implement hashing technique to map a given key K to the address space L. Resolve the collision (if any) using linear probing.	L+D	LCD+BB	Lab Session-3HR	30	B1:17/1/2023 B2:18/1/2023 B3:16/1/2023

Total Number of Hours for theory	**60 HR**
Total Number of Hours for Laboratory	**30 HR**
Total Number of Hours for theory and Laboratory	**90 HR**

Text Books:

1. Fundamentals of Data Structures in C - Ellis Horowitz and Sartaj Sahni, 2nd edition, Universities Press, 2014.
2. Data Structures - Seymour Lipschutz, Schaum's Outlines, Revised 1st edition, McGraw Hill, 2014.
3. Reema Thareja, Data Structures using C, 3rd Ed, Oxford press, 2012.

Reference Books:

1. Gilberg and Forouzan, Data Structures: A Pseudo-code approach with C, 2nd Ed, Cengage Learning,2014.
2. Jean-Paul Tremblay & Paul G. Sorenson, An Introduction to Data Structures with Applications,2nd Ed, McGraw Hill, 2013
3. A M Tenenbaum, Data Structures using C, PHI, 1989
4. Robert Kruse, Data Structures and Program Design in C, 2nd Ed, PHI, 1996.

Web Materials:

Weblinks and Video Lectures (e-Resources):

- http://elearning.vtu.ac.in/econtent/courses/video/CSE/06CS35.html
- https://nptel.ac.in/courses/106/105/106105171/
- http://www.nptelvideos.in/2012/11/data-structures-and-algorithms.html
  Problem based learning
- http://www.nptelvideos.in/2012/11/data-structures-and-algorithms.html
- https://ds1-iiith.vlabs.ac.in/exp/tree-traversal/index.html
- https://ds1-iiith.vlabs.ac.in/exp/tree-traversal/depth-first-traversal/dft-practice.html

Details for the teaching Aids

Black Board and LCD

Signature of Course In-Charge **Signature of Module Coordinator** **Signature of HOD** **Signature of Principal**

Head of the Department
Artificial Intelligence & Machine Learning
K.S. Institute of Technology
Bengaluru - 560 109

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109.

KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : SAHANA SHARMA M

SUBJECT CODE/NAME : 21CS33/ ANALOG AND DIGITAL ELECTRONICS

SEMESTER/YEAR : III A/ II

ACADEMIC YEAR : 2022-2023

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1:					
1	BJT Biasing: Fixed bias,	L+I	BB+LCD	1	1	2/11/2022
2	BJT Biasing: , voltage divider bias	L+I	BB+LCD	1	2	3/11/2022
3	Problems on BJT Biasing	L+I	BB+LCD	1	3	4/11/2022
4	Problems on BJT Biasing	L+I	BB+LCD	1	4	7/11/2022
5	Schmitt trigger-Inverting & Non inverting	L+I	BB+LCD	1	5	9/11/2022
6	Problems on Schmitt trigger-Inverting & Non inverting	L+I	BB+LCD	1	6	10/11/2022
7	Collector to base Bias	L+I	BB+LCD	1	7	14/11/2022
8	Non-Linear Amplifier, Relaxation Oscillator	L+I	BB+LCD	1	8	16/11/2022
9	Non-Linear Amplifier, Relaxation Oscillator	L+I	BB+LCD	1	9	17/11/2022
10	Operational Amplifier Application Circuits: Peak Detector	L+I	BB+LCD	1	10	18/11/2022
11	Current-to-Voltage and Voltage-to-Current Converter	L+I	BB+LCD	1	11	21/11/2022
12	D to A converters	L+I	BB+LCD	1	12	23/11/2022
13	Basic DAC Techniques	L+I	BB+LCD	1	13	24/11/2022
14	Problems on basic DAC Techniques	L+I	BB+LCD	1	14	26/11/2022
15	IA-1					29/11/2022
16	A to D converter.	L+I	BB+LCD	1	15	1/12/2022
17	Regulated Power Supply Parameters, adjustable voltage	L+I	BB+LCD	1	16	2/12/2022
18	Active Filters- First order low pass and High pass	L+I	BB+LCD	1	17	5/12/2022
19	Active Filters- First order low pass and High pass	L+I	BB+LCD	1	18	7/12/2022

20	Quiz on Module 1	I	LCD	1	19	8/12/2022
MODULE 2:						
21	Karnaugh maps: minimum forms of switching functions, two and three variable Karnaugh maps	L+I	BB+LCD	1	20	9/12/2022
22	Karnaugh maps: minimum forms of switching functions, two and three variable Karnaugh maps	L+I	BB+LCD	1	21	9/12/2022
23	Four variable Karnaugh maps, determination of minimum expressions using essential prime implicants.	L+I	BB+LCD	1	22	12/12/2022
24	Examples on three and four variable Karnaugh maps	L+I	BB+LCD	1	23	14/12/2022
25	Examples on three and four variable Karnaugh maps	L+I	BB+LCD	1	24	15/12/2022
26	Examples on three and four variable Karnaugh maps	L+I	BB+LCD	1	25	16/12/2022
27	QuineMcClusky Method: determination of prime implicants, the prime implicant chart.	L+I	BB+LCD	1	26	16/12/2022
28	Examples on QuineMcClusky Method	L+I	BB+LCD	1	27	19/12/2022
29	Examples on QuineMcClusky Method	L+I	BB+LCD	1	28	21/12/2022
30	Petricks method, simplification of incompletely specified functions,	L+I	BB+LCD	1	29	22/12/2022
31	Examples on Petricks method	L+I	BB+LCD	1	30	23/12/2022
32	Simplification using map-entered variables	L+I	BB+LCD	1	31	23/12/2022
33	Quiz on Module 2	I	LCD	1	32	24/12/2022
MODULE 3:						
34	Combinational circuit design and simulation using gates: Review of Combinational circuit design.	L+I	BB+LCD	1	33	26/12/2022
35	Design of circuits with limited Gate Fan-in, Gate delays and Timing diagrams,	L+I	BB+LCD	1	34	28/12/2022
36	Design of circuits with limited Gate Fan-in, Gate delays and Timing diagrams,		BB+LCD	1	35	29/12/2022
37	Hazards in combinational Logic	L+I	BB+LCD	1	36	30/12/2022
38	Hazards in combinational Logic	L+I	BB+LCD	1	37	30/12/2022
39	Simulation and testing of logic circuits	L+I	BB+LCD	1	38	31/12/2022

40	IA-II					3/1/2023
41	Multiplexers, Decoders	L+I	BB+LCD	1	39	5/1/2023
42	Programmable Logic Devices: Multiplexers, three state buffers,	L+I	BB+LCD	1	40	6/1/2023
43	Decoders and encoders,	L+I	BB+LCD	1	41	9/1/2023
44	Decoders and encoders,				42	11/1/2023
45	Programmable Logic devices.	L+I	BB+LCD	1	43	12/1/2023
	MODULE 4:					
46	Introduction to VHDL: VHDL description of combinational circuits,	L+I	BB+LCD	1	44	13/1/2023
47	VHDL Modules.	L+I	BB+LCD	1	45	16/1/2023
48	Latches and Flip-Flops: Set Reset Latch, Gated Latches	L+I	BB+LCD	1	46	18/1/2023
49	Latches and Flip-Flops: Set Reset Latch, Gated Latches	L+I	BB+LCD	1	47	19/1/2023
50	Edge-Triggered D Flip Flop 3,SR Flip Flop,	L+I	BB+LCD	1	48	20/1/2023
51	J K Flip Flop, T Flip Flop.	L+I	BB+LCD	1	49	20/1/2023
	MODULE 5:					
52	Registers and Counters: Registers and Register Transfers,	L+I	BB+LCD	1	50	23/1/2023
53	Registers and Counters: Registers and Register Transfers,	L+I	BB+LCD	1	51	25/1/2023
54	Parallel Adder with accumulator, shift registers,	L+I	BB+LCD	1	52	27/1/2023
55	Design of Binary counters, counters for other sequences	L+I	BB+LCD	1	53	28/1/2023
56	Counter design using SR and J K Flip Flops.	L+I	BB+LCD	1	54	30/1/2023
57	Revision	L+I	BB+LCD	1	55	31/1/2023
58	Revision	L+I	BB+LCD	1	56	1/2/2023
59	IA III					3/2/2023
60	Revision	L+I	BB+LCD	1	57	8/2/2023
61	Revision	L+I	BB+LCD	1	58	9/2/2023
62	Revision	L+I	BB+LCD	1	59	11/2/2023

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
MODULE 1: BJT Biasing and Operational Amplifier Application Circuits						
1	**Module 1 Lab Programs** Simulate BJT CE voltage divider biased voltage amplifier using any suitable circuit simulator.	Instruction and demonstration.	Pspice Simulator and components	Lab Session-3HR	3	B1:7/11/22 B2:2/11/22
2	Using ua 741 Opamp, design a 1 kHz Relaxation Oscillator with 50% duty cycle	Instruction and demonstration	PSpice, Components	Lab Session-3HR	6	B1: 12/11/22 B2: 8/11/22
3	Design an astable multivibrator circuit for three cases of duty cycle (50%, 50%) using NE 555 timer IC.	Instruction and demonstration	PSpice, Components	Lab Session-3HR	9	B1: 15/11/22 B2: 14/11/22
4	Using ua 741 opamap, design a window comparator for any given UTP and LTP.	Instruction and demonstration	PSpice, Components	Lab Session-3HR	12	B1: 21/11/22 B2: 22/11/22
MODULE 2:						
5	**Module 2 Lab Programs** Given a 4-variable logic expression, simplify it using appropriate technique and implement the same using basic gates. : SOP using K map	Instruction and demonstration	Digital Trainer Kit and Components	Lab Session-3HR	15	B1: 5/12/22 B2: 6/12/22
6	Given a 4-variable logic expression, simplify it using appropriate technique and implement the same using basic gates. :POS using K map	Instruction and demonstration	Digital Trainer Kit and Components	Lab Session-3HR	18	B1:12/12/22 B2: 13/12/22
MODULE 3:						
7	**Module 3 Lab Programs** Given a 4-variable logic expression, simplify it using appropriate technique and realize the simplified logic expression using 8:1 multiplexer IC.	Instruction and demonstration	Digital Trainer Kit and Components	Lab Session-3HR	21	B1: 19/12/22 B2: 20/12/22
8	Design and implement code converter I) Binary to Gray (II) Gray to Binary Code	Instruction and demonstration	Digital Trainer Kit and Components	Lab Session-3HR	24	B1: 26/12/22 B2: 27/12/22

MODULE 4:						
9	**Module 4 Lab Programs** Given a 4-variable logic expression, simplify it using appropriate technique and simulate the same in HDL simulator	Instruction and demonstration	Xilinx Simulator	Lab Session-3HR	27	B1: 31/12/22 B2: 3/1/23
10	Realize a J-K Master / Slave Flip-Flop using NAND gates and verify its truth table. And implement the same in HDL.	Instruction and demonstration	Xilinx Simulator	Lab Session-3HR	30	B1: 2/1/23 B2: 17/1/23
MODULE 5:						
11	Design and implement a mod-n (n<8) synchronous up counter using J-K flip flop IC and demonstrate its working.	Instruction and demonstration	Digital trainer kit and components.	Lab Session-3HR	33	B1: 16/1/23 B2: 31/1/23
12	Design and implement an asynchronous counter using decade counter IC to count up from 0 to n (n<=9) and demonstrate on 7-segment display (using IC-7447)	Instruction and demonstration	Digital trainer kit and components.	Lab Session-3HR	36	B1: 23/1/23 B2: 7/2/23
13	Revision Lab					B1: 30/1/23

Note - Mention test dates.

Total Number of Hours for theory - 59 HR
Total Number of Hours for Laboratory - 36 HR
Total Number of Hours for theory and Laboratory - 95 HR

Text Books:

1. Charles H Roth and Larry L Kinney, Raghunandan G H, Analog and Digital Electronics, Cengage Learning,2019

Reference Books:

1. Anil K Maini, Varsha Agarwal, Electronic Devices and Circuits, Wiley, 2012.
2. Donald P Leach, Albert Paul Malvino & Goutam Saha, Digital Principles and Applications, 8th Edition, Tata McGraw Hill, 2015.
3. M. Morris Mani, Digital Design, 4th Edition, Pearson Prentice Hall, 2008.
4. David A. Bell, Electronic Devices and Circuits, 5th Edition, Oxford University Press, 2008.

Web Materials:

Web links and Video Lectures (e-Resources):

- Analog Electronic Circuits: https://nptel.ac.in/courses/108/102/108102112/
- Digital Electronic Circuits: https://nptel.ac.in/courses/108/105/108105132/
- Analog Electronics Lab: http://vlabs.iitkgp.ac.in/be/
- Digital Electronics Lab: http://vlabs.iitkgp.ac.in/dec

Details for the teaching Aids

Black Board and LCD

Signature of Course In-Charge

Signature of Module Coordinator

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Artificial Intelligence & Machine Learning
K.S. Institute of Technology
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KS INSTITUTE OF TECHNOLOGY, BANGALORE

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

NAME OF THE STAFF : ANU MATHEWS

SUBJECT CODE/NAME : 21CS34/ COMPUTER ORGANIZATION & ARCHITECTURE

SEMESTER/YEAR/SEC : III A

ACADEMIC YEAR : 2022-2023

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1					
1	Introduction: Basic Operational Concepts, Bus Structures	L+I	LCD	1	1	02/11/2022
2	Performance – Processor Clock, Basic Performance Equation, Clock Rate, Performance Measurement.	L+I	LCD	1	2	03/11/2022
3	Machine Instructions and Programs: Memory Location and Addresses, Memory Operations	L+I	LCD	1	3	04/11/2022
4	Machine Instructions and Programs: Memory Location and Addresses, Memory Operations	L+I	LCD	1	4	07/11/2022
5	Instructions and Instruction Sequencing	L+I	LCD	1	5	09/11/2022
6	Instructions and Instruction Sequencing	L+I	LCD	1	6	10/11/2022
7	Addressing Modes	L+I	LCD	1	7	14/11/2022
8	Addressing Modes	L+I	LCD	1	8	16/11/2022
	MODULE 2					
9	Accessing I/O Devices	L+I	LCD	1	9	18/11/2022
10	Interrupts – Basic concepts	L+I	LCD	1	10	23/11/2022
11	Interrupt Hardware	L+I	LCD	1	11	24/11/2022
12	Interrupt Hardware (Contd…)	L+I	LCD	1	12	25/11/2022

13	Direct Memory Access	L+I	LCD	1	13	26/11/2022
14	**Internal Assessment Test 1**				14	30/11/2022
15	Direct Memory Access	L+I	LCD	1	15	01/12/2022
16	Direct Memory Access	L+I	LCD	1	16	02/12/2022
17	Buses	L+I	LCD	1	17	05/12/2022
18	Interface Circuits	L+I	LCD	1	18	07/12/2022
19	Interface Circuits (Contd…)	L+I	LCD	1	19	08/12/2022
20	Interface Circuits (Contd…)	L+I	LCD	1	20	09/12/2022
	MODULE 3					
21	Memory System: Basic Concepts	L+I	LCD	1	21	12/12/2022
22	Semiconductor RAM Memories	L+I	LCD	1	22	14/12/2022
23	Semiconductor RAM Memories (Contd…)	L+I	LCD	1	23	15/12/2022
24	Read Only Memories, Speed, Size and Cost	L+I	LCD	1	24	16/12/2022
25	Read Only Memories, Speed, Size and Cost	L+I	LCD	1	25	19/12/2022
26	Cache Memories – Mapping Functions	L+I	LCD	1	26	21/12/2022
27	Cache Memories – Mapping Functions	L+I	LCD	1	27	22/12/2022
28	Virtual memories	L+I	LCD	1	28	23/12/2022
29	Virtual memories	L+I	LCD	1	29	24/12/2022
30	Virtual memories	L+I	LCD	1	30	26/12/2022
	MODULE 4					
31	Arithmetic: Numbers, Arithmetic Operations and Characters, Addition and Subtraction of Signed Numbers	L+I	LCD	1	31	28/12/2022
32	Design of Fast Adders	L+I	LCD	1	32	29/12/2022
33	Multiplication of Positive Numbers	L+I	LCD	1	33	30/12/2022
34	Basic Processing Unit: Fundamental Concepts, Execution of a Complete Instruction	L+I	LCD	1	34	31/12/2022
35	Hardwired control	L+I	LCD	1	35	05/01/2023
36	Hardwired control	L+I	LCD	1	36	06/01/2023
37	Microprogrammed control	L+I	LCD	1	37	09/01/2023
38	**Internal Assessment Test 2**				38	11/01/2023
39	Microprogrammed control	L+I	LCD	1	39	12/01/2023

MODULE 5						
40	Parallel Processing	L+I	LCD	1	40	13/01/2023
41	Parallel Processing	L+I	LCD	1	41	16/01/2023
42	Pipelining	L+I	LCD	1	42	18/01/2023
43	Pipelining	L+I	LCD	1	43	19/01/2023
44	Arithmetic Pipeline	L+I	LCD	1	44	20/01/2023
45	Arithmetic Pipeline	L+I	LCD	1	45	23/01/2023
46	Instruction Pipeline	L+I	LCD	1	46	25/01/2023
47	Instruction Pipeline	L+I	LCD	1	47	27/01/2023
48	Vector Processing	L+I	LCD	1	48	28/01/2023
49	Vector Processing	L+I	LCD	1	49	30/01/2023
50	Array Processors	L+I	LCD	1	50	01/02/2023
51	**Internal Assessment Test 3**				51	06/02/2023
52	Array Processors	L+I	LCD	1	52	08/02/2023
53	QUIZ-Activity			1	53	09/02/2023
54	Topic Presentation-Activity			1	54	10/02/2023
55	Topic Presentation-Activity			1	55	11/02/2023

Text Books:

1. Carl Hamacher, ZvonkoVranesic, SafwatZaky, Computer Organization, 5th Edition, Tata McGrawHill, 2002.
2. M. Morris Mano, Computer System Architecture, PHI, 3rd Edition

Reference Books:

William Stallings: Computer Organization & Architecture, 9th Edition, Pearson, 2015

Details of the teaching aids: Power Point Presentations

Course in charge

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K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

NAME OF THE STAFF: **Lakshmi K K & Prof. S Subhash Kumar**
SUBJECT CODE/NAME: **21CSL35/ OBJECT ORIENTED PROGRAMMING WITH JAVA LABAROTORY**
SEMESTER/YEAR/SEC: **III/II/A**
ACADEMIC YEAR : **2022-2023**

Sl. No.	Topic to be covered	Teaching Aid	Proposed Date
1	Program: Write a java program that prints all real solutions to the quadratic equation ax2+bx+c=0. Read in a, b, c and use the quadratic formula.	Projector and Board	16/11/2022-B1 12/11/2022-B2
2	Program: Create a Java class called **Student** with the following details as variables within it. USN Name Branch Phone Write a Java program to create n Student objects and print the USN, Name, Branch, and Phone of these objects with suitable headings.	Projector and Board	23/11/2022-B1 21/11/2022-B2
3	A. Write a program to check prime number B.Write a program for Arithmetic calculator using switch case menu	Projector and Board	30/11/2022-B1 12/12/2022-B2
4	Design a super class called **Staff** with details as StaffId, Name, Phone, Salary. Extend this class by writing three subclasses namely Teaching (domain, publications), Technical (skills), and Contract (period). Write a Java program to read and display at least 3 staff objects of all three categories.	Projector and Board	07/12/2022-B1 19/12/2022-B2
5	Write a java program demonstrating Method overloading and Constructor overloading.	Projector and Board	14/12/2022-B1 26/12/2022-B2
6	Develop a java application to implement currency converter (Dollar to INR, EURO to INR, Yen to INR and vice versa), distance converter (meter to KM, miles to KM and vice versa), time converter (hours to minutes, seconds and vice versa) using packages.	Projector and Board	21/12/2022-B1 31/12/2022-B2
7	Write a program to generate the resume. Create 2 Java classes Teacher (data:personal information, qualification, experience, achievements) and Student (data: personalinformation, result, discipline) which implements the java interface Resume with the methodbiodata().	Projector and Board	24/12/2022-B1 16/01/2023-B2
8	Program: Write a Java program that implements a **multi-**	Projector and	11/01/2023-B1

	thread application that has three threads. First thread generates a random integer for every 1 second; second thread computes the square of the number and prints; third thread will print the value of cube of the number.	Board	19/01/2023-B2
9	Program: Write a program to perform string operations using ArrayList. Write functions for the following a. Append - add at end b. Insert – add at particular index c. Search d. List all string starts with given letter.	Projector and Board	14/01/2023-B1 23/01/2023-B2
10	Program: Write a Java program to read two integers a and b. **Compute** a/b and print, when b is not zero. Raise an exception when b is equal to zero.	Projector and Board	18/01/2023-B1 30/01/2023-B2
11	Write a java program that reads a file name from the user, displays information about whether the file exists, whether the file is readable, or writable, the type of file and the length of the file in bytes	Projector and Board	28/01/2023-B1 06/02/2023-B2
12	Develop an applet that displays a simple message in center of the screen. Develop a simple calculator using Swings.	Projector and Board	08/02/2023-B1 13/02/2023-B2
	REVISION		15/02/2023-B1 22/02/2023-B1 20/02/2023-B2 27/02/2023-B2
	LAB TEST		13/03/2023-B1 06/03/2023-B2 20/03/2023-B1&B2

Signature of course Incharge **Signature of Module Coordinator** **Signature of HOD**

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K S INSTITUTE OF TECHNOLOGY, BANGALORE
DEPARTMENT OF APPLIED SCIENCES & HUMANITIES
LESSON PLAN 2022-23 ODD SEMESTER

COURSE INCHARGE : **Thrimurthy R**

COURSE TYPE / CODE / TITLE : **Theory/21KBK37/Balake Kannada**

YEAR/ SEMESTER/SECTION : **2022-23/3rdsem**

BRANCH : **AI & ML**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1:					
1	Introduction, Necessity of learning a local language. Methods to learn the Kannada language.	L+D	BB	1	1	07/11/2022
2	Easy learning of Kannada Language: A few tips. Hints for correct and polite conservation, Listening and Speaking Activities	L+PPT	BB	1 1	2 3	14/11/2022 18/11/2022
3	Key to Transcription.	L+D	BB	1	4	21/11/2022
4	Personal Pronouns, Possessive Forms, Interrogative words.	L+D	BB	1	5	24/11/2022
	MODULE 2:					
5	Possessive forms of nouns, dubitive question and Relative nouns	L+D	BB	1	6	12/12/2022
6	Qualitative, Quantitative and Colour Adjectives, Numerals	L+D	BB	1	7	19/12/2022
7	Predictive Forms, Locative Case	L+D	BB	1	8	26/12/2022

	MODULE 3:					
8	Dative Cases, and Numerals	L+D	BB	1	9	02/01/2023
9	Ordinal numerals and Plural markers	L+D	BB	1	10	16/01/2023
10	Defective/Negative Verbs and Colour Adjectives	L+D	BB	1	11	23/01/2023

	MODULE 4:					
11	Permission, Commands, encouraging and Urging words (Imperative words and sentences)	L+D	BB	1	12	13/02/2023
12	Accusative Cases and Potential Forms used in General Communication	L+D	BB	1	13	20/02/2023
13	Helping Verbs "iru and iralla", Corresponding Future and Negation Verbs	L+D	BB	1	14	27/02/2023
14	Comparative, Relationship, Identification and Negation Words	L+D	BB	1	15	03/03/2023

	MODULE 5:					
15	Different types of forms of Tense, Time and Verbs	L+D	BB	1	16	06/03/2023
16	Formation of Past, Future and Present Tense Sentences with Verb Forms	L+D	BB	1	17	09/03/2023
17	Kannada Vocabulary List, Kannada Words in Conversation.	L+D	BB	1	18	11/03/2023

Text Books:

BALAKE KANNADA, Author: Dr. L. Thimmesh, Publisher: Vishveshwaraiah Technology University, Belagavi

Reference Books:

BALAKE KANNADA, Author: Dr. L. Thimmesh, Publisher: Vishveshwaraiah Technology University, Belagavi

Web Materials:

Weblinks and Video Lectures (e-Resources):

https://dtek.karnataka.gov.in
https://vtu.ac.in>BKBKK107
https://sahyadri.edu.in>Balake
https://dtek.karnataka.gov.in

Details for the teaching Aids

- BB – Black Board
- PPT Power Point Presentation
- Black Board and LCD

Signature of Course In-Charge

Signature of HOD

Head of the Department
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KS INSTITUTE OF TECHNOLOGY, BANGALORE -109
DEPARTMENT OF APPLIED SCIENCES & HUMANITIES
LESSON PLAN 2022-23 ODD SEMESTER

COURSE INCHARGE : **THRIMURTHY R**

COURSE TYPE / CODE/TITLE : **Theory/21KSK37/ Samskrutika Kannada**

YEAR/ SEMESTER/SECTION : **2022-23/3rdsem**

BRANCH : **AI & ML**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No.of Periods	Proposed Date
	ಘಟಕ –1 ಲೇಖನಗಳು					
1	ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ – ಹಂಪ ನಾಗರಾಜಯ್ಯ	L+D	BB	1	1	07/11/2022
2	ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ – ಹಂಪ ನಾಗರಾಜಯ್ಯ	L+ D	BB	2	2 3	14/11/2022 18/11/2022
3	ಕರ್ನಾಟಕ ಏಕೀಕರಣ: ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ– ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ	L+ D	BB	1	4	21/11/2022
4	ಕರ್ನಾಟಕ ಏಕೀಕರಣ: ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ– ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ	L+D	BB	1	5	24/11/2022
5	ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ–ಡಾ.ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೋ.ವಿ. ಕೇಶವಮೂರ್ತಿ	L+D	BB	1	6	05/12/2022

ಘಟಕ –2 ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ						
6	ವಚನಗಳು: ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು, ಆಯ್ದಕ್ಕಿ ಮಾರಯ್ಯ, ಜೇಡರ ದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ	L+D	BB	1	7	12/12/2022
7	ವಚನಗಳು: ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು, ಆಯ್ದಕ್ಕಿ ಮಾರಯ್ಯ, ಜೇಡರ ದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ	L+D	BB	1	8	19/12/2022
8	ಕೀರ್ತನೆಗಳು: ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ – ಪುರಂದರದಾಸರು	L+D	BB	1	9	26/12/2022
9	ಕೀರ್ತನೆಗಳು: ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ – ಪುರಂದರದಾಸರು	L+D	BB	1	10	31/12/2022
10	ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೇ– ಕನಕದಾಸರು	L+D	BB	1	11	02/01/2023
11	ತತ್ಪದಗಳು: ಸಾವಿರ ಕೊಡಗಳ ಸುಟ್ಟು – ಶಿಶುನಾಳ ಶರೀಫ	L+D	BB	1	12	16/01/2023

ಘಟಕ –3 ಆಧುನಿಕ ಕಾವ್ಯ ಭಾಗ						
12	ಡಿವಿಜಿರವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಆಯ್ದ ಕೆಲವು ಭಾಗಗಳು	L+D	BB	1	13	
13	ಕುರುಡು ಕಾಂಚಾಣ: ದ.ರಾ. ಬೇಂದ್ರೆ	L+D	BB	1	14	30/01/2023
14	ಹೊಸಬಾಳಿನ ಗೀತೆ: ಕುವೆಂಪು	L+D	BB	1	15	06/02/2023

ಘಟಕ –4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ						
15	ಡಾ. ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ: ವ್ಯಕ್ತಿ ಮತ್ತುಐತಿಹ್ಯ– ಎ ಎನ್ ಮೂರ್ತಿರಾವ್	L+D	BB	1	16	13/02/2023
16	ಡಾ. ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ: ವ್ಯಕ್ತಿ ಮತ್ತುಐತಿಹ್ಯ– ಎ ಎನ್ ಮೂರ್ತಿರಾವ್	L+D	BB	1	17	20/02/2023
17	ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ: ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ	L+D	BB	1	18	27/02/2023
18	ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ: ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ	L+D	BB	1	19	03/03/2023

ಘಟಕ –5 ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ						
19	ಯುಗಾದಿ: ವಸುಧೇಂದ್ರ	L+D	BB	1	20	06/03/2023
20	ಯುಗಾದಿ: ವಸುಧೇಂದ್ರ	L+D	BB	1	21	09/03/2023
21	ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ: ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ	L+D	BB	1	22	11/03/2023
22	ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ: ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ	L+D	BB	1	23	13/03/2023

Text Books:

1. ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ, ಡಾ. ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ, ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

Reference Books:

1. ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ, ಡಾ. ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ, ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

Web Materials:

Web links and Video Lectures (e-Resources):

https://www.vtuloop.com

https://www.forum.universityupdates.in

Details for the teaching Aids : **Black Board, PPT and LCD**

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K S INSTITUTE OF TECHNOLOGY BENGALURU

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

LESSON PLAN

NAME OF THE STAFF: **Prof. Lakshmi K K & Prof. Roopa K Murthy**

SUBJECT CODE/NAME: **21CSL381/Mastering Office**

SEMESTER/YEAR/SEC: **III/II/A**

ACADEMIC YEAR : **2022-2023**

Sl. No.	Topic to be covered	Teaching Aid	Proposed Date
1	**Module-1** **MS-Word**-Working with Files, Text – Formatting, Moving, copying and pasting text, Styles – Lists – Bulleted and numbered lists,	Projector and Board	8-11-2022
2	Nested lists, Formatting lists. Table Manipulations. Graphics – Adding clip Art, add an image from a file, editing graphics, Page formatting.	Projector and Board	12-11-2022
3	Header and footers, page numbers Protect the Document, Mail Merge, Macros – Creating & Saving web pages, Hyperlinks.	Projector and Board	22-11-2022
4	**Module-2** **MS-Excel**- Modifying a Worksheet – Moving through cells, adding worksheets, rows and columns, resizing rows and columns,	Projector and Board	06-12-2022
5	selecting cells Moving and copying cells, freezing panes - Macros – recording and running. Linking worksheets -	Projector and Board	13-12-2022
6	Sorting and Filling, Alternating text and numbers with Auto fill Auto filling functions. Graphics – Adding clip art,	Projector and Board	20-12-2022
7	add an image from a file, Charts – Using chart Wizard, Copy a chart to Microsoft Word.	Projector and Board	27-12-2022
8	**Module-3** **MS-Power Point** -Create a Presentation from a template- Working with Slides – Insert a new slide, applying a design template, changing slide layouts	Projector and Board	03-01-2023
9	**Module-3** Resizing a text box, Text box properties, delete a text box - Video and Audio effects, Colour Schemes & Backgrounds Adding clip art, adding an image from a file, Save as a web page.	Projector and Board	07-01-2023
10	**Module-4** **MS-Access** - Using Access database wizard, pages and projects. Creating Tables –	Projector and Board	31-01-2023

11	**Module-4** Create a Table in design view. Datasheet Records – Adding, Editing, deleting records, Adding and deleting columns Resizing rows and columns.	Projector and Board	07-02-2023
12	Finding data in a table & replacing, Print a datasheet. Queries - MS-Access	Projector and Board	14-02-2023
13	**Module-5** **Microsoft Outlook-** Introduction, Starting Microsoft Outlook	Projector and Board	21-02-2023
14	**Module-5** Outlook Today, Different Views in Outlook, Outlook Data Files	Projector and Board	28-02-2023
15	IA-I		15-03-2023
16	IA-II		24-03-2023

Signature of course Incharge **Signature of Module Coordinator** **Signature of HOD**

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

NAME OF THE STAFF : **Dr. K V A Balaji**

SUBJECT CODE/NAME : **18CS51/ Management and Entrepreneurship for IT Industry**

SEMESTER/YEAR/SEC : **V SEM**

ACADEMIC YEAR : **2022-2023**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1: Introduction					
1	Meaning, nature and characteristics of management	L+D	BB+LCD	1	1	10-10-2022
2	Scope and Functional areas of management	L+ D	BB+LCD	1	2	11-10-2022
3	Goals of management, Levels of Management	L+ D	BB+LCD	1	3	12-10-2022
4	Brief Overview of Evolution of Management	L+D	BB+LCD	1	4	13-10-2022
5	Planning - Nature, Importance	L+D	BB+LCD	1	5	17-10-2022
6	Types of Plans	L+D	BB+LCD	1	6	18-10-2022
7	Steps in Planning	L+D	BB+LCD	1	7	19-10-2022
8	Organizing - nature and purpose	L+D	BB+LCD	1	8	20-10-2022
9	Types of organization	L+D	BB+LCD	1	9	25-10-2022
10	Staffing: Meaning, Process of Recruitment and Selection	L+D	BB+LCD	1	10	27-10-2022
	MODULE 2: Directing and Controlling					
11	Meaning and Nature of Directing	L+D	BB+LCD	1	11	29-10-2022
12	Leadership Styles	L+ D	BB+LCD	1	12	31-10-2022
13	Motivation Theories	L+ D	LCD	1	13	02-11-2022
14	Communication - Meaning and Importance , Coordination - Meaning and Importance	L+ D	LCD	1	15	03-11-2022
15	Controlling-Meaning	L+ D	LCD	1	16	7-11-2022

16	Steps in Controlling	L+ D	LCD	1	17	8-11-2022
17	Methods of establishing control	L+ D	LCD	1	18	9-11-2022
18	Group Discussion	L+ D	LCD	1	19	10-11-2022
	FIRST INTERNALS					
	MODULE 3: Entrepreneur					
19	Meaning of Entrepreneur, Characteristics of Entrepreneur	L+ D	LCD	1	21	17-11-2022
20	Classification and types of entrepreneur	L+ D	LCD	1	22	21-11-2022
21	Various Stages of entrepreneurial process	L+ D	LCD	1	23	22-11-2022
22	Role of entrepreneurs in economic development	L+ D	LCD	1	24	23-11-2022
23	Entrepreneurship in India, Barriers to Entrepreneurship	L+ D	LCD	1	25	24-11-2022
24	Identification of business opportunities	L+ D	LCD	1	26	26-11-2022
25	Market Feasibility Study	L+ D	LCD	1	27	28-11-2022
26	Technical Feasibility Study	L+ D	LCD	1	28	29-11-2022
27	Financial Feasibility Study	L+ D	LCD	1	29	30-11-2022
28	Social Feasibility Study	L+ D	LCD	1	30	01-12-2022
	MODULE 4: Preparation of project and ERP					
29	Meaning of Project	L+ D	LCD	1	31	05-12-2022
30	Project Identification, Project Selection	L+ D	LCD	1	32	06-12-2022
31	Project Report, Need and Significance of Report	L+ D	LCD	1	33	07-12-2022
32	Contents, Formulation	L+ D	LCD	1	34	08-12-2022
33	Guidelines by planning commission for project report	L+ D	LCD	1	35	10-12-2022
34	Enterprise Resource Planning: Meaning and Importance	L+ D	LCD	1	36	12-12-2022
35	ERP and Functional Areas of Management - Marketing	L+ D	LCD	1	38	13-12-2022
36	Sales - Supply Chain Management	L+ D	LCD	1	39	14-12-2022
37	Finance and Accounting, Human Resources	L+ D	LCD	1	40	15-12-2022
	SECOND INTERNALS					
38	Business model presentation (pedagogical Activity)	L+ D	LCD	1	41	22-12-2022
39	Types of reports and methods of report generation	L+ D	LCD	1	42	23-12-2022
	MODULE 5: Micro and Small Enterprises					

40	Definition of micro and small enterprises	L+ D	LCD	1	43	24-12-2022
41	Characteristics and Advantages of Micro and Small Enterprises	L+ D	LCD	1	44	26-12-2022
42	Steps in establishing micro and small enterprises	L+ D	LCD	1	45	27-12-2022
43	Government of India indusial policy 2007 on micro and small enterprises	L+ D	LCD	1	46	28-12-2022
44	Case study (Microsoft),	L+ D	LCD	1	47	29-12-2022
45	Case study(Captain G R Gopinath)	L+ D	LCD	1	48	31-12-2022
46	Case study (N R Narayana Murthy & Infosys)	L+ D	LCD	1	49	02-01-2023
47	Institutional support: MSME-DI,	L+ D	LCD	1	50	03-01-2023
48	NSIC	L+ D	LCD	1	51	04-01-2023
49	Introduction to IPR	L+ D	LCD	1	52	05-01-2023
50	SIDBI, KIADB	L+ D	LCD	1	53	09-01-2023
51	KSSIDC	L+ D	LCD	1	54	10-01-2023
52	TECSOK	L+ D	LCD	1	54	11-01-2023
53	KSFC	L+ D	LCD	1	54	12-01-2023
54	, DIC and District level single window agency	L+ D	LCD	1	54	16-01-2023
55	Case Studies (pedagogical Activity)	L+ D	LCD	1	54	17-01-2023
	THIRD INTERNALS					

Signature of course In-charge

Signature of Module Coordinator

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
LESSON PLAN 2022-23 ODD SEMESTER

COURSE INCHARGE : **DR. VANEETA M**

COURSE CODE/TITLE : **PYTHON PROGRAMMING**

YEAR/ SEMESTER/SECTION : **3rd / 5th**

BRANCH : **ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	Module 1					
1	Introduction to Python Programming	L+D	LCD+BB	1	1	10-10-2022
2	**Python Basics**, Entering Expressions into the Interactive Shell, The Integer, Floating-Point, and String Data Types	L+D	LCD+BB	1	2	11-10-2022
3	String Concatenation and Replication, Storing Values in Variables, Your First Program, Dissecting Your Program,	L+D	LCD+BB	1	3	13-10-2022
4	**Flow control,** Boolean Values, Comparison Operators, Boolean Operators, Mixing Boolean and Comparison Operators,	L+D	LCD+BB	1	4	14-10-2022
5	Elements of Flow Control, Program Execution, Flow Control Statements,	L+D	LCD+BB	1	5	15-10-2022
6	Practice Programs	L+D	LCD+BB	1	6	17-10-2022
7	Importing Modules, Ending a Program Early with sys.exit(),	L+D	LCD+BB	1	7	18-10-2022
8	Functions, def Statements with Parameters, Return Values and return Statements,	L+D	LCD+BB	1	8	20-10-2022
9	The None Value, Keyword Arguments and print(), Local and Global Scope	L+D	LCD+BB	1	9	21-10-2022
10	The global Statement, Exception Handling, A Short Program: guess the Number	L+D	LCD+BB	1	10	27-10-2022

Module 2						
11	Lists, The List Data Type, Working with Lists	L+D	LCD+BB	1	11	28-10-2022
12	Augmented Assignment Operators, Methods	L+D	LCD+BB	1	12	31-10-2022
13	Example Program: Magic 8 Ball with a List, List-like Types: Strings and Tuples	L+D	LCD+BB	1	13	03-11-2022
14	References, Dictionaries and Structuring Data	L+D	LCD+BB	1	14	04-11-2022
15	The Dictionary Data Type, Pretty Printing	L+D	LCD+BB	1	15	7-11-2022
16	Using Data Structures to Model Real-World Things	L+D	LCD+BB	1	16	8-11-2022
17	Manipulating Strings, Working with Strings	L+D	LCD+BB	1	17	10-11-2022
18	Useful String Methods	L+D	LCD+BB	1	18	12-11-2022
19	Project: Password Locker	L+D	LCD+BB	1	19	13-11-2022
20	**Internal Assessment Test I**				20	14-11-2022
21	Project: Adding Bullets to Wiki Markup	L+D	LCD+BB	1	21	17-11-2022
Module 3						
22	Pattern Matching with Regular Expressions, Finding Patterns of Text Without Regular Expressions	L+D	LCD+BB	1	22	18-11-2022
23	Finding Patterns of Text with Regular Expressions, More Pattern Matching with Regular Expressions	L+D	LCD+BB	1	23	21-11-2022
24	Greedy and Nongreedy Matching, The findall() Method	L+D	LCD+BB	1	24	22-11-2022
25	Character Classes, Making Your Own Character Classes, The Caret and Dollar Sign Characters	L+D	LCD+BB	1	25	24-11-2022
26	The Wildcard Character, Review of Regex Symbols, Case-Insensitive Matching	L+D	LCD+BB	1	26	25-11-2022
27	Substituting Strings with the sub() Method, Managing Complex Regexes,	L+D	LCD+BB	1	27	28-11-2022
28	Combining re .IGNORECASE, re .DOTALL, and re .VERBOSE, Project: Phone Number and Email Address Extractor,	L+D	LCD+BB	1	28	29-11-2022
29	Reading and Writing Files, Files and File Paths, The os.path Module,	L+D	LCD+BB	1	29	01-12-2022
30	The File Reading/Writing Process, Saving Variables with the shelve Module,	L+D	LCD+BB	1	30	02-12-2022
31	Saving Variables with the pprint.pformat() Function,	L+D	LCD+BB	1	31	5-12-2022

52	Formulas, Adjusting Rows and Columns, Charts,	L+D	LCD+BB	1	52	09-01-2023
53	**Working with PDF and Word Documents,** PDF Documents, Project: Combining Select Pages from Many PDFs,	L+D	LCD+BB	1	53	10-01-2023
54	Working with Word Documents,	L+D	LCD+BB	1	54	12-01-2023
55	**Working with CSV files and JSON data,** The csv Module, Project: Removing the Header from CSV Files,	L+D	LCD+BB	1	55	13-01-2023
56	JSON and APIs, The json Module, Project: Fetching Current Weather Data	L+D	LCD+BB	1	56	16-01-2023
57	**Pedagogy:** Implementation of small problem statement on web scraping, working with PDF, Word, Excel, JSON etc			1	57	17-01-2023
58	**Internal Assessment Test III**			1	58	18-01-2023

Text Books:

1. Al Sweigart,"Automate the Boring Stuff with Python",1stEdition, No Starch Press, 2015.
2. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd Edition, Green Tea Press, 2015.

Reference Books:

1. Jake VanderPlas, **"Python Data Science Handbook: Essential Tools for Working with Data",** 1st Edition, O'Reilly Media, 2016. ISBN-13: 978-1491912058
2. Charles Dierbach, **"Introduction to Computer Science Using Python",** 1st Edition, Wiley India Pvt Ltd, 2015. ISBN-13: 978-8126556014
3. Wesley J Chun, **"Core Python Applications Programming",** 3rd Edition, Pearson Education India, 2015. ISBN-13: 978-9332555365

Details of the teaching aids:

- **Black Board**
- **Power Point Presentation**

Course Incharge

Module coordinator

PRINCIPAL
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HOD AIML
Head of the Department
Artificial Intelligence & Machine Learning
K.S. Institute of Technology
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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
LESSON PLAN 2022-23 ODD SEMESTER

COURSE INCHARGE : **ANU MATHEWS**

COURSE CODE/TITLE : **DATABASE MANAGEMENT SYSTEM /18CS53**

YEAR/ SEMESTER/SECTION : **3/5/A**

BRANCH : **AIML**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	Module 1					
1	**Introduction to Databases:** Introduction, Characteristics of database approach, Advantages of using the DBMS approach, History of database applications	L+I	LCD	1	1	10/10/2022
2	**Overview of Database Languages and Architectures:** Data Models, Schemas, and Instances.	L+I	LCD	1	2	11/10/2022
3	Three schema architecture and data independence, database languages, and interfaces, The Database System environment.	L+I	LCD	1	3	12/10/2022
4	**Conceptual Data Modelling using Entities and Relationships:** Entity types, Entity sets, attributes, roles,	L+I	LCD	1	4	14/10/2022
5	Structural constraints, Weak entity types,	L+I	LCD	1	5	15/10/2022
6	ER diagram- Company Database	L+I	LCD	1	6	17/10/2022
7	ER diagram- Company Database	L+I	LCD	1	7	18/10/2022
8	ER diagrams – Examples	L+I	LCD	1	8	19/10/2022
9	ER diagrams – Examples	L+I	LCD	1	9	21/10/2022
10	Specialization and Generalization	L+I	LCD	1	10	28/10/2022

	Module 2					
11	**Relational Model**: Relational Model Concepts,	L+I	LCD	1	11	29/10/2022
12	Relational Model Constraints and relational database schemas,	L+I	LCD	1	12	31/10/2022
13	Update operations, transactions, and dealing with constraint violations.	L+I	LCD	1	13	02/11/2022
14	**Relational Algebra:** Unary and Binary relational operations,	L+I	LCD	1	14	07/11/2022
15	Additional relational operations (aggregate, grouping, etc.)	L+I	LCD	1	15	08/11/2022
16	Examples of Queries in relational algebra.	L+I	LCD	1	16	09/11/2022
17	**Mapping Conceptual Design into a Logical Design:** Relational Database Design using ER-to-Relational mapping.	L+I	LCD	1	17	12/11/2022
18	**Internal Assessment Test 1**					15/11/2022
19	**SQL:** SQL data definition and data types, specifying constraints in SQL	L+I	LCD	1	18	25/11/2022
20	Retrieval queries in SQL, UPDATE statements in SQL	L+I	LCD	1	19	26/11/2022
21	PEDAGOGY- Activity Based Assignment	L+I	LCD	1	20	28/11/2022
	Module 3					
22	**SQL: Advances Queries:** More complex SQL retrieval queries	L+I	LCD	1	21	29/11/2022
23	Complex SQL retrieval queries	L+I	LCD	1	22	30/11/2022
24	Specifying constraints as assertions and action triggers	L+I	LCD	1	23	02/12/2022
25	Views in SQL	L+I	LCD	1	24	05/12/2022
26	Schema change statements in SQL	L+I	LCD	1	25	06/12/2022
27	**Database Application Development:** Accessing databases from applications, An introduction to JDBC, JDBC classes and interfaces	L+I	LCD	1	26	07/12/2022
28	SQLJ, Stored procedures	L+I	LCD	1	27	09/12/2022
29	Case study: The internet Bookshop.	L+I	LCD	1	28	10/12/2022
30	**Internet Applications:** The three-Tier application architecture,	L+I	LCD	1	29	12/12/2022

31	The presentation layer, The Middle Tier	L+I	LCD	1	30	13/12/2022
	Module 4					
32	**Normalization: Database Design Theory** – Introduction to Normalization using Functional and Multivalued Dependencies: Informal design guidelines for relation schema	L+I	LCD	1	31	14/12/2022
33	Functional Dependencies	L+I	LCD	1	32	16/12/2022
34	**Internal Assessment Test 2**	L+I	LCD	1	33	23/12/2022
35	Second and Third Normal Forms,	L+I	LCD	1	34	24/12/2022
36	Boyce-Codd Normal Form,	L+I	LCD	1	35	26/12/2022
37	Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form.	L+I	LCD	1	36	27/12/2022
38	**Normalization Algorithms:** Inference Rules, Equivalence, and Minimal Cover,	L+I	LCD	1	37	28/12/2022
39	Properties of Relational Decompositions	L+I	LCD	1	38	30/12/2022
40	Algorithms for Relational Database Schema Design, Nulls, Dangling tuples, and alternate Relational Designs,	L+I	LCD	1	39	31/12/2022
41	Further discussion of Multivalued dependencies and 4NF, Other dependencies and Normal Forms	L+I	LCD	1	40	02/01/2023
	Module 5					
42	**Transaction Processing:** Introduction to Transaction Processing, Transaction and System concepts, Desirable properties of Transactions	L+I	LCD	1	41	03/01/2023
43	Characterizing schedules based on recoverability, characterizing schedules based on Serializability,	L+I	LCD	1	42	04/01/2023
44	Transaction support in SQL.	L+I	LCD	1	43	06/01/2023
45	**Concurrency Control in Databases:** Two-phase locking techniques for Concurrency control	L+I	LCD	1	44	09/01/2023
46	Concurrency control based on Timestamp ordering, Multiversion Concurrency control techniques	L+I	LCD	1	45	10/01/2023

47	Validation Concurrency control techniques, Granularity of Data items and Multiple Granularity Locking	L+I	LCD	1	46	11/01/2023
48	**Introduction to Database Recovery Protocols:** Recovery Concepts	L+I	LCD	1	47	13/01/2023
49	NO-UNDO/REDO recovery based on Deferred update,	L+I	LCD	1	48	16/01/2023
50	Recovery techniques based on immediate update, Shadow paging,	L+I	LCD	1	49	17/01/2023
51	**Internal Assessment Test 3**					19/01/2023
52	Database backup and recovery from catastrophic failures	L+I	LCD	1	50	27/01/2023

Text Books:

1. Fundamentals of Database Systems, RamezElmasri and Shamkant B. Navathe, 7th Edition, 2017, Pearson.
2. Database management systems, Ramakrishnan, and Gehrke, 3rd Edition, 2014, McGraw Hill

Reference Books:

1. SilberschatzKorth and Sudharshan, Database System Concepts, 6th Edition, Mc-GrawHill, 2013.
2. Coronel, Morris, and Rob, Database Principles Fundamentals of Design, Implementation and Management, Cengage Learning 2012.

Details of the teaching aids:

- Power Point presentations

Course Incharge **Module coordinator** **HOD AIML**

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

NAME OF THE STAFF : Mr. Manoj Kumar S

SUBJECT CODE/NAME : 18CS54/ AUTOMATA THEORY & COMPUTABILITY

SEMESTER/YEAR/SEC : V/II

ACADEMIC YEAR : 2022-2023

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1					
1	Why ATC: Strings and Languages	L+I	BB	1	1	10/10/2022
2	Operations on String, Enumerations	L+I	BB	1	2	11/10/2022
3	Uniqueness, Encoding, Decision Problems	L+I	BB	1	3	12/10/2022
4	Chomsky Hierarchy, FSM, RE, CFG, PDA, Turing M	L+I	BB	1	4	13/10/2022
5	Computation, Non determinism, Intro to FSM	L+I	BB	1	5	17/10/2022
6	DFSM and Problems	L+I	BB	1	6	18/10/2022
7	DFSM Problems contd	L+I	BB	1	7	19/10/2022
8	DFSM Problems contd	L+I	BB	1	8	20/10/2022
9	DFSM Hard Problems	L+I	BB	1	9	21/10/2022
10	Into to NFSM	L+I	BB	1	10	25/10/2022
11	NFSM Contd	L+I	BB	1	11	27/10/2022
12	eNFSM and eNFSM to DFSM	L+I	BB	1	12	29/10/2022
13	NFSM to DFSM	L+I	BB	1	13	31/10/2022
14	NFSM to DFSM, Equivalence of two states, Minimization of DFSM	L+I	BB	1	14	02/11/2022

15	Minimization of DFSM Problems	L+I	BB	1	15	03/11/2022
	MODULE 2					
16	Introduction to Regular Expression	L+I	BB	1	16	04/11/2022
17	Problems on RE and Identities	L+I	BB	1	17	07/11/2022
18	RE to eNFSM	L+I	BB	1	18	08/11/2022
19	RE to eNFSM	L+I	BB	1	19	09/11/2022
20	FSM to RE by eliminating states	L+I	BB	1	20	10/11/2022
21	REVISION	L+I	BB	1	21	12/11/2022
	FIRST INTERNALS					
22	Kleene's Theorem & problems	L+I	BB	1	22	17/11/2022
23	Kleene's theorem problems	L+I	BB	1	23	21/11/2022
24	Regular grammar and problems, Closure Properties of RE	L+I	BB	1	24	22/11/2022
25	Pumping lemma theorem, prove L is not Regular	L+I	BB	1	25	23/11/2022
	MODULE 3					
26	CFG, Problems	L+I	BB	1	26	24/11/2022
27	CFG Problems	L+I	BB	1	27	25/11/2022
28	CFG Problems, Derivations	L+I	BB	1	28	26/11/2022
29	Derivation problems, Parse Tree, Ambiguous grammar	L+I	BB	1	29	28/11/2022
30	Chomsky Normal Form	L+I	BB	1	30	29/11/2022
31	Greibach Normal Form	L+I	BB	1	31	30/11/2022
32	Pushdown Automata Introduction	L+I	BB	1	32	01/12/2022
33	Pushdown Automata Problems	L+I	BB	1	33	05/12/2022
34	Pushdown Automata Problems	L+I	BB	1	34	06/12/2022
35	Deterministic PDA	L+I	BB	1	35	07/12/2022
36	Non-Deterministic PDA	L+I	BB	1	36	08/12/2022
37	Deterministic PDA, Non-Deterministic PDA problems	L+I	BB	1	37	10/12/2022
38	Nondeterminism and Halting	L+I	BB	1	38	12/12/2022
	MODULE 4					
39	Decidable questions,	L+I	BB	1	39	13/12/2022
40	Un-decidable questions.	L+I	BB	1	40	14/12/2022

41	Turing machine model Representation	L+I	BB	1	41	15/12/2022
	SECOND INTERNALS					
42	Language acceptability by TM	L+I	BB	1	42	22/12/2022
43	design of TM, Techniques for TM construction	L+I	BB	1	43	24/12/2022
44	TM Problems	L+I	BB	1	44	26/12/2022
45	TM Problems	L+I	BB	1	45	27/12/2022
46	Pedagogy: QUIZ	L+I	BB	1	46	28/12/2022
47	Variants of Turing Machines (TM)	L+I	BB	1	47	29/12/2022
48	Variants of Turing Machines (TM)	L+I	BB	1	48	31/12/2022
49	The model of Linear Bounded automata.	L+I	BB	1	49	02/01/2023
50	CBS: Introduction to LEX & YACC	L+I	LCD	1	50	03/01/2023
	MODULE 5					
51	Definition of an algorithm, decidability, decidable languages	L+I	LCD	1	51	04/01/2023
52	Undecidable languages	L+I	LCD	1	52	05/01/2023
53	halting problem of TM	L+I	LCD	1	53	09/01/2023
54	Post correspondence problem	L+I	LCD	1	54	10/01/2023
55	Complexity: Growth rate of functions, the classes of P and NP	L+I	LCD	1	55	11/01/2023
56	Quantum Computation: quantum computers	L+I	LCD	1	56	12/01/2023
57	Church-Turing thesis.	L+I	LCD	1	57	16/01/2023
58	Applications: G.1 Defining syntax of programming language, Appendix J: Security	L+I	LCD	1	58	17/01/2023
	THIRD INTERNALS					

Course in charge

Module Coordinator

HOD

Head of the Department
Artificial Intelligence & Machine Learning
K.S. Institute of Technology
Bengaluru - 560 109

Principal

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109.

KS INSTITUTE OF TECHNOLOGY BANGALORE

#14, Raghuvanahalli, Kanakapura Main Road, Bengaluru-5600109

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

NAME OF THE STAFF : SAHANA SHARMA M

SUBJECT CODE/NAME : 18AI55/ PRINCIPLES OF ARTIFICIAL INTELLIGENCE

SEMESTER/YEAR/SEC : V A

ACADEMIC YEAR : 2022-2023

Sl. No	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE 1					
1	Introduction to AI: History, Intelligent systems, foundation and sub area of AI , applications, current trend and development of AI	L+I	BB+LCD	1	1	10-10-2022
2	Problem solving: State space search- Tic Tac Toe game playing, Approach 1, Approach2	L+I	BB+LCD	1	2	11-10-2022
3	Problem solving: state space search- Tic Tac Toe game playing Appproach3	L+I	BB+LCD	1	3	12-10-2022
4	Production System: Water Jug problem	L+I	BB+LCD	1	4	13-10-2022
5	Production System: Missionaries and Cannibals	L+I	BB+LCD	1	5	17-10-2022
6	Production System: Eight puzzle problem	L+I	BB+LCD	1	6	18-10-2022
7	Exhaustive Search: BFS with water jug problem	L+I	BB+LCD	1	7	19-10-2022
8	Exhaustive Search: DFS with water jug problem	L+I	BB+LCD	1	8	20-10-2022
9	Depth First Iterative Deepening, Bidirectional Search.	L+I	BB+LCD	1	9	27-10-2022
10	Heuristic Search Techniques: Branch and Bound Search	L+I	BB+LCD	1	10	28-10-2022

Sl. No	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
11	Heuristic Search Techniques: Hill climbing.	L+I	BB+LCD	1	11	29-10-2022
12	Beam Search, Best-First Search	L+I	BB+LCD	1	12	31-10-2022
13	A* Algorithm and Optimal solution by A*Algorithm,	L+I	BB+LCD	1	13	2-11-2022
14	Iterative deepening A*	L+I	BB+LCD	1	14	3-11-2022
	MODULE 2					
15	Problem reduction- And OR Graph	L+I	BB+LCD	1	15	7-11-2022
16	Game problem, Status labelling procedure in game tree,	L+I	BB+LCD	1	16	9-11-2022
17	Game problem, Status labelling procedure in game tree,	L+I	BB+LCD	1	17	10-11-2022
18	Nim Game problem.	L+I	BB+LCD	1	18	12-11-2022
19	**Internal Assessment Test1**				19	16-11-2022
20	Bounded look-ahead strategy using MINIMAX procedure	L+I	BB+LCD	1	20	24-11-2022
21	MINIMAX procedure				21	26-11-202
22	Alpha-beta pruning: Refinements, Alternative to alpha beta-MINIMAX	L+I	BB+LCD	1	22	28-11-2022
23	Two-player perfect information games	L+I	BB+LCD	1	23	29-11-2022
	MODULE 4					
24	Advanced problem solving paradigm: Planning: types of planning system	L+I	BB+LCD	1	24	30-11-2022
25	Block world problem	L+I	BB+LCD	1	25	1-12-2022
26	Logic based planning	L+I	BB+LCD	1	26	5-12-2022
27	Linear planning using a goal stack	L+I	BB+LCD	1	27	6-12-2022
28	Linear planning using a goal stack	L+I	BB+LCD	1	28	7-12-2022
29	Means-ends analysis	L+I	BB+LCD	1	29	8-12-2022
30	Non- linear planning strategies	L+I	BB+LCD	1	30	10-12-2022
31	Non- linear planning strategies	L+I	BB+LCD	1	31	12-12-2022
32	Learning plans	L+I	BB+LCD	1	32	13-12-2022
	MODULE 5					
33	Knowledge Representation: Approaches	L+I	BB+LCD	1	33	14-12-2022
34	Knowledge representation using semantic network	L+I	BB+LCD	1	34	15-12-2022

Sl. No	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
35	**Internal Assessment Test2**			1	35	21-12-2022
36	Extended semantic networks for KR,	L+I	BB+LCD	1	36	22-12-2022
37	Expert system: introduction phases	L+I	BB+LCD	1	37	24-12-2022
38	Expert system architecture	L+I	BB+LCD	1	38	26-12-2022
39	ES verses Traditional system	L+I	BB+LCD	1	39	27-12-2022
	MODULE 3					
40	Logic concepts and logic Programming: Propositional Calculus, Truth table, equivalence laws	L+I	BB+LCD	1	40	28-12-2022
41	Propositional logic, Natural deduction system	L+I	BB+LCD	1	41	2-1-2023
42	Semantic Tableau System in propositional logic, Semantic tableau rules		BB+LCD		42	3-1-2023
43	Semantic Tableau System , satisfiability and Un-satisfiability	L+I	BB+LCD	1	43	4-1-2023
44	Resolution refutation Propositional logic: conversion of a formula into set of clauses	L+I	BB+LCD	1	44	5-1-2023
45	Conversion of formula to its CNF, resolution of clauses.	L+I	BB+LCD	1	45	9-1-2023
46	Predicate logic: Calculus, First order predicate calculus	L+I	BB+LCD	1	46	10-1-2023
47	Interpretation of formulae in FOL	L+I	BB+LCD	1	47	11-1-2023
48	Satisfiability and Un-satisfiability in FOL	L+I	BB+LCD	1	48	12-1-2023
49	**Pedagogy : Seminar - Module 3**	L+I	BB+LCD	1	49	16-1-2023
50	Seminar	L+I	BB+LCD	1	50	17-1-2023
51	**Internal Assessment Test3**			1	51	20-1-2023

Text Books:

1. Saroj Kaushik, Artificial Intelligence, Cengage learning, 2014

Reference Books:

1. Elaine Rich, Kevin Knight, Artificial Intelligence, Tata McGraw Hill
2. Nils J. Nilsson, Principles of Artificial Intelligence, Elsevier, 1980
3. StaurtRussel, Peter Norvig, Artificial Intelligence: A Modern Approach, Pearson Education, 3rd Edition, 2009
4. George F Lugar, Artificial Intelligence Structure and strategies for complex, Pearson Education, 5th Edition, 2011

Details of the teaching aids:

- LCD
- Black Board

Course Incharge

Module coordinator

HOD AIML

Head of the Department
Artificial Intelligence & Machine Learning
K.S. Institute of Technology
Bengaluru - 560 109

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109.

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

LESSON PLAN 2022-22 ODD SEMESTER

COURSE INCHARGE : **DR. AMULYASHREE S**

COURSE CODE/TITLE : **18AI56 / MATHEMATICS FOR MACHINE LEARNING**

YEAR/ SEMESTER/SECTION : **III/V/A**

BRANCH : **ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module 1						
1	Introduction	L+D	BB	1	1	10-10-2022
2	Matrices	L+D	BB	1	2	11-10-2022
3	System of Linear Equations, Vector Spaces	L+D	BB	1	3	13-10-2022
4	Linear Dependence	L+D	BB	1	4	14-10-2022
5	Linear Independence	L+D	BB	1	5	15-10-2022
6	Gaussian Elimination	L+D	BB	1	6	17-10-2022
7	Basis and basis set	L+D	BB	1	7	18-10-2022
8	Rank, Norms	L+D	BB	1	8	20-10-2022
9	Inner Products, Lengths	L+D	BB	1	9	21-10-2022

10	Distances	L+D	BB	1	10	25-10-2022
11	Angles	L+D	BB	1	11	27-10-2022
	Module 2					
12	Orthogonality	L+D	BB	1	12	28-10-2022
13	Orthonormal Basis	L+D	BB	1	13	31-10-2022
14	Orthogonal Complement	L+D	BB	1	14	3-11-2022
15	Rotations- 1D, 2D	L+D	BB	1	15	4-11-2022
16	Rotations-3D	L+D	BB	1	16	7-11-2022
17	Problem solving on orthogonality	L+D	BB	1	17	8-11-2022
18	Revision	L+D	BB	1	18	10-11-2022
19	Revision	L+D	BB	1	19	12-11-2022
20	**Internal Assessment Test 1**			1	20	**16-11-2022**
21	Determinant and Trace	L+D	BB	1	21	17-11-2022
22	Eigenvalues	L+D	BB	1	22	18-11-2022
23	Eigenvectors – its interpretations	L+D	BB	1	23	21-11-2022
24	Projections	L+D	BB	1	24	22-11-2022
25	Regressions	L+D	BB	1	25	24-11-2022
26	Diagonalization,	L+D	BB	1	26	25-11-2022
27	Singular Value Decomposition	L+D	BB	1	27	28-11-2022
28	Eigen decomposition vs Singular Value Decomposition	L+D	BB	1	28	29-11-2022
	Pedagogy Written Assignment: Solved problems on Linear Algebra					
	Module 3					
20	Introduction,	L+D	BB	1	29	1-12-2022
21	Differentiation of Univariate Functions	L+D	BB	1	30	2-12-2022
22	Partial Differentiation and Gradients	L+D	BB	1	31	5-12-2022
23	Gradients of Vector-Valued Functions	L+D	BB	1	32	6-12-2022

24	Gradients of Matrices	L+D	BB	1	33	8-12-2022
25	Useful Identities for Computing Gradients	L+D	BB	1	34	9-12-2022
26	Backpropagation	L+D	BB	1	35	10-12-2022
27	Problems	L+D	BB	1	36	12-12-2022
28	Solving problems on gradients and vector-valued functions	L+D	BB	1	37	13-12-2022
30	Revision	L+D	BB	1	39	15-12-2022
Module 4						
31	Probability concepts	L+D	BB	1	40	16-12-2022
32	**Internal Assessment Test 2**			1	41	**21-12-2022**
33	Conditional probability	L+D	BB	1	42	22-12-2022
34	Bayes' Theorem	L+D	BB	1	43	23-12-2022
35	Discrete and Continuous Random Variables	L+D	BB	1	44	26-12-2022
36	Discrete distributions	L+D	BB	1	44	27-12-2022
36	Continuous distributions	L+D	BB	1	45	29-12-2022
37	Standard Discrete Distribution functions	L+D	BB	1	46	30-12-2022
38	Continuous distribution functions	L+D	BB	1	47	31-12-2022
39	Central Limit theorem	L+D	BB	1	48	2-1-2023
40	Practice problems on Central limit theorem	L+D	BB	1	49	3-1-2023
Module 5						

35	Introduction	L+D	BB	1	50	5-1-2023
36	Optimization Using Gradient Descent	L+D	BB	1	51	6-1-2023
37	Constrained Optimization	L+D	BB	1	52	9-1-2023
38	Lagrange Multipliers	L+D	BB	1	53	10-1-2023
39	Convex Optimization	L+D	BB	1	54	12-1-2023
40	Practice problems	L+D	BB	1	55	13-1-2023
41	Revision	L+D	BB	1	56	16-1-2023
42	**Internal Assessment Test 3**				57	**20-1-2023**

Text Books:

1. Marc Peter Deisenroth, A. Aldo Faisal, and Cheng Soon Ong. "Mathematics for Machine Learning", Published by Cambridge University Press, Copyright 2020.

Reference Books:

1. Sheldon Axler, "Linear Algebra Done Right" third edition, 2015, Springer
2. David C. Lay, "Linear Algebra and its Applications," 3rd edition, Pearson Education (Asia) Pte. Ltd,2005
3. Gilbert Strang, "Linear Algebra and its Applications", 3rd edition, Thomson Learning Asia, 2003
4. D. Chatterjee, "Analytical Geometry: Two and Three Dimensions", Alpha Science International Limited, 2009.
5. Charles M. Grinstead, J. Laurie Snell, "Introduction to Probability".
6. DasGupta, Anirban, "Probability for Statistics and Machine Learning: Fundamentals and Advanced Topics" , Springer, 2011
7. David Morin, "Probability: For the Enthusiastic Beginner", 2016
8. Jeyakumar, Alexander M. Rubinov, "Continuous Optimization: Current Trends and Modern Applications (Applied Optimization) 2005th Edition.
9. Kulkarni, Anand J., Satapathy, Suresh Chandra, "Optimization in Machine Learning and Applications", Springer, 2020.

Details of the teaching aids:

- **Black Board**

Course Incharge

Module coordinator

HOD AIML

Head of the Department
Artificial Intelligence & Machine Learning
K.S. Institute of Technology
Bengaluru - 560 109

PRINCIPAL

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109.

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

NAME OF THE STAFF: **Dr. Amulyashree S**
SUBJECT CODE/NAME: **18AI57/ARTIFICIAL INTELLIGENCE LAB**
SEMESTER/YEAR/SEC: **V/III/A**
ACADEMIC YEAR : **2022-2023**

Sl. No.	Topic to be covered	Teaching Aid	Proposed Date
1	Practice programs in Python (Program 1 & 2)	Projector and Board	13/10/22
2	Practice programs in Python (Program 3 & 4)	Projector and Board	20/10/22
3	Practice programs in Python (Program 5)	Projector and Board	27/10/22
4	Implement and Demonstrate Depth First Search Algorithm on Water Jug Problem	Projector and Board	3/11/22
5	Implement and Demonstrate Best First Search Algorithm on any AI problem	Projector and Board	10/11/22
6	Implement AO* Search algorithm	Projector and Board	17/11/22
7	Solve 8-Queens Problem with suitable assumptions	Projector and Board	24/11/22
6	Implementation of TSP using heuristic approach	Projector and Board	1/12/22
7	Implementation of the problem solving strategies: either using Forward Chaining or Backward Chaining	Projector and Board	8/12/22
8	Implement resolution principle on FOPL related problems	Projector and Board	15/12/22
9	Implement any Game and demonstrate the Game playing strategies	Projector and Board	22/12/22
10	**Pedagogy: Implement A* Search Algorithm**	Projector and Board	29/12/22
11	Practice Lab	Projector and Board	5/1/23
12	Lab Internals		23/1/23

Signature of course Incharge **Signature of Module Coordinator** **Signature of HOD** **Signature of Principal**

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109.

Head of the Department
Artificial Intelligence & Machine Learning
K.S. Institute of Technology
Bengaluru - 560 109

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

NAME OF THE STAFF: **Prof. Amulyashree S**
SUBJECT CODE/NAME: **18AI5#/ARTIFICIAL INTELLIGENCE LAB**
SEMESTER/YEAR/SEC: **V/III/A**
ACADEMIC YEAR : **2022-2023**

Sl. No.	Topic to be covered	Teaching Aid	Proposed Date
1	Practice programs in Python (Program 1 & 2)	Projector and Board	14/10/22
2	Practice programs in Python (Program 3 & 4)	Projector and Board	15/10/22
3	Practice programs in Python (Program 5)	Projector and Board	21/10/22
4	Implement and Demonstrate Depth First Search Algorithm on Water Jug Problem	Projector and Board	28/10/22
5	Implement and Demonstrate Best First Search Algorithm on any AI problem	Projector and Board	4/11/22
6	Implement AO* Search algorithm	Projector and Board	18/12/22
7	Solve 8-Queens Problem with suitable assumptions	Projector and Board	2/12/22
6	Implementation of TSP using heuristic approach	Projector and Board	9/12/22
7	Implementation of the problem solving strategies: either using Forward Chaining or Backward Chaining	Projector and Board	16/12/22
8	Implement resolution principle on FOPL related problems	Projector and Board	30/12/22
9	Implement any Game and demonstrate the Game playing strategies	Projector and Board	30/12/22
10	**Pedagogy: Implement A* Search Algorithm**	Projector and Board	6/1/23
11	Practice Lab	Projector and Board	13/1/23
12	Lab Internals		23/1/23

Signature of course Incharge **Signature of Module Coordinator** **Signature of HOD** **Signature of Principal**

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109.

Head of the Department
Artificial Intelligence & Machine Learning
K.S. Institute of Technology
Bengaluru - 560 109

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
LESSON PLAN 2022-23 ODD SEMESTER

COURSE INCHARGE : ANU MATHEWS

COURSE CODE/TITLE : Database Management Systems Laboratory

YEAR/ SEMESTER/SECTION : 3/5/A

ACADEMIC YEAR : **2022-2023**

Sl. No.	Topic to be covered	Teaching Aid	Proposed Date
1	Consider the following schema for a Library Database: BOOK(Book_id, Title, Publisher_Name, Pub_Year) BOOK_AUTHORS(Book_id, Author_Name) PUBLISHER(Name, Address, Phone) BOOK_COPIES(Book_id, Branch_id, No-of_Copies) BOOK_LENDING(Book_id, Branch_id, Card_No, Date_Out, Due_Date) LIBRARY_BRANCH(Branch_id, Branch_Name, Address) Write SQL queries to 1. Retrieve details of all books in the library – id, title, name of publisher, authors,number of copies in each branch, etc. 2. Get the particulars of borrowers who have borrowed more than 3 books, butfrom Jan 2017 to Jun 2017. 3. Delete a book in BOOK table. Update the contents of other tables to reflect this data manipulation operation. 4. Partition the BOOK table based on year of publication. Demonstrate its working with a simple query. 5. Create a view of all books and its number of copies that are currently available in the Library.	Projector and Board	B1: 13/10/23 B2: 14/10/23

2	Consider the following schema for Order Database: SALESMAN(Salesman_id, Name, City, Commission) CUSTOMER(Customer_id, Cust_Name, City, Grade, Salesman_id) ORDERS(Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id) Write SQL queries to 1. Count the customers with grades above Bangalore"s average. 2. Find the name and numbers of all salesman who had more than one customer. 3. List all the salesman and indicate those who have and don"t have customers in their cities (Use UNION operation.) 4. Create a view that finds the salesman who has the customer with the highest order of a day. 5. Demonstrate the DELETE operation by removing salesman with id 1000. All his orders must also be deleted.	Projector and Board	B1:20/10/23 B2: 15/10/23
3	Consider the schema for Movie Database: ACTOR(Act_id, Act_Name, Act_Gender) DIRECTOR(Dir_id, Dir_Name, Dir_Phone) MOVIES(Mov_id, Mov_Title, Mov_Year, Mov_Lang, Dir_id) MOVIE_CAST(Act_id, Mov_id, Role) RATING(Mov_id, Rev_Stars) Write SQL queries to 1. List the titles of all movies directed by „Hitchcock". 2. Find the movie names where one or more actors acted in two or more movies. 3. List all actors who acted in a movie before 2000 and also in a movie after 2015 (use JOIN operation). 4. Find the title of movies and number of stars for each movie that has at least one rating and find the highest number of stars that movie received. Sort the result by movie title. 5. Update rating of all movies directed by „Steven Spielberg" to 5.	Projector and Board	B1: 27/10/23 B2: 21/10/23
4	Consider the schema for College Database: STUDENT(USN, SName, Address, Phone, Gender) SEMSEC(SSID, Sem, Sec) CLASS(USN, SSID) SUBJECT(Subcode, Title, Sem, Credits) IAMARKS(USN, Subcode, SSID, Test1, Test2, Test3, FinalIA) Write SQL queries to	Projector and Board	B1: 03/11/23 B2: 28/10/23

	1. List all the student details studying in fourth semester „C" section. 2. Compute the total number of male and female students in each semester and in each section. 3. Create a view of Test1 marks of student USN „1BI15CS101" in all subjects. 4. Calculate the FinalIA (average of best two test marks) and update the corresponding table for all students. 5. Categorize students based on the following criterion: If FinalIA = 17 to 20 then CAT = „Outstanding" If FinalIA = 12 to 16 then CAT = „Average" If FinalIA< 12 then CAT = „Weak" Give these details only for 8th semester A, B, and C section students.		
5	Consider the schema for Company Database: EMPLOYEE(SSN, Name, Address, Sex, Salary, SuperSSN, DNo) DEPARTMENT(DNo, DName, MgrSSN, MgrStartDate) DLOCATION(DNo,DLoc) PROJECT(PNo, PName, PLocation, DNo) WORKS_ON(SSN, PNo, Hours) Write SQL queries to 1. Make a list of all project numbers for projects that involve an employee whose last name is „Scott", either as a worker or as a manager of the department that controls the project. 2. Show the resulting salaries if every employee working on the „IoT" project is given a 10 percent raise. 3. Find the sum of the salaries of all employees of the „Accounts" department, as well as the maximum salary, the minimum salary, and the average salary in this department 4. Retrieve the name of each employee who works on all the projects controlledby department number 5 (use NOT EXISTS operator). 5. For each department that has more than five employees, retrieve the department number and the number of its employees who are making more than Rs. 6,00,000.	Projector and Board	B1: 10/11/23 B2: 04/1123
6	MINI PROJECT- ER Design Evaluation		B1: 17/11/23 B2: 18/1123
7	MINI PROJECT- Relational Schema Design Evaluation		B1: 01/12/23 B2: 02/12/23
8	MINI PROJECT- SQL table creation with integrity constraints check.		B1: 08/12/23 B2: 09/12/23

9	MINI PROJECT- Implementation	B1: 15/12/23 B2: 16/12/23
10	MINI PROJECT- Implementation	B1: 22/12/23 B2: 23/12/23
12	MINI PROJECT- Implementation	B1: 29/12/23 B2: 30/12/23
13	MINI PROJECT- Implementation	B1: 05/01/23 B2: 06/01/23
14	MINI PROJECT-Final Evaluation	B1: 12/01/23 B2: 13/01/23
15	**LAB TEST**	B1: 23/01/23 B2: 24/01/23

Signature of course Incharge **Signature of Module Coordinator** **Signature of HOD** **PRINCIPAL**

Head of the Department
Artificial Intelligence & Machine Learning
K.S. Institute of Technology
Bengaluru - 560 109

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109.

KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF CHEMISTRY

NAME OF THE FACULTY : Dr. KIRAN KUMAR S.R

SUBJECT:ENVIRONMENTAL STUDIES (18CIV59)
BRANCH:CSE
SECTION/ : AIML
ACADEMIC YEAR : **2021-2022**

Sl. No	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	MODULE- 1: Ecosystems					
1	Ecosystems (Structure and Function): Forest, Desert, Wetlands, Riverine, Oceanic and Lake.	L	BB	1	1	13/10/2021
2	Biodiversity: Types, Value; Hot-spots; Threats and Conservation of biodiversity,	L	BB	1	2	23/10/2021
3	Forest Wealth, and Deforestation.	L	BB	1	3	27/10/2021
	MODULE- 2: Advances in Energy Systems					
4	Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.	L	BB	1	4	10/11/2021
5	Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining,	L	BB	1	5	17/11/2021

6	Cloud Seeding, and Carbon Trading.	L	BB	1	6	24/11/2021
	MODULE- 3: Environmental Pollution					
7	Environmental Pollution (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution.	L	BB	1	7	1/12/2021
8	Waste Management & Public Health Aspects: Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.	L	BB	1	8	8/12/2021
	MODULE- 4: Global Environmental Concerns					
9	Global Environmental Concerns (Concept, policies and case-studies):Ground water depletion/recharging, Climate Change.	L	BB	1	9	15/12/2021
10	Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water.	L	BB	1	10	22/12/2021
11	Resettlement and rehabilitation of people, Environmental Toxicology.	L	BB	1	11	29/12/2021
	MODULE- 5: Latest Developments in Environmental Pollution Mitigation Tools					
12	G.I.S. & Remote Sensing, Environment Impact Assessment, Environmental Management Systems.	L	BB	1	12	5/1/2022
13	ISO14001; Environmental Stewardship- NGOs.	L	BB	1	13	12/1/2022
14	Field work: Visit to an Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant; ought to be Followed by understanding of process .	L	BB	1	14	19/1/2022

SIGNATURE OF FACULTY

SIGNATURE OF HOD

Head of the Department
Dept. of Science and Humanities
K.S. Institute of Technology
Bengaluru - 560 109

SIGNATURE OF PRINCIPAL

PRINCIPAL
K.S. INSTITUTE OF TECHNOLOGY
BENGALURU - 560 109.